US Highway 93 Ninepipe/Ronan Improvement Project

Final Supplemental Environmental Impact Statement and Section 4(f) Evaluation Volume I

Montana Department of Transportation

Confederated Salish and Kootenai Tribes

U.S. Department of Transportation
Federal Highway Administration

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Lake County, Montana

FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT AND SECTION 4(f) EVALUATION

Submitted pursuant to 42 United States Code 4332 (2)(c); 49 United States Code 303; Section 2-3-104 and 75-1-201 Montana Code Annotated; and Executive Orders 11990, 11988, and 12898

U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION
AND
MONTANA DEPARTMENT OF TRANSPORTATION
AND
CONFEDERATED SALISH AND KOOTENAI TRIBES

Cooperating Agencies
U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service

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ABSTRACT: The proposed action is the improvement of an 18-kilometer (11.2-mile) segment of US 93 from Dublin Gulch Road/Red Horn Road through the City of Ronan to Baptiste Road/Spring Creek Road in Lake County, Montana. The improvements are proposed to provide a facility that meets current design standards in order to enhance the safety and operation of the facility. A No-Action Alternative, and 10 widening alternatives are analyzed for the rural portion of the project, ranging from minor widening and improvement of the two-lane roadway with a cross-section of 12 meters (40 feet) to widening and improvement to a four-lane roadway cross section of 33.6 meters (112 feet). This document also analyzes a No-Action Alternative and five action alternatives for the urban portion of the project through the City of Ronan. These alternatives range from improving the roadway within the existing right-of-way to widening outside the existing roadway to a split couplet, with southbound lanes relocated to an adjacent street. Alternatives Rural 3, a widened two-lane roadway with a single north bound climbing/passing lane on Post Creek Hill and a short four-lane divided section south of Ronan, and Ronan 4, a couplet with improved intersections and two lanes in each direction about a block a part, are the preferred alternatives.

In addition, a 3.0-meter (10-foot) wide separated pedestrian/bicycle path will be included for the entire length of the project as part of the preferred alternative.

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Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
ADT	average daily traffic
ALCO	Aquatic Lands Conservation Ordinance
AST	above ground storage tank
ATV	all-terrain vehicle
BIA	Bureau of Indian Affairs
BMP	best management practices
CBD	central business district
CBIR	Center for Business Information and Research
CEI	cost effectiveness index
CEIC	Census and Economic Information Center
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CECRA	Comprehensive Environmental Cleanup and Responsibility Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CIP	Capitol Improvements Planning
cms	cubic meters per second
CSKT	Confederated Salish & Kootenai Tribes
dB	decibels
dBA	A-weighted decibels
DNRC	Montana Department of Natural Resources and Conservation
DPM	diesel particulate matter
DPS	distinct population segment
EIS	Environmental Impact Statement

ESA	Endangered Species Act
FAID	Flathead Agency Irrigation Division
FDOT	Florida Department of Transportation
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FPPA	Farmland Protection Policy Act
FR	Federal Register
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
km	kilometer
km/h	kilometers per hour
L_{eq}	equivalent noise levels
LOS	level of service
LUST	leaking underground storage tank
MAAQS	Montana Ambient Air Quality Standards
MCA	Montana Code Annotated
MDEQ	Montana Department of Environmental Quality
MDLI	Montana Department of Labor and Industry
MDT	Montana Department of Transportation
MFWP	Montana Fish Wildlife and Parks
MNHP	Montana Natural Heritage Program
MOA	Memorandum of Agreement
mph	miles per hour
MPO	Metropolitan Planning Organization
MRI	Midwest Research Institute
MRL	Montana Rail Link
MSAT	Mobile source air toxics

MT	Montana Highway
NAAQS	national ambient air quality standards
NAC	noise abatement criteria
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OSHA	Occupational Safety and Health Administration
PAB	palustrine aquatic bed wetland
PCBs	polychlorinated biphenyls
PEM	palustrine emergent wetland
PFO	palustrine forested wetland
PM_{10}	fine particulate matter equal to or less than 10 micrometers (microns) in diameter
$PM_{2.5}$	fine particulate matter equal to or less than 2.5 micrometers (microns) in diameter (a subset of PM_{10})
POG	Project Oversight Group
ppm	parts per million
PSS	palustrine scrub-shrub wetland
PUB	palustrine unconsolidated bottom wetland
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
ROW	right-of-way
RP	reference post
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Officer

SIP	state air quality implementation plan
SPA	Stream Preservation Act
SWPPP	Stormwater Pollution Prevention Plan
TDC	Technical Design Committee
THPO	Tribal Historic Preservation Officer
TNM	traffic noise model
TSCA	Toxic Substances Control Act
TSP	total suspended particulates
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tanks
U.S. EPA	United States Environmental Protection Agency
U.S. DOI	U.S. Department of the Interior
VFR	view from the road
VMT	vehicle miles traveled
VOR	views of the road
µg/m3	micrograms per cubic meter
ºC	degrees Celsius
ºF	degrees Fahrenheit

Part 1 Summary

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1.1 Description of the Proposed Action

The Federal Highway Administration (FHWA), the Montana Department of Transportation (MDT), and the Confederated Salish and Kootenai Tribes (CSKT), referred to as the project proponents, propose to improve 18 kilometers (11.2 miles) of roadway in the Ninepipe/Ronan section of the existing U.S. Highway 93 (US 93) corridor in Montana. This US 93 Ninepipe/Ronan final Supplemental Environmental Impact Statement (FSEIS) provides the information necessary to supplement the *U.S. Highway 93 – Evaro to Polson – Missoula and Lake Counties, Montana: Final Environmental Impact Statement and Section 4(f) Evaluation; FHWA-MT-EIS-95-01-F; F 5-1(9)6* (FHWA and MDT 1996), referred to as the US 93 Evaro to Polson FEIS, for the proposed improvements in the Ninepipe/Ronan section of the US 93 corridor (Figure 1.1-1). FHWA, MDT, and CSKT are the lead agencies responsible for complying with the requirements of the National Environmental Policy Act (NEPA) and the preparation of this environmental analysis. The final SEIS will be used to identify the preferred alternatives for highway improvements for the US 93 Ninepipe/Ronan improvement project.

The US 93 Evaro to Polson FEIS described the proposed project and alternatives, and the social, economic, and environmental impacts of the corridor project. A Record of Decision (ROD) was issued on August 12, 1996; however, the ROD deferred making a decision on lane configurations, mitigation measures, and a Section 4(f) determination until agreement was reached by FHWA and MDT, along with their cooperating agency, the CSKT.

Representatives from MDT, FHWA, and CSKT (referred to as the “three governments” or “proponents”) then negotiated and signed the *Memorandum of Agreement-US 93 Evaro to Polson* (MDT, FHWA, and CSKT 2000) (referred to as the US 93 Corridor MOA). The US 93 Corridor MOA, dated December 20, 2000, lays out the preferred conceptual roadway improvements, including lane configurations, design features, and mitigation measures for 50 kilometers (30.6 miles) of US 93 from Evaro to the Dublin Gulch Road/Red Horn Road intersection (RP 37.1) near Saint Ignatius and for 17.4 kilometers (10.8 miles) of US 93 from the Baptiste Road/Spring Creek Road intersection near Ronan (RP 48.3) to the MT 35 intersection near Polson (RP 59.1). The US 93 Corridor MOA does not include an 18-kilometer (11.2-mile) section between the Dublin Gulch Road/Red Horn Road intersection (RP 37.1) and the Baptiste Road/Spring Creek Road intersection (RP 48.3), which is called the US 93 Ninepipe/Ronan project corridor.

The three governments agreed to prepare a Supplemental EIS (referred to as the US 93 Ninepipe/Ronan SEIS) for the Ninepipe/Ronan section. It was agreed a supplement was needed to explore possible alternate alignments around the environmentally sensitive Ninepipe glacial pothole wetland complex, and to study in more depth the effects of the highway improvement on the wetlands and wildlife in the corridor.

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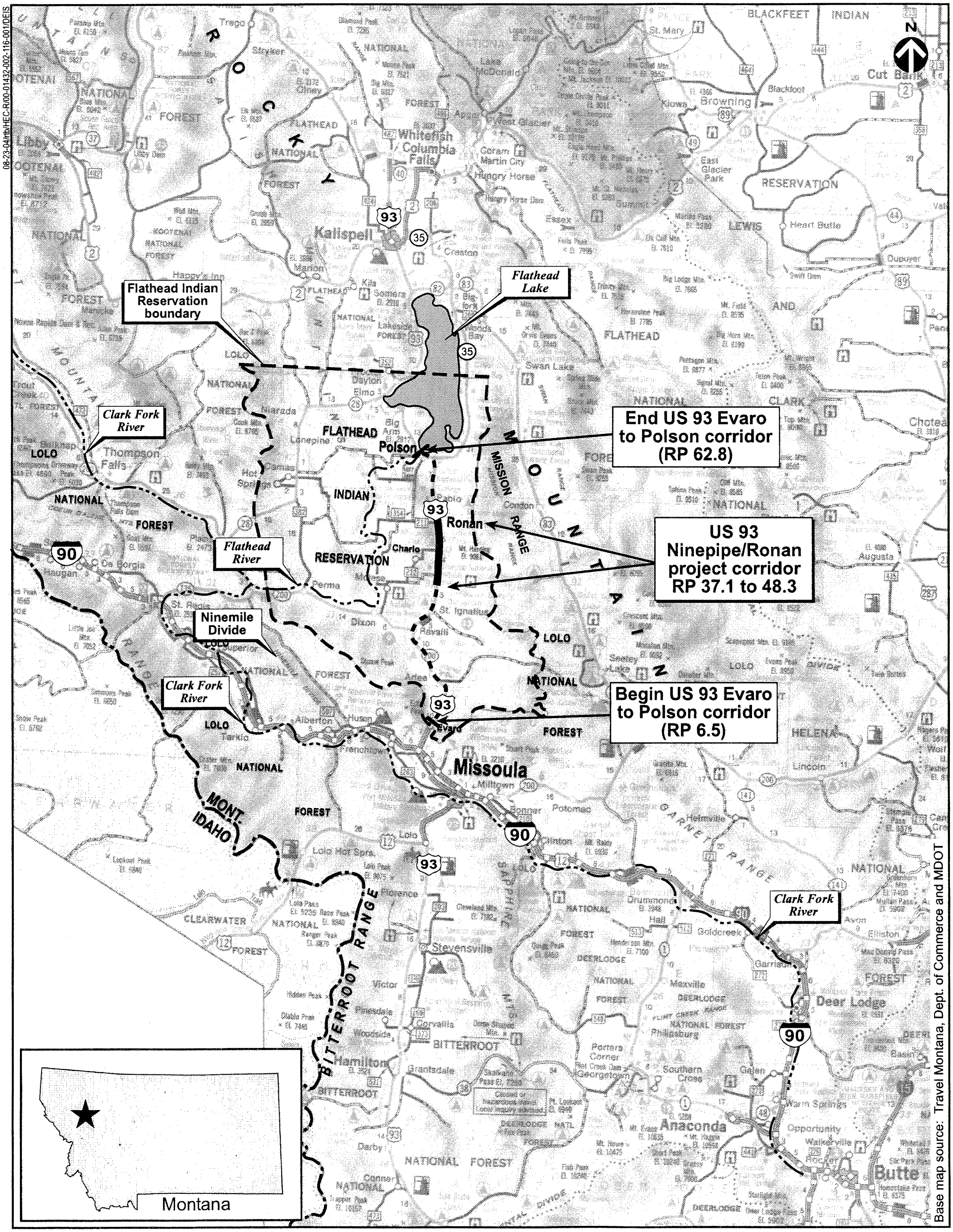

Figure 1.1-1. Vicinity map of the US 93 Ninepipe/Ronan improvement project within the US 93 Evaro to Polson corridor in Montana.

1.1.1 Proposed Action

The US 93 Ninepipe/Ronan improvement project extends from Dublin Gulch Road/Red Horn Road (Reference Post [RP] 37.1) north through the City of Ronan to Baptiste Road/Spring Creek Road (RP 48.3). The existing road is narrow, lacks shoulders, is periodically congested, and is expected to get worse in the future. Accidents have particularly high severities. Five percent of accidents involve fatalities, in comparison to 1.7 percent for comparable facilities statewide. There are also about three accidents per mile per year compared to one per mile per year for comparable facilities. Thus, both the fatality rate and the rate of accidents per mile per year are three times the comparable statewide rates. The proportion of nonfatal injury accidents in the corridor (41 percent) is also greater than for comparable roads statewide (34 percent). Of these injury accidents, 6 percent were “head-on” accidents versus 2 percent for comparable roads statewide. Since this highway has much higher traffic volumes than most other comparable facilities statewide the average accident frequency rate is 0.98 per million vehicle miles of travel compared to a statewide rate of 1.30 per million vehicle miles of travel on comparable facilities. The severity index is 2.86 per million vehicle miles compared to a statewide rate of 2.34 per million vehicle miles on comparable facilities. Thus, reducing the high accident severity (high risk of death or injury when an accident occurs) is an objective for the corridor and one of the purposes of the project.

The proposed alignments are shown on Figures 1.1-2 through 1.1-4. The proposed project would follow the present alignment of US 93 through the rural portion of the project corridor, with some of the proposed alternatives deviating from the existing US 93 alignment in the urban portion through the City of Ronan. The 10 rural action alternatives range from two lanes and variations of two lanes with passing lanes to a continuous four-lane divided highway. An elevated parkway is also considered in the rural portion of the project corridor. The five urban action alternatives range from two lanes with left-turn lanes to four lanes with continuous two-way left-turn lanes, as well as two couplet alternatives.

Over 100 written comments were received on the draft SEIS asking for a separated bicycle/pedestrian path. As a result, a separated bicycle/pedestrian path within the project right-of-way has been added from Buchanan Street in Ronan south to Dublin Gulch Road/Red Horn Road as part of the preferred alternative. The preliminary designs presented in the draft SEIS incorporated a separate bicycle/pedestrian path for the north portion of the project from Baptiste Road/Spring Creek Road (where it would connect to the path extending south from Polson and Pablo) to Ronan at US 93 and Buchanan Street.

The earliest the proposed project could begin construction is anticipated to be 2012. The actual date that construction will begin will depend on the availability of funding. All estimated costs shown for this project have been inflated to the year 2012. The US 93 Ninepipe / Ronan improvement project currently does not fall within a designated Metropolitan Planning Organization (MPO) area.

1.1.2 General Description of Project Area

The Flathead Indian Reservation is located in the Rocky Mountain region of Northwestern Montana, and is characterized with diverse landforms – low, wide valleys, forested hills, rocky buttes, high mountains peaked by glaciers, alpine tundra, semi-arid sagebrush/grasslands, and dozens of rivers, streams, lakes and wetlands. Oral history suggests the natural setting has supported human occupation since before the last glacial retreat. Archaeological evidence and Native American stories suggest that Native Americans have inhabited the region for 12,000 years. Today three main Tribal groups reside on the Flathead Indian Reservation: the Bitterroot Salish, the Kootenai, and the Upper Pend d'Oreille.

Most 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 foraging and habitat for a wide variety of wildlife species. The Mission Valley is located south of Flathead Lake (Figure 1.1-1). The valley is flanked on the east by the Mission Mountain Range, which reaches a height of 2,853 meters (9,360 feet), and on the west by the lower Salish Mountains, which reach a height of 1,707 meters (5,600 feet). The project corridor lies in the central portion of the Mission Valley approximately 20 to 30 kilometers (12 to 18 miles) south of Flathead Lake and 5 to 6.5 kilometers (3 to 4 miles) west of the base of the Mission Range. Drainages flowing from the Mission Mountain Range cross the Mission Valley east to west and enter the Flathead River, which hugs the west edge of the valley floor. The project corridor crosses two watersheds within the valley: Mission Creek and Crow Creek. The southern part of the project area from its south terminus (RP 37.1) north to the Ronan south city limits (RP 46) is rural, with a limited number of residences and commercial facilities. Much of the land along this rural portion of the highway is fee land (land in private ownership). The United States Fish and Wildlife Service (USFWS) and the Montana Department of Fish, Wildlife and Parks (MFWP) are also major landowners in this area. The Confederated Salish and Kootenai Tribes (CSKT) own the majority of land (Tribal land) within the Flathead Indian Reservation, but not along the highway corridor. In addition, there are allotments along the corridor, which are tracts of Tribal land owned in whole or in part by individuals and the Tribes for which the federal government holds title on behalf of the owners.

This rural portion of the project corridor encompasses the Post Creek drainage basin in the Mission Creek watershed and the Ninepipe Area. The rural portion of the corridor would include crossing the following water resources: Post Creek, Ninepipe Reservoir, two kettle ponds, and Crow Creek. The area lies north of the Post Creek drainage basin and includes the Ninepipe National Wildlife Refuge and a core pothole wetland area, with thousands of pothole wetlands and much land managed specifically for wildlife. The Ninepipe area is of considerable interest to the Tribal government and the Tribal cultural communities. The rural portion also includes the Crow Creek watershed, which lies north of the Ninepipe Area and is an important corridor for fish and wildlife.

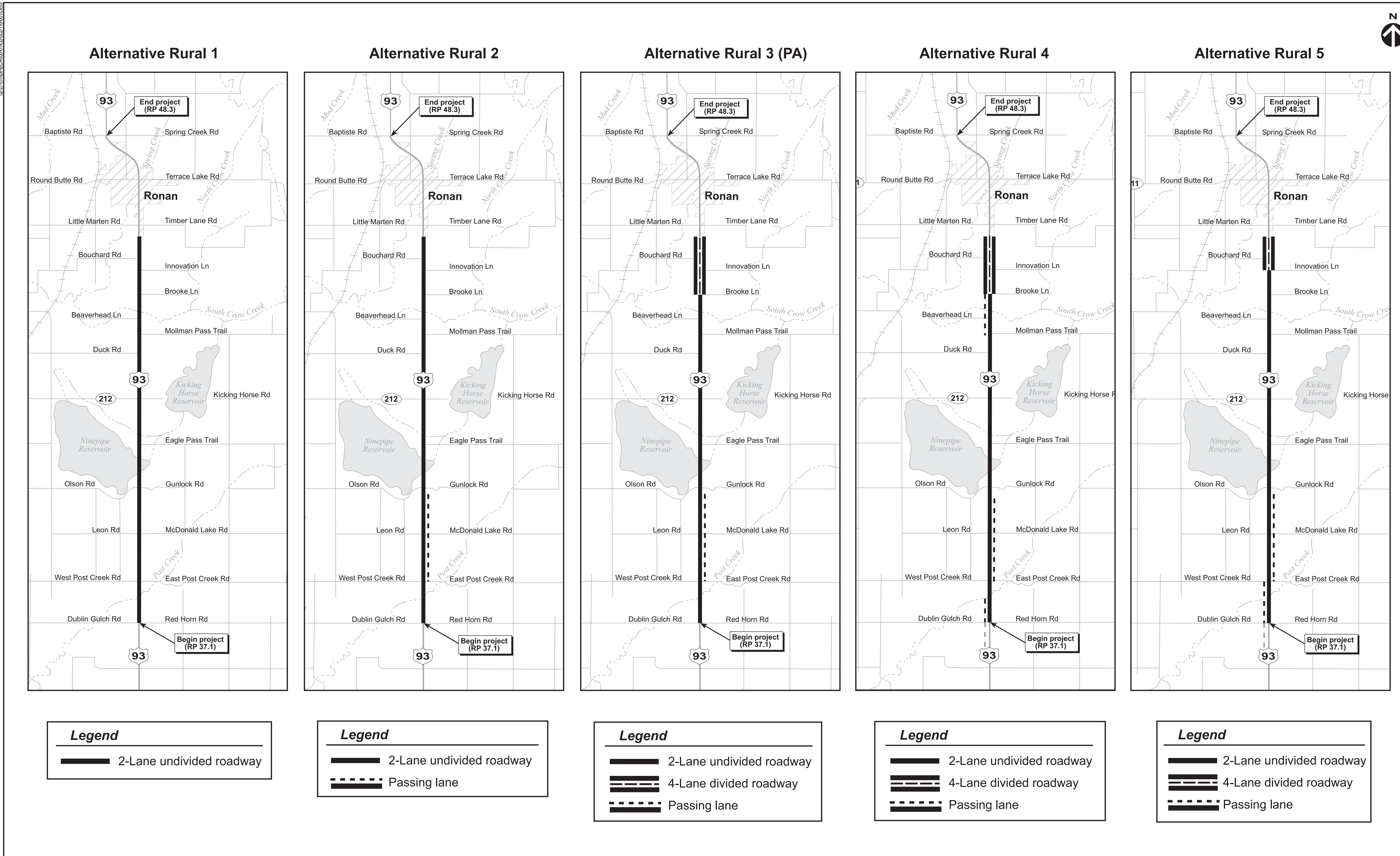

Figure 1.1-2. **Alternatives Rural 1 through Rural 5 within the rural portion of the US 93 Ninepipe/Ronan project corridor.**

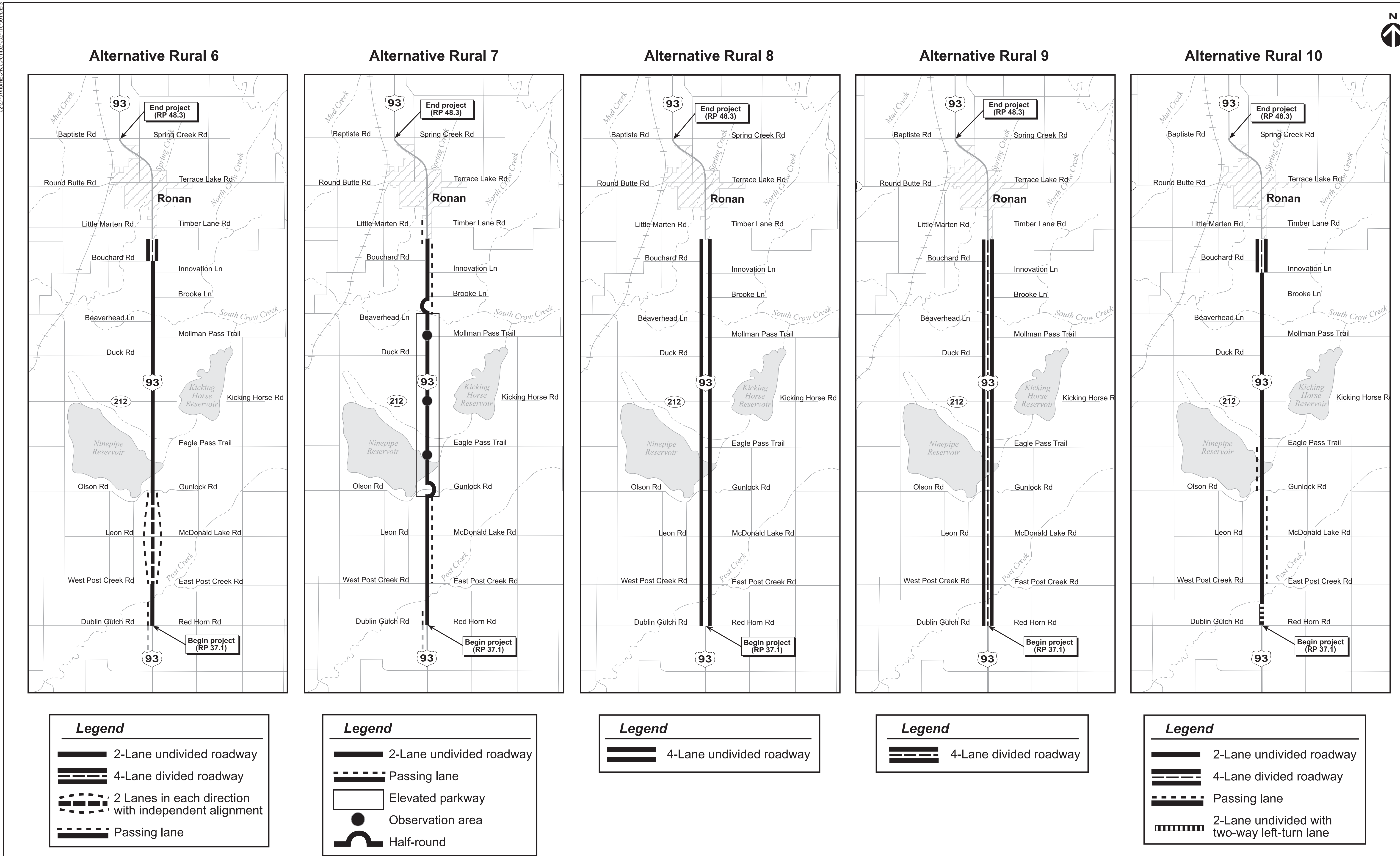

Figure 1.1-3. Alternatives Rural 6 through Rural 10 within the rural portion of the US 93 Ninepipe/Ronan project corridor.

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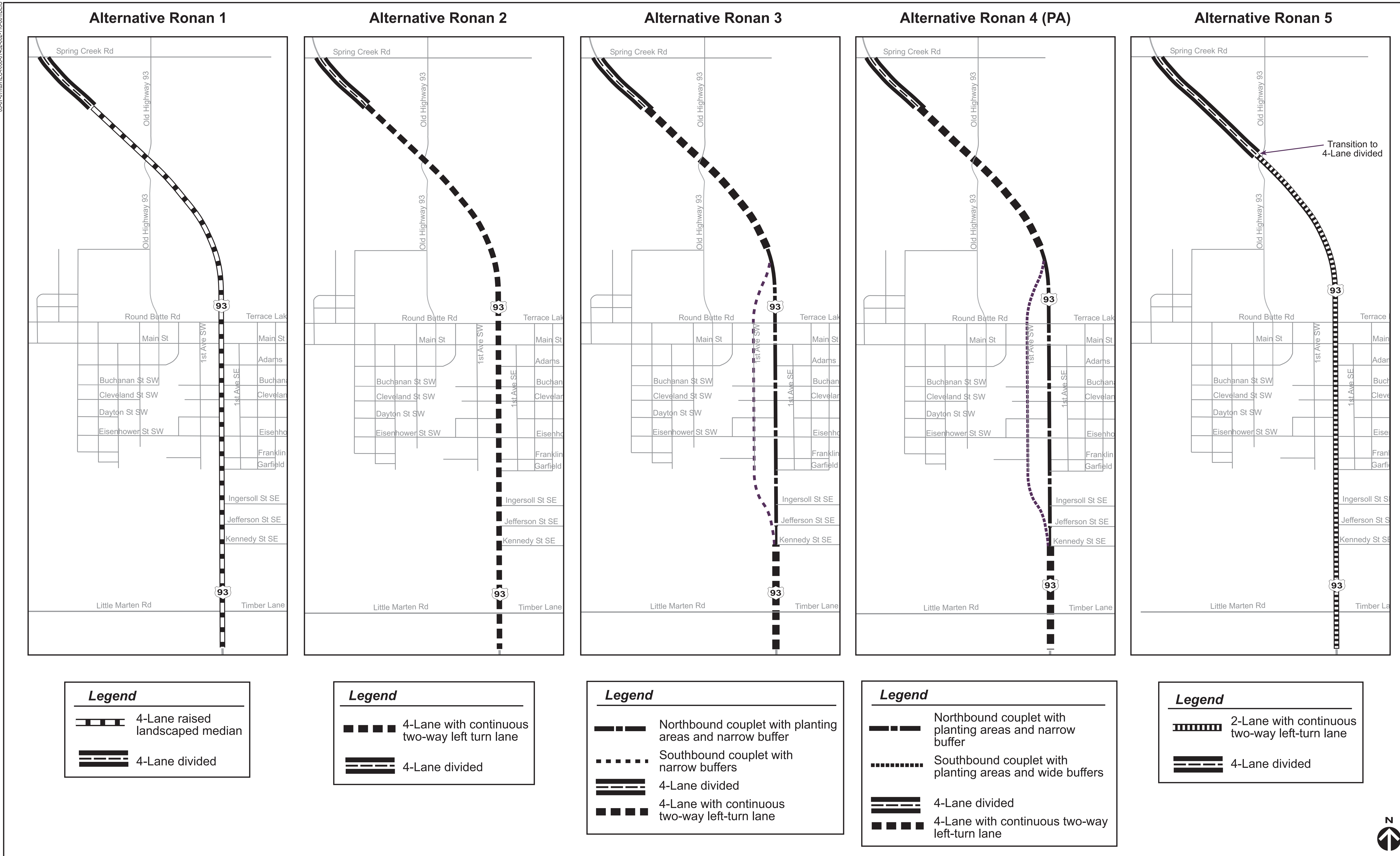

Figure 1.1-4. **Alternatives Ronan 1 through Ronan 5 within the urban portion of the US 93 Ninepipe/Ronan project**

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The rural portion of the project corridor also includes cultivated lands and lands supporting livestock. Residential and commercial activity is primarily limited to single-family residences on multiple acres. Commercial activity is often single proprietorships operating from a residential dwelling or a separate building on the property.

The northern part of the project area extends from the south city limits of Ronan (RP 46) to the north project terminus at Baptiste Road/Spring Creek Road (RP 48.3). This portion of the project corridor is urban and natural habitats in the urban portion of the project area are limited to Ronan Spring Creek, which is conveyed underneath US 93 through a culvert, and a few wetlands near the north terminus of the project corridor. Within the City of Ronan, US 93 is a major commercial corridor. A diverse array of retail and service-oriented businesses and Tribal land dominate the land use adjacent to the highway.

Two of the urban alternatives would utilize a couplet with the southbound lanes located on First Avenue SW. Residential housing is the predominant land use along First Avenue SW. The few commercial parcels along First Avenue SW within the project area are often the back segments of businesses that front US 93. Throughout the project area, single-family dwellings dominate the housing where residential pockets occur. Other living accommodations include duplexes and apartment complexes of varying density.

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1.2 Major Actions Proposed by Other Governmental Agencies in the Same Geographic Area

The following actions are proposed by governmental agencies in the same geographic area as the US 93 Ninepipe/Ronan improvement project. A complete description of governmental and non-governmental past, present, and future action is included in the cumulative effects analysis for this document in Section 5.20.

- FHWA and MDT reconstruction of US 93 from Evaro to Polson (RP 6.5 to RP 37.1 and RP 48.3 to RP 58.4) began in 2004 with the replacement of the Jocko River bridge at RP 19. Reconstruction throughout the corridor will occur in segments and is likely to extend into 2010. In addition to reconstruction of the roadway, several mitigation sites would be implemented to compensate for unavoidable impacts on wetlands. The nearest sites to the proposed project include Mud Creek, a tributary to Crow Creek; Mission Creek, which is fed by Post Creek; and an unnamed tributary to Post Creek.

- MDT proposes to improve Montana Highway (MT) 354, which approximately parallels US 93 between MT 211 and Polson. Construction for the proposed project is expected to begin by 2008.

- CSKT, in cooperation with Lake County, proposes to close and remove a 3.2-kilometer (2.0-mile) segment of Duck Road between the easterly intersection with US 93 and the westerly intersection with Piedalue Road.

- CSKT proposes to reconstruct Mollman Pass Trail beginning at Hillside Road, which is east of the Kicking Horse Reservoir, and extending approximately 2.4 kilometers (1.5 miles) to the east. The proposed project would be completed in 2008.

- CSKT proposes the construction of the Timber Lane Pedestrian Pathway. This pathway would begin at the junction of US 93 and Timber Lane Road, which is immediately south of the city of Ronan, and would extend north and east for approximately 8.0 kilometers (5.0 miles). The pathway provides an alternate route for pedestrian use. The proposed project would be constructed in 2008. This pathway would connect to the new proposed bicycle/pedestrian path to be constructed as part of the US 93 Ninepipe/Ronan project.

- CSKT proposes street improvements in downtown Ronan, including one block of Second Avenue SE and two blocks of Main Street. These improvements are expected to be implemented by 2010.

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1.3 Alternatives Considered

The US 93 Ninepipe/Ronan project corridor has been divided into two major portions—the rural portion and the urban portion. The rural portion of the project corridor extends from the Dublin Gulch Road/Red Horn Road intersection, approximately RP 37.1 on the south, northerly to the south Ronan city limits (approximately RP 46). The urban portion extends from the south city limits of Ronan northerly through Ronan to the Baptiste Road/Spring Creek Road intersection (approximately RP 48.3), which is the end of the proposed project.

1.3.1 Rural Action Alternatives

There are 10 action alternatives and a no-action alternative for the rural portion of the corridor. All of the rural action alternatives, except Alternative Rural 7, include various combinations of two-lane, modified two-lane, four lane divided, and four lane undivided roadway configurations. Detailed descriptions and figures depicting these lane configurations are provided in *Section 3.2 Alternatives Considered in Detail*.

All of the rural action alternatives would 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 proposed project.

1.3.2 Urban Action Alternatives

There are five action alternatives and a No-Action Alternative for the urban portion of the corridor. All of the urban action alternatives would include reconstruction of some existing roadway through Ronan. The urban action alternatives include two-lane, four-lane, and couplet configurations. Detailed descriptions and figures depicting these lane configurations are provided in *Section 3.2 Alternatives Considered in Detail*.

1.3.3 The Preferred Alternative

Rural Preferred Alternative

The rural preferred alternative (PA) is Alternative Rural 3. Although accident statistics suggest that the safety of two-lane highways is substantially improved when a passing opportunity is provided every 3.2 to 4 kilometers (2 to 2.5 miles), the project proponents and stakeholders agreed during the development of rural lane configuration alternatives that protection of the sensitive natural resources of the Ninepipe segment was an important objective. Therefore, passing lanes were not included in the Ninepipe segment extending from Olson Road/Gunlock Road to Mollman Pass Trail for two lane alternatives Rural 1 through Rural 7.

However, ongoing discussions of roadway safety identified the need to provide a passing opportunity no less than every 6.4 kilometers (4 miles) and prompted the project proponents to reconsider inclusion of a southbound passing lane in the Ninepipe segment as part of the preliminary preferred alternative, Alternative Rural 10, along with additional preliminary design measures to avoid and/or minimize impacts to adjacent natural resources. Following publication of the draft SEIS a number of public comments against the inclusion of a southbound passing lane in this section of road were received. As a result of these comments, project proponents revisited the issue, agreed that the natural resource protection issues were paramount, and selected a final preferred alternative that did not include a southbound passing lane between West Post Creek Road/East Post Creek Road and MT 212/Kicking Horse Road. In addition, due to more than 100 comments requesting the addition of a separated bicycle/pedestrian path, the project proponents endorsed adding such a path to the project.

In choosing the preferred alternative, the project proponents needed to balance multiple factors, including vehicular safety and wildlife impacts among many others, in choosing the final Preferred Alternative. All of the action alternatives include widening of the existing highway. There is no practicable alternative to increasing the capacity and safety in this corridor without widening the existing roadway. Wetland avoidance by realignment of the roadway would cause environmental impacts of substantial magnitude, mainly to wetlands, wildlife, wildlife habitat, and Section 4(f) resources. Of the rural alternatives, there are three alternatives (Rural 1, 2 and 10) that have slightly less total wetland impact than the preferred alternative, Rural 3. Alternatives Rural 1 and 2 do not adequately address the capacity and safety needs of the corridor, and Alternative Rural 10 was determined to have greater potential impacts on wildlife, which was objectionable to the resource agencies. Alternative Rural 7, which would have fewer permanent impacts but greater temporary impacts, was determined to be not practicable due to greatly increased cost, an estimated $162 million more than the final preferred alternative, and subsequent project delays and impacts to safety.

The preferred alternative was crafted to gain both safety and capacity improvements and, with the implementation of proposed mitigation, will not result in significant additional impacts to natural resources. Additional information on the rural PA is provided in *Section 3.2.2 Rural Action Alternatives*. Table 1.3-1 summarizes the right-of-way requirements, permanent wetland impacts, and projected cost for the preferred alternative including the separated bicycle/pedestrian path.

Urban Preferred Alternative

The urban PA is the Ronan 4 alternative. Additional information on the urban PA is provided in *Section 3.2.3 Urban Action Alternatives*. Table 1.3-1 summarizes the right-of-way requirements, permanent wetland impacts, and projected cost for the preferred alternative including the separated bicycle/pedestrian path.

Table 1.3-1. Summary of impacts and costs of the preferred alternatives for the US 93 Ninepipe/Ronan Improvement project.

	Right-of-Way hectares (acres)	Permanent Wetland Impacts hectares (acres)	Cost ($million - inflated to 2012)
Alternative Rural 3 (PA)	18 (45)	6.3 (15.5)	$ 53
Alternative Ronan 4 (PA)	4.9 (12.0)	0.008 (0.02)	$ 21
Separated Bicycle/Pedestrian Path	0.2 (0.5)	1.7 (4.1)	$ 12
Total	23.1 (57.5)	8.0 (19.6)	$ 86

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1.4 Summary of Major Environmental Impacts, Both Beneficial and Adverse

The major environmental impacts and benefits identified in this document are summarized in Sections 1.4.1 and 1.4.2 for the rural and urban action alternatives:

1.4.1 Rural Action Alternatives

- Traffic operations and safety would improve with all of the rural action alternatives. There should be a 16 to 37 percent reduction in accidents.
- Under all rural alternatives, the highway would be more visually evident than the existing highway, with the wider alternatives and the elevated parkway having the greatest visual effects.
- All of the rural action alternatives would displace a minimum of one residence and two businesses, and the four-lane alternatives would displace up to two residences and four businesses.
- From approximately 14 to 42 hectares (35 to 103 acres) of additional right-of-way would be required for the range of rural action alternatives.
- Alternatives Rural 1 through 5 (including the PA) and Alternative Rural 10 would not require acquisition of any recreational, wildlife, or wildlife management lands subject to Section 4(f) protection. Alternatives Rural 6 through 9 would require acquisition of between approximately 1.3 to 10.7 hectares (3.3 and 26.6 acres) of recreational, wildlife, or wildlife management land subject to Section 4(f) protection.
- All rural action alternatives would require realignment of 10 mainline culverts and 7 canals in the Flathead Irrigation Project. In addition, Alternative Rural 9 would require acquisition of a small portion (approximately 0.008 hectares or 0.02 acres) of the historic stagecoach route. Both are historic resources protected under Section 4(f) regulations. However, it has been determined that there will be No Adverse Impact on the Flathead Irrigation Project as a result of this project (Appendix C)
- The range of wetland impacts for the rural action alternatives is from approximately 4.7 to 12.1 hectares (11.7 to 29.8 acres) of permanent wetland impacts and 6.2 to 8.7 hectares (15.4 to 21.4 acres) of temporary impacts.
- All of the rural action alternatives would improve conditions for wildlife to cross under the highway at riparian areas associated with stream crossings and migration routes.

- The rural preferred alternative (Alternative Rural 3) is a two-lane road with a single northbound climbing/passing lane on Post Creek Hill, improved intersections with left turn lanes, and a short four-lane divided section. It would improve traffic operations, have the potential to reduce accidents by 20 percent (a reduction of 193 accidents including 19 fatal accidents by 2024), require approximately 19 hectares (46 acres) of new right-of-way, displace one residence and 2 businesses, and cost approximately $65 million, including the cost of the separated bicycle/pedestrian path discussed below.

  In response to public comments, the rural preferred alternative (Alternative Rural 3) also includes a separated bicycle/pedestrian path within the right-of-way. It would require an additional 0.2 hectares (0.5 acres) of right-of-way, conversion of 1.7 hectares (4.1 acres) of temporary wetland impacts to permanent impacts, and cost $12 million.

1.4.2 Urban Action Alternatives

- Traffic operations would be improved and accidents reduced under all urban action alternatives by adding either lanes or shoulders and signalizing major intersections.
- The urban action alternatives would displace from one to five businesses. Four of the five urban action alternatives would not displace any residences, while the fifth would displace between seven and nine residences.
- Right-of-way required for the urban action alternatives ranges from approximately 1.1 to 4.9 hectares (2.7 to 12.0 acres).
- All the urban action alternatives would include improved facilities for bicycles and pedestrians.
- All the urban action alternatives would improve air quality (PM_{10}).
- All urban action alternatives would require realignment of two mainline culverts and one canal in the Flathead Irrigation Project, a historic resource protected under Section 4(f) regulations. However, it has been determined that there will be No Adverse Impact on this resource as a result of this project (Appendix C)
- The urban preferred alternative is a couplet with improved intersections (some signalized) and two lanes in each direction about a block apart. It would improve traffic congestion, reduce accidents, facilitate cross-traffic movements (autos, pedestrians, and bicycles), require approximately 4.9 hectares (12.0 acres) of new right-of-way , displace seven to nine residences and two businesses, relocate a tribal health clinic, and cost approximately $21 million.

1.4.3 Comparison of Alternatives

Given the inherent complexity of comparing proposed project alternatives against one another, the following tables (Table 1.4-1 and Table 1.4-2) are provided to highlight major impacts resulting from these alternatives. The severity of the impacts was assessed after the application of appropriate mitigation.

Definitions of Evaluation Factors

Traffic Operations and Safety

This evaluation factor includes changes in levels of service (LOS) and potential reduction in accidents brought about by the roadway improvements. Level of service is defined and discussed in detail in *Section 4.1 Traffic Operations and Safety*.

Community Character

Community character includes the effects on community social patterns, visual aspects, and quality of life. Elements of community character in the US 93 Ninepipe/Ronan project area that residents may perceive as defining lifestyle include its rural setting with low residential densities and agricultural land uses, small commercial activity nodes, agricultural economic base, pastoral valley and mountain views, and quiet nights with low levels of noise and light.

Socioeconomics

Socioeconomics is the analysis of economic (real dollar) impacts associated with changes in community character. Elements of a socioeconomic analysis include changes in community tax base, including displacements of residences and businesses, right-of-way acquisition, environmental justice, and changes in access.

Cultural, Historic, and Recreational Resources

Cultural and historic resources can be organized into ethnographic cultural resources (reflecting meanings, ideologies, beliefs, values, and land use practices shared by a group of people) and vernacular cultural resources (reflecting repetitive human activities such as farming, fishing, or mining).

- Ethnographic resources include wildlife, fish, and plants for food, medicinal, and spiritual purposes; CSKT traditional cultural places (archaeological, sacred and cultural sites, features, and trails); and CSKT living cultural landscapes (camas fields, streams, forests, prairies, and wetlands).

- Vernacular resources include historic National Register properties (Fort Connah), farm structures over 50 years old or original homestead properties that are possibly eligible for the National Register, and historic agriculture features (irrigation canals).

Table 1.4-1. Comparison of the Rural Alternatives.

Alternative	Traffic Operations & Safety *(including LOS and accident rate)*	Community Character *(including social and visual quality)*	Socioeconomic *(including displacements, right-of-way acquisition, environmental justice, and changes in access)*	Cultural/ Historic & Recreation	Ecological *(including wetlands and water quality)*	Wildlife	Cost *(in $ Million Inflated to 2012)*
No-Action	--	O	O	O	O	--	$ 0
Rural 1	+	-	-	O	-	++	$ 49
Rural 2	+	-	-	O	-	++	$ 50
Rural 3 (PA)	++	--	--	-	-	++	$ 65*
Rural 4	++	--	--	-	-	++	$ 55
Rural 5	++	--	--	-	-	++	$ 53
Rural 6	++	--	--	-	-	++	$ 54
Rural 7	++	---	--	-	+	+++	$ 227
Rural 8	+++	---	---	--	--	+	$ 67
Rural 9	+++	---	---	---	---	+	$ 80
Rural 10	++	--	--	-	-	++	$ 53

*Includes the cost of the separated bicycle/pedestrian trail which will cost $12 million.

The severity of the impacts was assessed after the application of appropriate mitigation.

Rating ranges from most adverse impact (---) to most positive impact (+++):
- = ADVERSE impact   O = NEUTRAL impact   + = POSITIVE impact.

Table 1.4-2. Comparison of the Urban Alternatives.

Alternative	Traffic Operations & Safety *(including LOS and accident rate)*	Community Character *(including social and visual quality)*	Socioeconomic *(including displacements, right-of-way acquisition, environmental justice, and changes in access)*	Bicycle/Pedestrian Accommodations	Cost *(in $ Million Inflated to 2012)*
No-Action	---	---	O	---	$ 0
Ronan 1	++	O	-	-	$ 14
Ronan 2	++	-	O	O	$ 13
Ronan 3	+++	O	--	+	$ 19
Ronan 4 (PA)	+++	+	---	++	$ 21
Ronan 5	-	--	O	O	$ 12

The severity of the impacts was assessed after the application of appropriate mitigation.

Because the ecological and wildlife impacts of the proposed project in the urban portion of the corridor were considered neutral for all alternatives, they were not included in this table.

Rating ranges from most adverse impact (---) to most positive impact (+++):
- = ADVERSE impact   O = NEUTRAL impact   + = POSITIVE impact.

Recreational resources include public recreation on National Wildlife Refuge and Wildlife Management Lands. Recreational activities include hunting, fishing, wildlife watching, wetland tours, interpretive walks, educational activities, and picnics.

Ecological Environment

This evaluation factor includes both biological and physical habitat features. Biological resources considered include wetlands, streams, and vegetation communities. Physical features considered include air quality, water quality, and soil erosion potential.

Wildlife

The wildlife evaluation factor includes considerations of habitat quality and connectivity for fish and wildlife, including threatened and endangered species.

Bicycle/Pedestrian Accommodations

The bicycle/pedestrian accommodation evaluation factor includes the ability to provide separate facilities for bicycles and pedestrians in the roadway corridor.

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1.5 Areas of Controversy Including Issues Raised by Agencies and the Public

In the draft SEIS, Alternative Rural 10 was chosen as the preliminary preferred rural alternative. Alternative Rural 10 includes a 1.9-km (1.2-mile) southbound passing lane from the top of Post Creek Hill (RP 40) to Eagle Pass Trail (RP 41.2), within the Ninepipe National Wildlife Refuge. Both resource agencies and the public expressed concern over the inclusion of a passing lane within the wildlife refuge. A total of 43 comments were received that opposed Alternative 10 as the preferred alternative during the comment period that followed the publication of the draft SEIS. In response to the resource agency and public comments, project proponents reevaluated the alternatives and determined that protection of natural resources was paramount; therefore, Alternative Rural 3 was chosen as the preferred rural alternative in the final SEIS. Alternative Rural 3 (PA) does not include a passing lane within the wildlife refuge. Over 110 comments were received requesting the addition of a bike path throughout the length of the project. As a result, the separated path which initially was to terminate at the Ronan City Park has been extended south to the project terminus at Dublin Gulch Road/Red Horn Road.

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1.6 Unresolved Issues

There are no unresolved issues associated with the proposed project.

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1.7 Other Actions Required Including Permits

1.7.1 Other Actions Required

There are no other actions required for the US 93 Ninepipe/Ronan improvement project.

1.7.2 Required Permits and Authorizations

Prior to construction of the US 93 Ninepipe/Ronan improvement project, required permits would be obtained, which would include, but are not limited to the following:

- *Special Use permit* from the Flathead Agency Irrigation District (FAID) for modification of irrigation canal crossings in the corridor
- *Section 401 Certification* of the Clean Water Act from the CSKT for any discharge or fill in water or wetlands
- *Section 404 permit* of the Clean Water Act from the U.S. Army Corps of Engineers (USACE) for filling in jurisdictional wetlands or waters of the U.S.
- *Montana Stream Preservation Act (SPA) 124 Facilities authorization* from MFWP for activities that disturb the beds or banks of a stream
- *National Pollutant Discharge Elimination System (NPDES) General Permit for Discharge from Large and Small Construction Activities* from CSKT and the U.S. Environmental Protection Agency (U.S. EPA) to control sediment discharge and erosion during construction projects to protect water quality
- *Aquatic Lands Conservation Ordinance (ALCO) 87A permit* from the CSKT for filling wetlands and all aquatic lands (below the mean annual high water mark) on the Flathead Indian Reservation
- A *Floodplain Development permit* from Lake County may be required for floodplain encroachment associated with construction at streams
- *Plan of Operation approval* from the CSKT Lands Division for development of material source sites on Tribal lands
- Compliance with the Open Cut Mining Act administered by the Montana Department of Environmental Quality (MDEQ) for development of material source sites owned and operated by non-Tribal parties.

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1.8 Summary of Impacts and Mitigation Measures

Table 1.8-1 summarizes project impacts, features incorporated into the preliminary design that avoid and minimize impacts, and additional mitigation measures to be implemented during and following construction for all elements analyzed in the US 93 Ninepipe/Ronan SEIS. Impacts of all action alternatives are discussed together in this table. For detailed descriptions of impacts for individual alternatives see the corresponding environmental element in *Part 5 - Environmental Consequences* of this document.

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Table 1.8-1. Summary of impacts, design features that avoid and minimize impacts, and additional mitigation measures required.

	Impacts			Design Features that Avoid and Minimize Impacts and Mitigation Measures Required
	No Action Alternative	All Action Alternatives	Preferred Alternatives	
Traffic Operations and Safety	▪ Level of service (LOS) would be expected to drop from D to E in the rural section and from A/F to D/F in the urban section in 2024. ▪ Accidents per mile would likely increase due to increased congestion, increased following time, and reduced gaps for turns. ▪ Increased likelihood of right angle accidents at unsignalized intersections and rear-end accidents at signals.	▪ Traffic operations and safety would improve with all of the rural action alternatives. It is estimated there would be a 16 to 37 percent reduction in accidents. ▪ Traffic operations would be improved and accidents reduced under all urban action alternatives by adding either lanes or shoulders and signalizing major intersections.	▪ LOS is expected to improve to D+ in the rural section and B/C in the urban section ▪ Estimated accident reduction of 20 percent in the rural section. ▪ Reduced accidents in urban area.	▪ Shoulder rumble strips to alert errant vehicles of potential land departures ▪ Edge line and centerline stripes will be 15 centimeters (6 inches) wide compared to typical statewide practice of 10-centimeter (4-inch) stripes. Wider stripes will aid drivers with day and night time navigation ▪ Turn lanes will be installed at all public road intersections throughout the corridor. With a D+ in the design year, the turn lanes at intersections will improve operations along the corridor. ▪ A public information plan would be prepared and implemented to inform motorists in advance of construction activity and possible alternate routes. ▪ Preparation and implementation of a detailed traffic control plan by the contractor that describes methods for maintaining access to adjoining properties and minimizing traffic delays such as short-term, one-lane closures administered by flaggers, all in accordance with MDT specifications and plans and the version of the Manual on Uniform Traffic Control Devices current at the time of construction. ▪ Agreements would be drafted with jurisdictions whose adjacent roads or streets might be damaged when used as a designated detour route during construction. These agreements would specifically detail the limits of repair for any damage to these facilities.
Land Use	▪ No impacts anticipated. ▪ Development is expected to continue along current trends.	▪ Modification of some accesses will be required.	▪ Modification of some accesses will be required. ▪ Transfer of southbound US 93 traffic onto First Avenue SW in Ronan is likely to facilitate long-term conversion from residential to commercial uses along that street.	▪ Modifications to the access management plan currently in place will be developed cooperatively by the Confederated and Salish Kootenai Tribes (CSKT), MDT, the Federal Highway Administration (FHWA), Lake County, and the City of Ronan. This plan will then be implemented and administered by MDT in cooperation with CSKT, FHWA, Lake County, and the City of Ronan.

Table 1.8-1 (continued). Summary of impacts, design features that avoid and minimize impacts, and additional mitigation measures required.

	Impacts			Design Features that Avoid and Minimize Impacts and Mitigation Measures Required
	No Action Alternative	All Action Alternatives	Preferred Alternatives	
Prime and Unique Farmland	▪ No impacts anticipated.	▪ Approximately 12 to 36 hectares (30 to 90 acres) of prime farmland, farmland of statewide importance, and farmland of local importance would be impacted by the range of rural action alternatives. ▪ Approximately 1.1 to 4.5 hectares (2.7 to 11.2 acres) of prime farmland, farmland of statewide importance, and farmland of local importance would be impacted by the range of urban action alternatives.	▪ 17.0 hectares (42.2 acres) of prime farmland, farmland of statewide importance, and farmland of local importance would be required for the rural PA. ▪ 4.5 hectares (11.2 acres) of prime farmland, farmland of statewide importance, and farmland of local importance would be required for the urban PA.	▪ The use of steeper side slopes on the roadway prism has been incorporated into the preliminary project designs at several locations where other environmentally sensitive areas, such as wetlands, occur adjacent to the roadway. The locations of these steeper road prism slopes coincide with some of the areas of mapped prime farmland and farmland of statewide or local importance, thereby reducing the overall impacts to farmland resources. ▪ During final design, further opportunities to reduce the roadway prism and fine-tune the roadway alignment to reduce impacts to prime farmland and farmland of statewide or local importance would be investigated. ▪ For areas where impacts on prime farmlands are unavoidable, MDT would coordinate with the Natural Resources Conservation Service to complete the required documentation identifying measures taken to avoid impacts on farmlands and calculating the total expected impacts.
Social	▪ Lifestyle, community cohesion, and provision of public services would degrade as traffic congestion increases.	▪ Temporary impacts during construction could affect lifestyles, community cohesion, commute times, and cause utility disruptions. ▪ There should be a positive impact on public services with the completed project. ▪ The couplet alternatives (Ronan 3 and 4) and Ronan 5 could result in perceived short-term impacts to the rural or small town lifestyle of the area. Some traffic movements would be eliminated necessitating different, possibly more circuitous, travel. ▪ Alternatives Ronan 3 and 4 would require the relocation of the Tribal Health facility.	▪ Temporary disruptions during construction. ▪ Positive impact on public services. ▪ Short-term impacts related to new couplet in Ronan. ▪ Relocation of Tribal Health facility.	▪ The relocation of the Tribal Health facility would be coordinated with CSKT to minimize disruption to providing health services. ▪ MDT would purchase properties or acquire an easement and provide relocation assistance for properties negatively affected by the proposed project. These actions would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law [P.L.] 91-636 as amended), 42 United States Code (U.S.C.) Section 4651 and 4652, et seq., and the Uniform Relocations Act Amendments of 1987 (P.L. 100-17). ▪ During construction, the contractor would be required to implement the following measures: □ Place adequate signage in the project area informing travelers and residents of revised traffic patterns. □ Coordinate the construction schedule with fire departments and police service in the area to ensure that reliable emergency access is maintained and alternative plans or reroutes (where possible) are developed to avoid substantial delays in response times.

Table 1.8-1 (continued). Summary of impacts, design features that avoid and minimize impacts, and additional mitigation measures required.

	Impacts			Design Features that Avoid and Minimize Impacts and Mitigation Measures Required
	No Action Alternative	All Action Alternatives	Preferred Alternatives	
Social (continued)		▪ All alternatives represent an improvement over existing conditions or the No-Action Alternative.		◻ Coordinate with utility companies to minimize potential utility service disruptions. ◻ Maintain reasonable access to businesses and residences during construction.
Economics	▪ No impacts anticipated.	▪ During construction temporary delays or loss of access may occur. ▪ Construction of the US 93 Ninepipe/Ronan improvement project would bring additional dollars into the local community in the form of labor income and materials purchases, and this would generate increased economic activity. ▪ Retail businesses along the project corridor may experience minor positive or negative long term economic benefits depending on changes to access. ▪ The Ronan 3 and 4 couplet alternatives would divert traffic from US 93 to the downtown area, expanding economic activity within the community.	▪ During construction temporary delays or loss of access may occur. ▪ Construction of the US 93 Ninepipe/Ronan improvement project would bring additional dollars into the local community in the form of labor income and materials purchases, and this would generate increased economic activity. ▪ Retail businesses along the project corridor may experience minor positive or negative long term economic benefits depending on changes to access. ▪ The Ronan couplet would divert traffic from US 93 to the downtown area, expanding economic activity within the community.	▪ Signage, left-turn lanes, and U-turn lanes are incorporated into the alternatives and would minimize economic impacts on businesses. ▪ As a means to ensure that local residents are hired for construction jobs, the Confederated Salish and Kootenai Tribes have implemented an Indian Preference Ordinance that requires that Indians be given hiring preference for construction work that occurs on Tribal lands. The Montana Department of Transportation and the Confederated Salish and Kootenai Tribes have agreed to develop a Memorandum of Agreement that would guide construction contracting activities. ▪ In order to maximize the value of materials purchased locally, business organizations will be informed of impending contracts through the standard state policy for advertising contracts, whereby local suppliers may have the opportunity to submit bids. ▪ Implementation of the Uniform Relocation Act of 1970 would mitigate the economic impact caused by acquiring residential or commercial/industrial properties. ▪ During construction, the contractor would be required to maintain reasonable access to businesses and use appropriate signing to inform the traveling public that businesses are open.
Pedestrians and Bicyclists	▪ Perpetuates the lack of adequate pedestrian and bicycle facilities. ▪ Pedestrian and bicycle quality of service would remain at F.	▪ All rural alternatives except Rural 7 provide 8-foot paved shoulders (10-foot with Rural 7). ▪ Pedestrian quality of service would be E-F and bicycle quality of service C-D (A-B for Rural 7) for all rural alternatives (except the PA).	▪ In response to public comments, the rural PA will include a separated bicycle/pedestrian path within the right-of-way. It would require an additional 0.2 hectares (0.5 acres) of right-of-way, conversion of 1.7 hectares (4.1 acres) of temporary wetland impacts to permanent impacts. Quality of service would be B-C for pedestrians and A for bicyclists.	▪ A Transportation Management Plan (TMP) will be developed for the project. The TMP will consider project and corridor impacts and will include components for traffic operations, public information and project-related construction traffic control.

Table 1.8-1 (continued). Summary of impacts, design features that avoid and minimize impacts, and additional mitigation measures required.

	Impacts			Design Features that Avoid and Minimize Impacts and Mitigation Measures Required
	No Action Alternative	All Action Alternatives	Preferred Alternatives	
Pedestrians and Bicyclists (continued)		▪ All urban action alternatives (except the PA) accommodate pedestrians on adjacent sidewalks and bicycles on shoulders or reroute them on City streets with a commensurate improvement in both safety and quality of service.	▪ The urban PA will construct a 3-meter (10-foot) wide pedestrian/bicycle pathway from a connection with the CSKT Timber Lane Pathway at Timber Lane Road, north and west to the Ronan City Park, then north to Spring Creek Road to connect with a similar pathway under construction north to Polson. The sidewalks and bicycle lanes within Ronan would be connected to the pathway.	
Air Quality	▪ The No-Action Alternative would result in a slight decrease in air quality associated with the increase in vehicle miles traveled (VMT) and emissions.	▪ Construction activities would generate temporary dust and emissions impacts in the immediate project vicinity. ▪ All rural alternatives would result in impacts well within National Ambient Air Quality Standards. ▪ All the urban action alternatives would reduce PM_{10} emissions, improving air quality.	▪ Construction activities would generate temporary dust and emissions impacts in the immediate project vicinity. ▪ The rural PA would result in impacts well within National Ambient Air Quality Standards. ▪ The urban PA would reduce PM_{10} emissions more than the other urban alternatives, in part due to more paving on First Avenue SW.	▪ The primary measure included in roadway preliminary project design to avoid or minimize air quality impacts is providing adequate roadway capacity including appropriate turn lanes and control at major intersections so that traffic congestion is minimized. ▪ In Ronan, paving approaches within the US 93 right-of-way; surfacing gravel and dirt shoulders: installing curbs and gutters; and providing new surfacing on US 93 are measures included in the preliminary project design that would reduce potential PM_{10} concentrations. ▪ Controlling and minimizing the tracking of sediment offsite as required by the stormwater pollution prevention plan (SWPPP) would help control dust produced by construction. ▪ Implementation of a traffic control plan will follow MDT's Work Zone Safety and Mobility Guidelines to minimize traffic delay to the extent feasible. ▪ During construction, best management practices (BMPs) to reduce the generation and dispersion of particulates should be implemented. A variety of routine dust suppression and reduction methods is available and would be applied as appropriate. ▪ If roadway construction activities result in PM_{10} levels that exceed standards, construction activities will be stopped or modified to reduce levels to acceptable levels.

Table 1.8-1 (continued). Summary of impacts, design features that avoid and minimize impacts, and additional mitigation measures required.

	Impacts			Design Features that Avoid and Minimize Impacts and Mitigation Measures Required
	No Action Alternative	All Action Alternatives	Preferred Alternatives	
Noise	▪ Noise impact criteria will be exceeded at 9 rural and 7 urban receptors in the design year (2024) even without project construction.	▪ Construction noise impacts would be temporary in nature and localized. ▪ Noise impact criteria will be exceeded at 9-10 rural receptors in the design year with or without project construction. ▪ Noise impact criteria will be exceeded at 7-16 receptors in Ronan in the design year.	▪ Construction noise impacts would be temporary in nature and localized. ▪ Noise impact criteria will be exceeded at 9 rural receptors in the design year. ▪ Noise impact criteria will be exceeded at 16 receptors in Ronan in the design year.	▪ Where impacts on sensitive noise receptors are expected, alternative pavement materials that would reduce noise would be considered during development of the final designs for the proposed project. ▪ Contractors would abide by all local noise ordinances and restrictions on construction timing.
Water Quality	▪ No treatment of stormwater would be provided. Pollutant loads would increase incrementally as traffic volumes increase.	▪ Direct construction related sediment discharges are estimated between 50 and 69 tons depending on alternative. ▪ Positive operational impacts should range from 27 to 58 percent reduction of solid loads in the rural segment and 58 to 66 percent in Ronan depending on alternative.	▪ Direct construction related sediment discharges are estimated at 56 tons. ▪ Positive operational impacts are estimated at 50 percent reduction of solid loads in the rural segment and 59 percent in Ronan.	▪ Mitigation measures would be implemented during construction to reduce suspended solids from stormwater generated by this proposed roadway improvement project on roadway surfaces in areas that drain directly to sensitive receiving waters (category I and II wetlands and associated streams). ▪ Infiltration of stormwater would be encouraged where conditions are favorable to prevent pollutant discharge to surface waters. ▪ New or reconfigured stormwater outfalls and drainage ditches would be designed to accommodate increased flow rates and to prevent erosion over the long term. ▪ Where stormwater would discharge to category I and II wetlands and associated streams, treatment facilities would be constructed. Two common facility types that generally meet this requirement are wet ponds and biofiltration swales. ▪ Stormwater facilities included in the final design for the proposed project to reduce the long-term impact of roadway runoff pollutants on sensitive receiving waters would be maintained to ensure their continued intended function. ▪ In order to comply with the requirements of the Clean Water Act, MDT and the contractor would obtain a NPDES permit. ▪ Appropriate BMPs for the proposed project site would be selected from the current version of Erosion and Sediment Control Best Management Practices: Reference Manual, prepared for MDT and in place at the time final designs are completed.

Table 1.8-1 (continued). Summary of impacts, design features that avoid and minimize impacts, and additional mitigation measures required.

	Impacts			Design Features that Avoid and Minimize Impacts and Mitigation Measures Required
	No Action Alternative	All Action Alternatives	Preferred Alternatives	
Wetlands	▪ No new disturbances of wetlands would occur. ▪ The lack of wetland connectivity would be perpetuated. ▪ Wetland functions would continue to decrease.	▪ The range of wetland impacts for the rural action alternatives is from approximately 4.7 to 12.1 hectares (11.7 to 29.8 acres) of permanent wetland impacts and 6.2 to 8.7 hectares (15.4 to 21.4 acres) of temporary impacts. ▪ The range of wetland impacts for the urban action alternatives is from 0 to approximately 0.008 hectares (0 to 0.02 acres) of permanent wetland impacts and 0 to 0.008 hectares (0 to 0.02 acres) of temporary impacts.	▪ The rural PA would result in approximately 6.3 hectares (15.5 acres) of permanent wetland impacts and 6.8 hectares (16.8 acres) of temporary impacts. ▪ The urban PA would result in approximately 0.008 hectares (0.02 acres) of permanent wetland impacts and 0.004 hectares (0.01 acres) of temporary impacts. ▪ The inclusion of a separated bicycle/pedestrian path as part of the PA would convert up to 1.7 hectares (4.1 acres) of temporary impacts to permanent impacts.	▪ The proposed preliminary design would minimize impacts on wetland habitats by steepening fill slopes or installing walls at sensitive areas. During final design, the areas will be further investigated to determine if the proposed preliminary design is practicable and feasible. If during final design there are areas that slopes can be safely steepened, they would be incorporated into the proposed project's plans. (Note: slope steepening would require approval from the MDT Highways Engineer and FHWA through the design exceptions process.) ▪ The proposed project would add culverts and increase bridge lengths and culvert sizes at major wetland and stream crossings to improve hydrologic connections. ▪ Retaining walls are used as appropriate through the two kettle ponds to minimize impacts. ▪ The proposed project would implement wetland and stream restoration at wildlife crossing structures where appropriate. ▪ MDT requires that all construction activities within and adjacent to wetlands adhere to the BMPs outlined in the MDT standard specifications and described in the SWPPP, which is prepared for all projects disturbing more than 0.4 hectares (1 acre) of land area. Examples of these measures include the following: □ Limit certain activities to upland areas rather than wetlands when feasible. □ Limit the total area that may be disturbed at any one time. □ Seed exposed soils as soon as practical once work is complete, which minimizes the potential for sedimentation to wetlands. ▪ Additional mitigation measures will be added to the special specifications for the contractor to minimize project impacts on wetlands including the following: □ Install preservation fencing to prevent unnecessary vegetation clearing and minimize intrusion into surrounding habitats.

Table 1.8-1 (continued). Summary of impacts, design features that avoid and minimize impacts, and additional mitigation measures required.

	Impacts			Design Features that Avoid and Minimize Impacts and Mitigation Measures Required
	No Action Alternative	All Action Alternatives	Preferred Alternatives	
Wetlands (continued)				◻ Follow the Evaro to Polson Integrated Invasive Weed Management Plan. ◻ Where appropriate, salvage wetland vegetation from construction areas for use in revegetation activities. ▪ Permits for unavoidable placement of fill in wetlands would be required from CSKT under the ALCO 87A and from the USACE, under Section 404 of the federal Clean Water Act. ▪ As part of the permitting process, compensatory mitigation is required to compensate for unavoidable impacts.
Floodplains and Streams	▪ No impacts anticipated. ▪ 4 percent of floodplain spanned at Post Creek; 20 percent at Ninepipe Reservoir; and 5 percent at Crow Creek.	▪ Under all action alternatives, stream and associated floodplain openings at the Post Creek, Ninepipe Reservoir, and Crow Creek crossings would be increased, improving conveyance and floodplain storage. ▪ Overall, many of the proposed structures would increase the opening within the existing floodplain and no net fill would occur. For sites where floodplain fill may occur, the quantity of fill in the floodplain would be determined during final design and opportunities to remove fill from the affected floodplain would be sought, so that no net increase in floodplain fill would occur.	▪ 39 percent of floodplain spanned at Post Creek; over 100 percent at Ninepipe; and 48 percent at Crow Creek. ▪ Floodplain area increased by 0.61 hectares (1.51 acres). ▪ Floodplain storage increased by 6,780 cubic meters (8,867 cubic yards).	▪ Peak flows from newly developed impervious areas draining directly to sensitive receiving waters (category I and II wetlands and associated streams) should be reduced to match pre-developed peak flows for 24-hour duration storms with recurrence intervals of 2, 10, and 50 years. Potential measures to meet this standard include stormwater retention systems, which allow collected water to infiltrate into the soil, and detention systems (such as ponds), which temporarily store stormwater to attenuate peak flow rates. ▪ The proposed preliminary design for all of the rural alternatives reviewed the possibility for steepened roadway slopes to minimize impacts on key features in the project corridor. Proposed approximate locations are shown in Appendix A. During final design, the areas will be further investigated to determine if the proposed preliminary design is practicable and feasible. If during final design there are areas that slopes can be safely steepened, they would be incorporated into the proposed project's plans. (Note: Slope steepening would require approval from the MDT Highways Engineer and FHWA through the design exceptions process). These steeper slopes reduce the width of the roadway footprint and consequently reduce impacts to floodplains. ▪ MDT requires that construction activities adhere to the BMPs outlined in the MDT standard specifications, which place restrictions on the contractor's activities in an attempt to avoid and minimize impacts on sensitive areas, including floodplains.

Table 1.8-1 (continued). Summary of impacts, design features that avoid and minimize impacts, and additional mitigation measures required.

	Impacts			Design Features that Avoid and Minimize Impacts and Mitigation Measures Required
	No Action Alternative	All Action Alternatives	Preferred Alternatives	
Floodplains and Streams (continued)				▪ In order to comply with the requirements of the Clean Water Act, MDT and the contractor would obtain a NPDES permit. ▪ Preparation of a SWPPP to be implemented during construction would reduce the risk to water quality in project area streams thereby protecting the values of project area floodplains. ▪ With implementation of the identified avoidance and minimization measures and additional measures during construction, the proposed project is expected to be in compliance with Executive Order 11988 – Floodplain Management, which directs federal agencies to avoid to adverse impacts associated with floodplains and to avoid direct or indirect support of floodplain development.
Fish and Wildlife	▪ No direct impacts to populations of plant or animal species anticipated. ▪ As traffic levels increase in the corridor increase, more wildlife are likely to be deterred from crossing the corridor. ▪ The ongoing lack of habitat connectivity would continue to affect species of concern.	▪ Construction activities may displace wildlife and reduce habitat. ▪ All of the rural action alternatives would improve conditions for wildlife to cross under the highway at riparian areas associated with stream crossings and migration routes. ▪ Fish may be impacted by loss of wetlands and habitat, by increased impervious areas and stormwater, and by stream relocation.	▪ The proposed project includes wildlife crossings at major systems with additional wildlife crossing culverts in the corridor to reduce the fragmentation of habitats in the project corridor, facilitate wildlife movement through the project corridor, minimize wildlife-vehicle collisions, and enhance fisheries resources by opening a greater area of the floodplain and allowing areas to be restored, which would improve hydrologic connections and provide greater vegetative cover on the stream banks and in riparian wetlands. ▪ Requires 836 meters (2,742 feet) of stream channel relocation.	▪ Steepening fill slopes at key features in the project corridor would benefit fish, wildlife and wildlife habitat in the project area. ▪ Wetland and stream restoration occurring at the Post Creek, Ninepipe Reservoir, and Crow Creek wildlife crossing structures would also improve habitat for wildlife in the project area. ▪ Post-construction monitoring is being implemented at wildlife crossings for the Evaro to Red Horn Road portion of the US 93 Evaro to Polson reconstruction projects. The information gathered from this monitoring effort may be applicable to wildlife crossings associated with this proposed project and should be reviewed during development of the final designs to address the following issues: □ Modifying the wing fencing in the vicinity of Post Creek to prevent turtles, duck nestlings, and other large and small mammals from penetrating the mesh and entering the road corridor. Constructing wildlife crossing structures of concrete box culverts or some other similar materials if turtle passage is desired at the crossing. □ If power lines require relocation, they would be raptor-proofed.

Table 1.8-1 (continued). Summary of impacts, design features that avoid and minimize impacts, and additional mitigation measures required.

	Impacts			Design Features that Avoid and Minimize Impacts and Mitigation Measures Required
	No Action Alternative	All Action Alternatives	Preferred Alternatives	
Fish and Wildlife (continued)			▪ Rural PA would impact 9.7 hectares (24 acres) of habitat lost and 18.6 hectares (46 acres) of habitat compromised. ▪ Urban PA would impact 9.6 hectares (23.9 acres) of habitat lost and 7.1 hectares (17.7 acres) of habitat compromised.	▪ The project proponents have agreed that if it is determined that power lines require relocation, the following options would be considered in order to determine the most appropriate means for power line relocation: burying the power line; rerouting the power line; applying visible marking to the lines; or implementing no action. ▪ The proposed wildlife crossing structures would enhance fisheries resources by opening a greater area of the floodplain and allowing areas to be restored, which would improve hydrologic connections and provide greater vegetative cover on the stream banks and in riparian wetlands. ▪ Permanent stormwater treatment measures would be designed to reduce suspended solids from stormwater. ▪ In fish bearing streams, culverts would be designed and installed to accommodate fish passage. ▪ Stream channels that would be affected by roadway widening must be relocated. During final design onsite restoration and enhancement will be explored at Ashley Creek and unnamed tributaries to Post Creek 1, 2, and 3. ▪ MDT requires that construction activities adhere to the BMPs outlined in the MDT standard specifications, which place restrictions on the contractor's activities in an attempt to avoid and minimize impacts on sensitive areas. These restrictions include limiting the total area that may be disturbed at any one time, which gives wildlife an opportunity to move out of the construction area, and seeding exposed soils as soon as work is complete, which facilitates re-establishment of the disturbed habitat. Additional standard specifications include making sure electric facilities relocated due to construction activities are raptor-proofed. ▪ Preparation of a SWPPP to be implemented during construction would reduce the risk to water quality in project area wetlands and streams and aquatic wildlife associated with those systems.

Table 1.8-1 (continued). Summary of impacts, design features that avoid and minimize impacts, and additional mitigation measures required.

	Impacts			Design Features that Avoid and Minimize Impacts and Mitigation Measures Required
	No Action Alternative	All Action Alternatives	Preferred Alternatives	
Fish and Wildlife (continued)				▪ In addition to the standard specifications, additional measures would be added to the project specifications to minimize disturbance to stream channels and fish habitat. The following measures would be included for this proposed project: □ Work in project area streams would comply with appropriate work windows as determined by the United States Fish and Wildlife Service (USFWS) and CSKT biologists. □ Preservation fencing would be installed to protect identified vegetation sites at specific riparian areas. ▪ Special provisions for wildlife include: □ Implementing measures to effectively keep birds from returning to their nests at existing structures or establishing nests at structures during the construction period in order to comply with the Migratory Bird Treaty Act. □ If deemed necessary, additional measures may include timing restrictions to protect nesting areas or key migration periods for wildlife. □ Placing limitations on the locations of staging areas to avoid key habitat features located in close proximity to the proposed project. ▪ Follow the Evaro to Polson Integrated Invasive Weed Management Plan. ▪ During final design populations of Oregon checker-mallow will be identified and avoided or salvaged where possible. ▪ Newly issued National Bald Eagle Management Guidelines (USFWS 2007) will be followed to protect this species. ▪ Special provisions for culturally significant plants include requiring the contractor to notify CSKT Tribal Preservation Office of the construction schedule and providing opportunities for Tribal members to salvage plants from the construction site. ▪ Maintenance of the highway right-of-way would follow MDT's Maintenance Operations and Best Management Practices Manual, which includes provisions for controlling the spread of noxious weeds.

Table 1.8-1 (continued). Summary of impacts, design features that avoid and minimize impacts, and additional mitigation measures required.

	Impacts			Design Features that Avoid and Minimize Impacts and Mitigation Measures Required
	No Action Alternative	All Action Alternatives	Preferred Alternatives	
Threatened and Endangered Species	▪ No direct impacts, although the current conditions create a barrier to grizzly bear crossing and contribute to the lack of suitable bull trout habitat.	▪ Project construction may affect bull trout and grizzly bears due to habitat loss and disturbance.	▪ Measures included in preliminary project design to minimize impacts on wildlife and vegetation, wetlands, and fisheries resources would also benefit threatened and endangered species. ▪ Project construction may affect bull trout and grizzly bears due to habitat loss and disturbance.	*Bull Trout* ▪ Work in project area streams would comply with appropriate work windows as determined by the USFWS and CSKT biologists. ▪ Preservation fencing would be installed to protect identified vegetation sites at specific riparian areas. *Grizzly Bears* ▪ Educate contractors and construction crews regarding the need for proper sanitation in grizzly bear habitat, and instruct workers to report all grizzly bear sightings immediately to Tribal wildlife program biologists. ▪ Ensure that contractors and construction crews store all food and garbage in bear-proof containers or inside a secured hard-sided dwelling, storage building, vehicle or bear-resistant container when unattended. ▪ 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 RP 38.2 (approximately 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. ▪ Reasonable and prudent measures are those measures necessary and appropriate to minimize the incidental take resulting from the proposed action. These reasonable and prudent measures are non-discretionary and must be implemented by the project proponents. The reasonable and prudent measures for this proposed project as identified in the Biological Opinion include: □ The FHWA and MDT shall identify and implement means to reduce the potential for incidental take of grizzly bears from direct mortality as a result of high traffic levels present on U.S. Highway 93, and from habitat fragmentation and displacement for these species as a result of project-related increases in highway width and increases in traffic volume and speed.

Table 1.8-1 (continued). Summary of impacts, design features that avoid and minimize impacts, and additional mitigation measures required.

	Impacts			Design Features that Avoid and Minimize Impacts and Mitigation Measures Required
	No Action Alternative	All Action Alternatives	Preferred Alternatives	
Threatened and Endangered Species (continued)				□ The FHWA and the MDT shall monitor reconstruction of the highway, as well as the construction of wildlife crossing structures, to ensure that these activities and structures comply with the Re-evaluation of the Final Environmental Impact Statement, BA, BA Supplement, Memorandum of Agreement, and biological opinion for the US 93 Evaro to Polson project, and the BA, BA addendum, and SEIS for the US 93 Ninepipe / Ronan project. The FHWA and the MDT shall also implement the reporting requirements as described in the terms and conditions of the biological opinion.
Cultural and Historical Resources	▪ No impact anticipated.	▪ All rural action alternatives would require realignment of 10 mainline culverts and 7 canals in the historic Flathead Irrigation Project. In addition, Alternatives Rural 8 and Rural 9 would require acquisition of a small portion (approximately 0.008 hectares or 0.02 acres) of the historic stagecoach route. However, it has been determined that there will be No Adverse Impact on the Flathead Irrigation Project as a result of this project (Appendix C) ▪ All urban action alternatives would modify 2 culverts and realign one existing canal in the historic Flathead Irrigation Project. However, it has been determined that there will be No Adverse Impact on the Flathead Irrigation Project as a result of this project (Appendix C).	▪ The rural PA would require realignment of 10 mainline culverts and 7 canals in the historic Flathead Irrigation Project. However, it has been determined that there will be No Adverse Impact on the Flathead Irrigation Project as a result of this project (Appendix C). ▪ The urban PA would modify 2 culverts and realign one existing canal in the historic Flathead Irrigation Project. However, it has been determined that there will be No Adverse Impact on the Flathead Irrigation Project as a result of this project (Appendix C).	▪ At the Anderson Farmstead a veneered retaining wall will be constructed and no physical features of the site will be directly impacted. ▪ FHWA and CSKT, with concurrence from MDT, executed a Memorandum of Agreement (Appendix C) that stipulates the following: □ "The MDT would provide a turn-out and funding for a historical interpretive marker describing the development and significance of the Flathead Irrigation Project on the Flathead Indian Reservation. The Tribal Preservation Office would prepare the text for the interpretive marker and provide it to the MDT for review and production of the marker." □ "The MDT would provide $6,000 to the CSKT Tribal Preservation Office as partial funding for the inventory and evaluation of the Flathead Irrigation Project. The MDT would receive five copies of the completed report. The MDT's contribution to the study would be acknowledged in the report." ▪ If a cultural resource is encountered, the contractor would cease all work in the immediate area and contact the Tribal Preservation Office, the State Historic Preservation Office, and the MDT archaeologist. ▪ If human remains or materials subject to cultural patrimony (as defined in the Native American Graves and Repatriation Act) are encountered, the contractor would contact the Tribal Preservation Office, the State Historic Preservation Office, and the MDT archaeologist.

Table 1.8-1 (continued). Summary of impacts, design features that avoid and minimize impacts, and additional mitigation measures required.

	Impacts			Design Features that Avoid and Minimize Impacts and Mitigation Measures Required
	No Action Alternative	All Action Alternatives	Preferred Alternatives	
Parks and Recreation	▪ No impact anticipated.	▪ All action alternatives acquire a small amount of right-of-way from CSKT wildlife management lands [not subject to 4(f)]. ▪ Alternatives Rural 1 through 5 (including the PA) and Alternative Rural 10 would not require acquisition of any recreational, wildlife, or wildlife management lands subject to Section 4(f). Alternatives Rural 6 through 9 would require acquisition of between approximately 1.3 to 10.7 hectares (3.3 and 26.6 acres) of land subject to Section 4(f). ▪ Ronan City Park will experience proximity noise impacts with Alternatives Ronan 3 and Ronan 4.	▪ Approximately 1.1 hectare (2.7 acres) of right-of-way will be required from CSKT wildlife management lands [not subject to 4(f)]. ▪ Ronan City Park will experience proximity noise impacts.	▪ Proposed changes in fill slopes at key features in the project corridor would reduce impacts to parks and recreation lands. ▪ The wildlife crossing structures would improve the wildlife management lands by improving habitat connectivity and therefore the recreation lands that are used for viewing wildlife. However, the overall effect would be minor. ▪ A fence and shrub buffer or other screening may be placed along the Ronan City Park boundary adjacent to First Street SW to mitigate for the close proximity of the southbound portion of the new highway. The proposed mitigation at this location would be further refined during final design in coordination with the City of Ronan.
Hazardous Materials	▪ No acquisition of possible hazardous materials sites would occur; subsequently, cleanup would not occur.	▪ None of the rural or urban alternatives require full acquisition of hazardous materials sites with a documented release. ▪ From 12 to 33 hazardous materials sites could be partially acquired.	▪ No full acquisition of hazardous materials sites with a documented release. ▪ Approximately 28 hazardous materials sites would be partially acquired.	▪ Preliminary roadway design was modified to avoid potential hazardous materials sites where possible. ▪ During the design and right-of-way acquisition phases of project development, sites with the potential for hazardous materials would be investigated in detail for soil and ground water impacts that may affect construction. ▪ MDT would inspect all buildings that have been or would be acquired for right-of-way purposes and that are slated for demolition for the presence of asbestos. Established methods and controls would be implemented to prevent worker and public exposure to lead paint and asbestos. ▪ If hazardous materials remediation is necessary during construction, the contractor would be required to submit a health and safety plan to MDT prior to beginning work. ▪ If hazardous materials remediation is necessary during construction, there would be special provisions included in the contract documents to address management of contaminated soil and ground water, as needed.

Table 1.8-1 (continued). Summary of impacts, design features that avoid and minimize impacts, and additional mitigation measures required.

	Impacts			Design Features that Avoid and Minimize Impacts and Mitigation Measures Required
	No Action Alternative	All Action Alternatives	Preferred Alternatives	
Hazardous Materials (continued)				▪ Throughout the construction process, encounters with hazardous materials would be documented and reported appropriately. Project planning would accommodate regulatory agency requirements as well as disposal or treatment facility requirements. ▪ If ongoing cleanup and monitoring become necessary, properties left with residual contamination would be clearly identified in documentation provided to the MDEQ.
Visual Quality	▪ No impact anticipated.	▪ Under all rural alternatives, the highway would be more visually evident than the existing highway, with the wider alternatives and the elevated parkway having the greatest visual effects.	▪ Slightly greater impact than with a combination of Alternative Rural 1 and Alternative Ronan 5. ▪ Visual character of First Avenue SW would change from residential to more commercial uses than existing.	▪ Curvilinear alignment was added as appropriate to direct views from the road and enhance the visual quality of the landscape character. ▪ During final design, interpretive elements such as pull-offs at viewpoints, recreational resources, and culturally important sites may be considered as well as place names and other interpretive signs. ▪ Vegetative screening removed through construction between the road and any residences will be replaced where possible.
Relocations	▪ No impacts anticipated.	▪ All of the rural action alternatives would displace a minimum of one residence and two businesses, and the four-lane alternatives would displace up to two residences and four businesses. ▪ The urban action alternatives would displace from one to five businesses. Four of the five urban action alternatives would not displace any residences, while the fifth would displace between seven and nine residences. ▪ Two of the urban alternatives displace the Tribal Health facility.	▪ One residence and two businesses would be displaced in the rural segment. ▪ Between 7 and 9 residences and 2 businesses would be displaced. ▪ The Tribal Health facility would be displaced.	▪ During final design, further opportunities to avoid displacement of structures and reduce relocation impacts would be investigated. ▪ At Ninepipes Lodge, retaining walls would be used to avoid the need to displace this business. ▪ MDT would purchase properties or acquire an easement and provide relocation assistance, as prescribed by the Uniform Relocation Act of 1970 and Sections 70-31-101 and 70-31-311 of the Montana Code Annotated (MCA). ▪ MDT would provide relocation assistance to owners and qualified renters. ▪ The relocation of the Tribal Health facility would be coordinated with CSKT to minimize disruption to providing health services.

Table 1.8-1 (continued). Summary of impacts, design features that avoid and minimize impacts, and additional mitigation measures required.

	Impacts			Design Features that Avoid and Minimize Impacts and Mitigation Measures Required
	No Action Alternative	All Action Alternatives	Preferred Alternatives	
Geology and Soils	▪ No impacts anticipated. ▪ The existing road structure would continue to be susceptible to seismic activity commensurate with the existing design.	▪ Earthwork for the entire project ranges from 515,000 to 917,000 cubic meters (675,000 to 1,199,000 cubic yards). ▪ Lower susceptibility to seismic hazards compared to No Action due to construction to current standards.	▪ Earthwork for the rural and urban segments would total 637,000 cubic meters (833,000 cubic yards). ▪ Lower susceptibility to seismic hazards compared to No Action due to construction to current standards.	▪ Excavation and grading along the roadways would be designed and executed in accordance with geotechnical standards of practice.

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Part 2 Purpose of and Need for Action

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2.1 Purpose of the Proposed Action

The following discussion of the purpose of and need for the proposed action is based on the *Final Environmental Impact Statement and Section 4(f) Evaluation; FHWA-MT-EIS-95-01-F; F 5-1(9)6, U.S. Highway 93, Evaro to Polson, Missoula and Lake Counties, Montana* (referred to as the US 93 Evaro to Polson FEIS) (FHWA and MDT 1996). This discussion of the project purpose and need has been reorganized to reflect current agency guidance for the organization of environmental impact statements (EISs).

The purpose of the proposed action, as stated in the US 93 Evaro to Polson FEIS, is to improve the transportation system on U.S. Highway 93 (US 93) for a distance of 90.6 kilometers (56.3 miles), from Evaro at reference post (RP) 6.5 through Polson to RP 62.8 (Figure 2.1-1). This Supplemental EIS addresses the proposed action within an 18-kilometer (11.2-mile) section of the US 93 Evaro to Polson project corridor, referred to as the US 93 Ninepipe/Ronan improvement project, which extends from Dublin Gulch Road/Red Horn Road at RP 37.1 through Ronan to Baptiste Road/Spring Creek Road at RP 48.3. The purpose of the proposed action in this subsection of the corridor is to improve level of service (LOS), mobility, traffic flow, system linkage, and safety on the transportation system. It is anticipated construction in the US 93 Ninepipe/Ronan project corridor could begin in 2012 with one or more separate construction projects, depending on funding availability and other factors.

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2.2 Statement of Need

US 93 is important to local, regional, and nationwide transportation; the volume of traffic is high, has been steadily increasing, and is projected to continue to increase. The existing roadway has various geometric features that do not meet current guidelines and standards for safety and design. Existing level of service (LOS) is poor, and it is projected that it will worsen by the design year 2024. The number of accidents per mile for the US 93 Ninepipe/Ronan project corridor is almost three times the statewide average. Accident severity statistics for fatal and injury accidents are also substantially higher than statewide averages, although due to high traffic volumes the accident rate per million vehicle miles of travel is slightly lower than the statewide rate. Bicycle and pedestrian facilities are very limited in the project corridor. The Confederated Salish and Kootenai Tribes (CSKT), the City of Ronan, and Montana Department of Transportation (MDT) have all supported the need for improved bicycle and pedestrian accommodation. There is a definite need to improve safety and mobility in the project corridor.

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2.3 Project Objectives

Project Objectives were established through the public involvement process, with the participation of the Advisory Committee, Interdisciplinary Committee, and CSKT, MDT, and FHWA. It was expected that the project would be formulated such that all objectives would be achieved to some degree. The project objectives for the Ronan/Ninepipe improvement project are:

- Improve safety by reducing accidents
- Improve capacity, particularly needed on summer weekends
- Improve intersection performance in Ronan
- Provide improvements for increased capacity in Ronan in such a way that the highway will not be a barrier dividing the community
- Provide improved facilities for bicyclists and pedestrians in Ronan and throughout the corridor as well
- Reduce vehicle/animal conflicts and the resultant property damage, injury accidents, and animal mortality
- Improve wetland and riparian connectivity
- Be respectful of the cultural significance of the land and animals to the Confederated Salish and Kootenai Tribes of the Flathead Indian Reservation
- Be respectful of the "Spirit of Place"
- Provide a balance between cost efficiency, roadway safety, traffic operations, and environmental protection.

The preferred alternatives respond positively to all of these objectives.

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2.4 Project Background

The MDT has proposed to improve US 93 for a distance of 90.6 kilometers (56.3 miles), from Evaro at RP 6.5 through Polson to RP 62.8 (Figure 2.1-1). On June 17, 1996, the Federal Highway Administration (FHWA) and MDT issued the US 93 Evaro to Polson FEIS, consistent with requirements of the National Environmental Policy Act (NEPA). The US 93 Evaro to Polson FEIS described the proposed project and alternatives, and the social, economic, and environmental impacts of the corridor project. A Record of Decision (ROD) was issued on August 12, 1996, which selected the existing alignment for improvement throughout the length of the proposed project, called for development of a corridor bypassing Ronan, and allowed for right-of-way acquisition and access control. However, the ROD deferred making a decision on lane configurations, mitigation measures, and a Section 4(f) determination until agreement was reached by FHWA and MDT, along with their cooperating agency, the CSKT. The ROD was modified on February 9, 1998, to allow right-of-way acquisition to proceed on non-Tribal land. An access control plan for the US 93 Evaro to Polson corridor was then developed cooperatively by MDT, FHWA, CSKT, Lake County, and Missoula County, for administration by MDT. The Ninepipe/Ronan portion of the access control plan was never implemented, and it was decided to revisit the Ninepipe/Ronan section following the SEIS process.

Representatives from MDT, FHWA, and CSKT (referred to as the "three governments" or "proponents") then negotiated and signed the *Memorandum of Agreement-US 93 Evaro to Polson* (MDT, FHWA, and CSKT 2000) (referred to as the US 93 Corridor MOA). The US 93 Corridor MOA, dated December 20, 2000, lays out the preferred conceptual roadway improvements, including lane configurations, design features, and mitigation measures for 50 kilometers (30.6 miles) of US 93 from Evaro to the Dublin Gulch Road/Red Horn Road intersection (RP 37.1) near Saint Ignatius and for 17.4 kilometers (10.8 miles) of US 93 from the Baptiste Road/Spring Creek Road intersection near Ronan (RP 48.3) to the MT 35 intersection near Polson (RP 59.1). The US 93 Corridor MOA does not include decisions on appropriate improvements for the 6-kilometer (3.7-mile) section from the US 93/MT 35 intersection north through Polson to the US 93/Rocky Point Road intersection (RP 62.8). The US 93 Corridor MOA also does not include an 18-kilometer (11.2-mile) section between the Dublin Gulch Road/Red Horn Road intersection (RP 37.1) and the Baptiste Road/Spring Creek Road intersection (RP 48.3), which is called the US 93 Ninepipe/Ronan project corridor (see Figure 2.1-2).

The three governments agreed to prepare a Supplemental EIS (referred to as the US 93 Ninepipe/Ronan SEIS) for the Ninepipe/Ronan section. It was agreed a supplement was needed to explore possible alternate alignments around the environmentally sensitive Ninepipe glacial pothole wetland complex, and to study in more depth the effects of the highway improvement on the wetlands and wildlife in the corridor. Additional study was also needed to refine the economic impacts on the City of Ronan. The US 93 Ninepipe/Ronan draft SEIS provided information necessary to supplement the US 93 Evaro to Polson FEIS for the Ninepipe/Ronan section of the US 93 corridor, and was used by the three governments to facilitate selection of a preferred alternative for highway improvements for the US 93 Ninepipe/Ronan improvement project. That information is included in this final SEIS.

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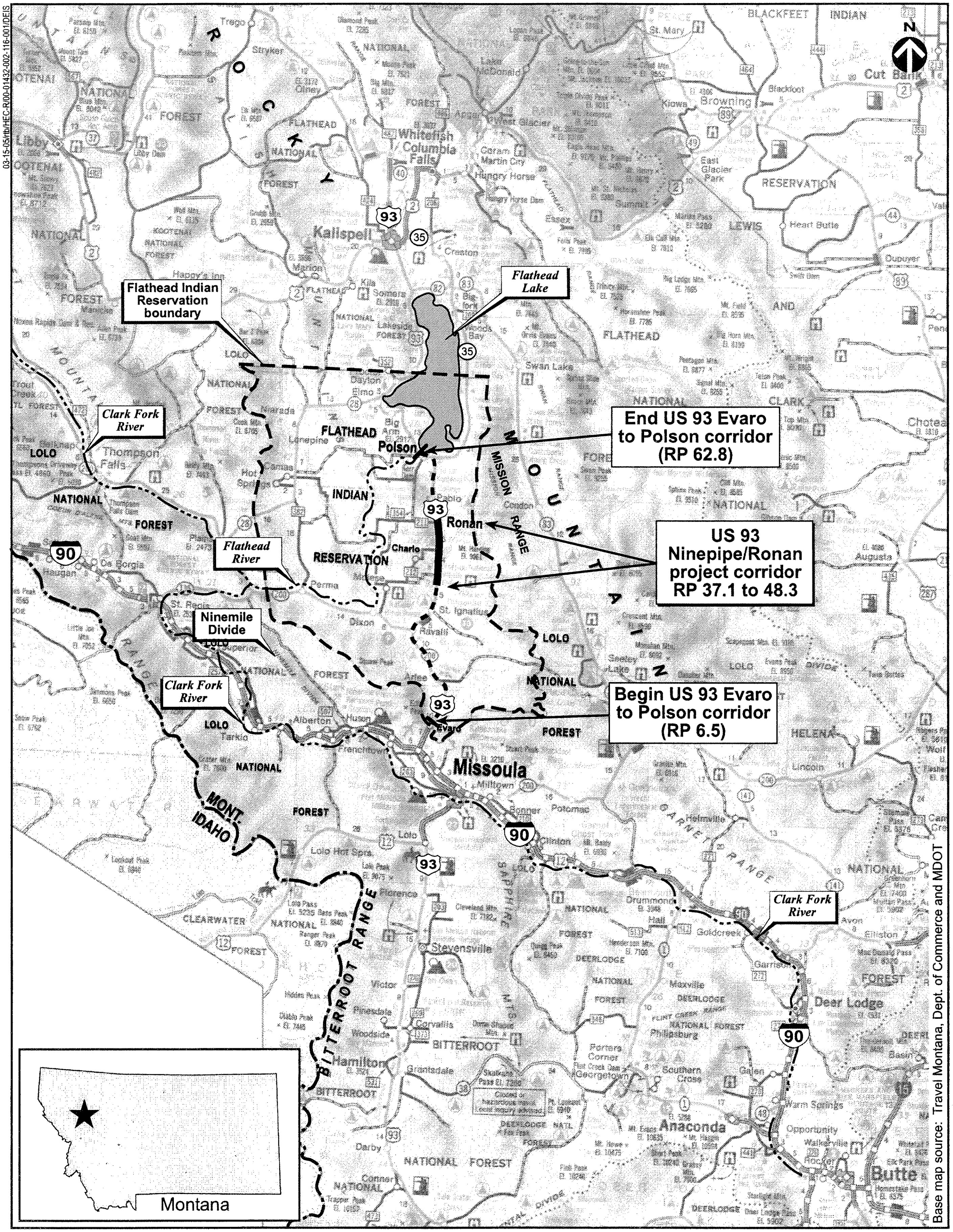

Figure 2.1-1. Vicinity map of the US 93 Ninepipe/Ronan improvement project within the US 93 Evaro to Polson corridor in Montana.

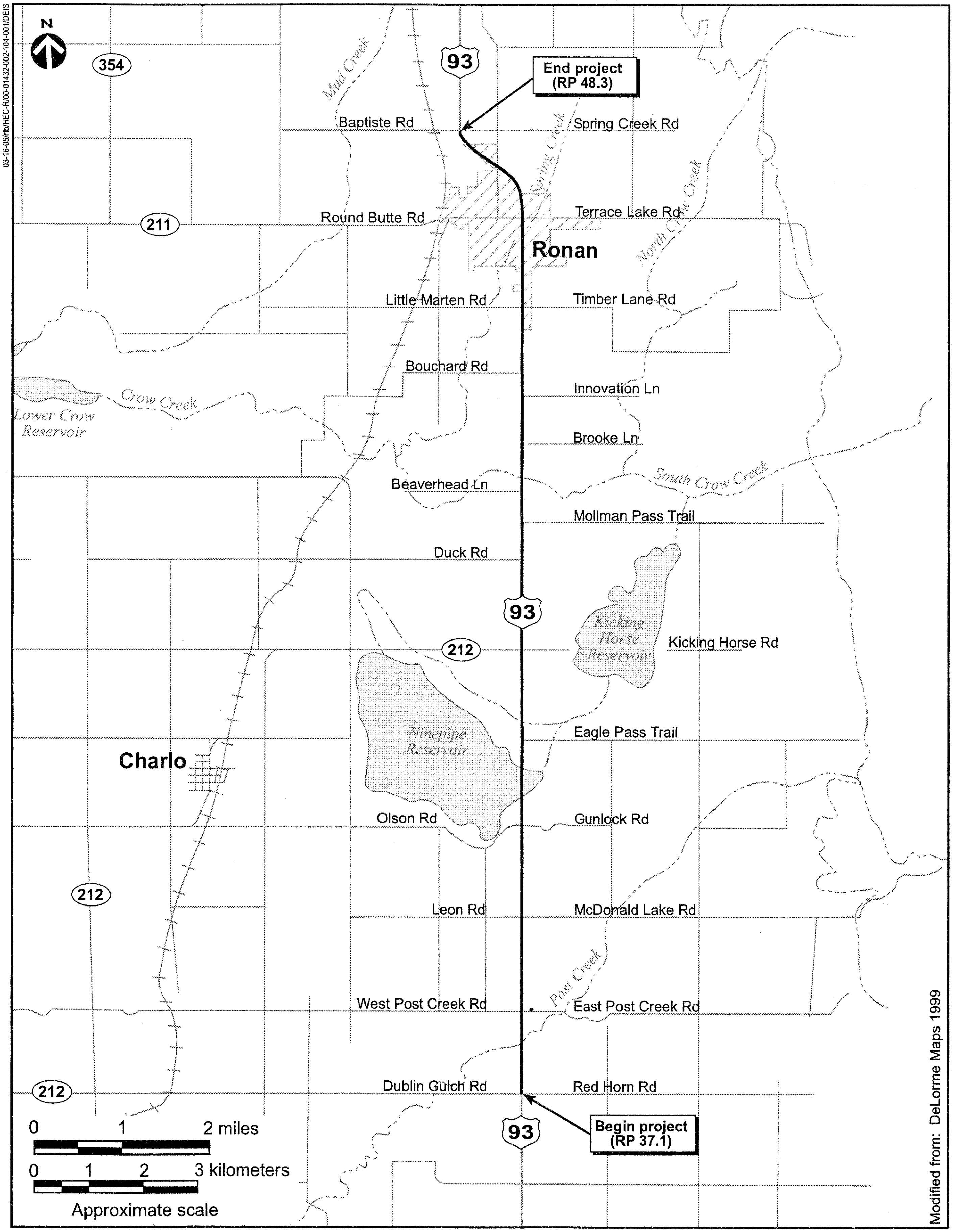

Figure 2.1-2. Project corridor for the US 93 Ninepipe/Ronan improvement project.

Access currently is controlled under an access management plan where access is managed by MDT through application of road approach standards and permit requirements. Modifications to the access management plan will be developed cooperatively by the Confederated and Salish Kootenai Tribes (CSKT), MDT, the Federal Highway Administration (FHWA), Lake County, and the City of Ronan. This plan will then be implemented and administered by MDT in cooperation with CSKT, FHWA, Lake County, and the City of Ronan.

2.5 Transportation Conditions

The following sections provide additional detail and explain the need for improvement of the highway.

2.5.1 System Linkage

Highway improvement that will preserve and enhance US 93 is needed because of its importance to the transportation system of Lake County, the Flathead Indian Reservation, western Montana, and the western United States.

Nationally, US 93 traverses the United States in generally a north-south direction from the Canadian border to near the Mexican border, passing through the states of Montana, Idaho, Nevada, and Arizona.

US 93, which is the major north-south transportation route in western Montana, is functionally classified as a rural principal arterial highway, and is on the National Highway System (NHS). US 93 is part of an extensive system of rural arterial routes that support the Interstate Highway System. Other highways in the region are: Interstate 90; Montana highways MT 28, MT 35, MT 135, and MT 200 in Lake and Sanders counties; MT 83, which is east of US 93 across the Mission Mountains in the Swan Valley of Lake and Missoula counties; and Montana Secondary Highways MT 211, MT 212, MT 354, MT 382, and MT 559 in Lake and Sanders counties. US 93 provides transportation services to an area that spans six major valleys in Montana: Flathead, Mission, Jocko, Missoula, Swan, and Bitterroot. US 93 is the major transportation route providing access to Flathead Lake and Glacier National Park. There are no north-south Interstate Highways in northwestern Montana.

Lake County operates approximately 1,930 kilometers (1,200 miles) of rural roads with mostly gravel surfaces (Lake County 1990). The CSKT Roads Program maintains rural roads that interconnect with county and private roads on the Flathead Indian Reservation.

2.5.2 Transportation Demand

Improvement of the existing transportation system along US 93 is needed to safely and efficiently accommodate existing and projected future transportation demand through the design year 2024.

Excluding the segments of highway in the incorporated City of Ronan, US 93 had average daily traffic (ADT) in the year 2000 that ranged from 7,500 vehicles per day south of MT 212 to more than 12,000 vehicles per day between Pablo and Polson (Skillings-Connolly and Midwest Research Institute 2000). The level of ADT from Evaro through Polson generally is between two and three-times higher than ADT for other non-Interstate National Highway System highways in Montana, and it is six-times higher than MT 83 in the Swan Valley. Other non-Interstate National Highway System highways in the state generally operate at LOS A or B, compared with LOS D on US 93 (refer to *Section 4.1 Traffic Operation and Safety*).

The increased traffic demand is a result of the growing population in the region. US 93 from Evaro through Polson provides transportation for the local area and the regional population throughout western Montana. The western part of the state has experienced a high rate of population growth since 1970, which in turn has placed a strain on the transportation system. An eight-county area of western Montana, including Lake, Missoula, Flathead, Sanders, Ravalli, Mineral, Lincoln, and Granite counties, had 52 percent of all population growth in Montana between 1970 and 1990. During that 20-year period, the population of the eight counties increased from 23 percent to 27 percent of the total population in the state (US Department of Commerce 1970-1990).

Between 1970 and 1990, the populations of Lake, Missoula, and Flathead counties increased by 42 percent, while the overall population of Montana increased by 15 percent; during the 20-year period the population of the Flathead Indian Reservation increased by 37 percent (US Department of Commerce 1970-1990). Between 1990 and 2000 population in Lake County grew at an annual rate of 3.0 percent compared to 1.7 percent statewide, however, this growth rate shows a slowing trend beginning in 1995 (Center for Business Information, and Research [CBIR] 2002 and US Census Bureau 2002).

Average annual growth in traffic volume on US 93 has been approximately 3 percent during the past 20 years; however, growth is not anticipated to continue at this rate for the next 20 years. Growth is expected to decrease slightly to 2.8 percent per year with or without improvement of the highway, and traffic volume on the highway will nearly double by the design year 2024. The decrease in the traffic growth rate is due to a decrease in population growth beginning in 1995 (See discussion in *Section 4.4.5, Population and Demographic Characteristics*). This decrease is also substantiated by a corresponding decrease in traffic growth recorded on the MDT permanent traffic recorder located in the corridor. The traffic projections are believed to be the same with or without improvements to the highway, since traffic growth is dependent upon population and land use changes, the relationship of which is not expected to change as a result of the proposed highway improvements. In addition, the percentage of trucks and recreational vehicles (RVs) in the traffic stream is approximately 5 percent and 3 percent, respectively, which is lower than other non-Interstate NHS routes in Montana, and these percentages are expected to continue through the design year. As indicated in *Section 4.1 Traffic Operation and Safety*, this increasing traffic volume is currently straining the existing highway system and is projected to cause serious operational and congestion problems in the future.

2.5.3 Roadway Deficiencies

Improvement of US 93 is needed to correct deficiencies in the existing highway to meet current design and safety standards for a design speed of 100 kilometers per hour (km/h) (60 miles per hour [mi/h]). As explained in *Section 4.1 Traffic Operation and Safety*, the existing highway fails to meet current safety and design standards for a design speed of 100 km/h (60 mi/h) for a rural arterial highway in various categories including vertical grade, vertical curves, and roadway shoulder width.

There are no passing lanes in the existing corridor. Where striping does not prohibit passing, vehicles pass by finding gaps in opposing traffic that are long enough to complete a passing maneuver. Given the traffic volumes during peak periods on weekdays, weekends, and summers, these opportunities are few and can be risky. Accident statistics suggest that the safety of two-lane highways is substantially improved when a passing opportunity is provided every 3.2 to 4 kilometers (2 to 2.5 miles). The project proponents agreed that this frequency was not feasible for this project corridor but agreed to attempt to provide a passing opportunity no less than every 6.4 kilometers (4 miles) in the corridor. The analysis of traffic accident data in the rural portion of the US 93 Ninepipe/Ronan project corridor indicated that the greatest need for safety improvements were a northbound climbing/passing lane on Post Creek Hill and a southbound passing lane located somewhere between West Post Creek Road/East Post Creek Road and MT 212/Kicking Horse Road.

Vertical grades on Post Creek Hill are substandard. Vertical grades that are steeper than standard for significant distances substantially reduce the speed of trucks, RVs, and other heavy vehicles, and they begin to reduce the speed of some passenger cars. Substandard vertical grades affect roadway safety by creating a speed differential in the traffic stream, thereby increasing the potential for rear-end collisions. The speed differential also reduces roadway capacity and LOS (LOS is described in Section 4.1.1), and it increases driver frustration – some drivers begin to pass where it is unsafe.

Paved roadway shoulder width (the paved area of the roadway outside the driving lanes) is generally substantially less than the 2.4-meter (8-foot) width considered standard and desirable for rural arterial highways with high traffic volumes. Space is therefore limited and not sufficient for: 1) emergency stopping on the roadway; 2) farm equipment, wide loads, or other equipment using the roadway; 3) pedestrians and bicyclists; and 4) a recovery zone for errant or out-of-control vehicles. As a result, there is a decrease in safety and driving comfort, or convenience.

In Ronan, motorists are experiencing long delays at some intersections, particularly on the crossroads. There are also long delays to make left turns into driveways at businesses and residences due to the lack of openings in the heavy traffic in the opposite direction on the mainline.

2.5.4 Capacity and Level of Service

The proposed action is needed to improve the existing poor roadway LOS and retain a desirable LOS through the design year 2024.

MDT policy for design LOS for improvements in principal arterial highway corridors like US 93 is LOS B in rural areas and LOS C in urban areas of the corridor in the design year. In negotiating the US 93 Corridor MOA, MDT in consultation with FHWA and CSKT approved an exception to their normal policy concerning design LOS for rural portions of the proposed project to achieve at least LOS B through the first half and at least LOS C through the second half of the 20-year design period, with no portion of the design period closely approaching LOS D for normal weekday traffic; and at least LOS C through the entire 20-year design period for summer weekend traffic. There are no specific LOS requirements for the proposed project. It was agreed that these levels of service would be goals for achievement. It was further agreed that alternatives considered would not be screened out solely on LOS if the alternative nearly achieves these goals.

The capacity of the highway is reached when traffic operation is represented by LOS E. As traffic demand exceeds the capacity (LOS E), congestion and unstable flow occurs and flow rate decreases (LOS F). The existing highway is generally operating at LOS D in the rural area and is projected to operate at LOS E in the design year (2024). At LOS D, passing demand is high while passing capacity is near zero. Platoons are forming in the traffic stream and the percentage of time motorists are delayed approaches 75 percent. The present LOS at some intersections in Ronan is level D and F. Without improvement it is predicted that nearly all of the intersections would be experiencing LOS D and F on at least one approach and the arterial LOS will also be at F within 20 years. These levels of service would cause long back-ups on US 93 in and near Ronan for perhaps several kilometers during peak periods.

Poor traffic operation and congestion on US 93 will result in the following types of conditions:

- As LOS deteriorates, frustration levels of drivers increase and some drivers begin to take chances, begin to follow other vehicles too closely and attempt to pass where it is unsafe. As a result, head-on and rear-end collisions increase.

- As the volume of traffic increases, US 93 will become more of a barrier. If the highway is not improved, there will be increased concentrations of traffic. Longer platoons of vehicles will further restrict the continuous flow of traffic. It will be increasingly difficult to have access to and from the highway for residential, commercial, industrial, agricultural, and public areas. Some alternatives for improvement of the highway will provide additional traffic lanes, including left-turn bays and continuous two-way left-turn center medians, to improve vehicle access to and from the highway.

- Increasing traffic volumes and congestion on US 93 will likely disrupt the ability of Ronan to function as a cohesive community, by impeding circulation for pedestrians and vehicles. US 93 effectively bisects the central area of town, substantially reducing traffic circulation and economic activity. The barrier effect of US 93 is projected to worsen as traffic volume increases. This will result in further separation of the community by disrupting traffic and circulation, reducing the efficiency of facilities and services, and hampering Ronan's ability to capitalize on its potential for economic growth. When traffic congestion occurs on the highway, access and travel by emergency vehicles (ambulances, fire trucks, and police) are seriously hampered, as is use by bicyclists and pedestrians. Travel speeds are reduced substantially, flows are sporadic and excessive deceleration, stopping and acceleration occurs. It becomes difficult for vehicles to move off the roadway to let emergency vehicles pass. Emergency vehicles may often be forced to take less direct, substantially longer alternate routes with low travel speeds, resulting in increased emergency response time.

- As traffic demand increases, the highway becomes more congested, and traffic flow is more unstable. Delivery of goods and services to the area and shipping of agricultural, timber, and other products from the area would be hampered. Travel times and costs for shipping would result in more expensive and less reliable transportation services to the economy.

2.5.5 Safety

The proposed action is needed to improve safety by reducing the number of accidents and resultant property damage and, particularly, injuries and fatalities.

The following summary of accident history from Saint Ignatius to Ronan (described in *Section 4.1 Traffic Operation and Safety*) is based on information from an analysis of reported accidents from 1995 through 2003 (Skillings-Connolly 2004a):

- 228 accidents were reported during the 9-year period.

- There were 2.8 accidents per mile on an annual basis, which is substantially more than the statewide average of 1.3 accidents per mile on non-Interstate NHS highways in Montana for 2003. The computed accident rate of 0.98 accidents per million vehicle miles is, however, less than the statewide average of 1.30, due to the relatively high traffic volumes on US 93 between Saint Ignatius and Ronan.

- Fatal accidents during the 9-year reporting period comprised 4.8 percent of the total number of accidents (or 11 accidents), which is substantially higher than the statewide average for fatal accidents of 1.4 percent.

- Injury accidents comprised 41 percent of total accidents (or 94 accidents) as compared to the statewide average of 34 percent. Of these accidents, 6 percent (or 12 accidents) were “head-on” accidents versus 2 percent statewide.
- The severity index is 2.86 accidents per million vehicle miles, which is higher than the statewide average of 2.34 accidents per million vehicle miles on comparable facilities

The existing highway experiences high numbers of accidents with higher than average severity (fatalities and injury accidents) caused by higher proportions of head-on accidents. These types of accidents are generally correctable by design improvements that increase the availability of passing opportunities; such design improvements include passing lanes, climbing lanes, and four-lane sections. Inclusion of paved shoulders will provide increased safety as well.

Part 3 Description of Alternatives

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3.1 Alternatives Development Process

3.1.1 Background

As a component of the *Memorandum of Agreement-US 93 Evaro to Polson* (referred to as the US 93 Corridor MOA) (FHWA, MDT, and CSKT 2000), the project proponents agreed to the following:

> "*The parties will prepare a Supplemental Environmental Impact Statement (SEIS) to explore alternative roadway alignments and to evaluate new circumstances and information relevant to environmental concerns for 11.2 miles of the proposed project between the US-93 Red Horn Road/Dublin Gulch Road intersection and the US-93/Spring Creek/Baptiste Road intersection north of Ronan.*"

The process for preparing the US 93 Ninepipe/Ronan draft SEIS included consideration, analysis and screening of alternative roadway alignments, alternative roadway lane configurations, and a wide range of options for enhancing wildlife movement across the roadway. Separate processes for alternatives development and screening were undertaken for the rural and urban portions of the proposed project because of the distinctly different roadway characteristics and improvement needs in each portion of the project corridor. The processes undertaken for each of the screening efforts and descriptions of the alternatives are included in this part of the final SEIS.

3.1.2 Process for Developing and Screening Alternatives in the Rural Portion of the US 93 Ninepipe/Ronan Project Corridor

A multi-phased effort was undertaken to develop and screen a wide range of alternatives in the rural portion of the US 93 Ninepipe/Ronan project corridor. These phases included consideration of the following:

- New U.S. Highway 93 (US 93) roadway corridors to the east and west of the existing roadway (i.e., moving the highway to a new location)
- Different lane configurations along the existing US 93 roadway corridor
- Structure options (bridges and large culverts) at locations along the existing US 93 corridor that are important as crossings for wildlife.

For each phase, a wide range of alternatives was considered and, where appropriate, those alternatives that did not meet the project purpose and need were eliminated from further consideration. The following summary highlights the processes undertaken to develop and screen alternatives for inclusion in the US 93 Ninepipe/Ronan SEIS.

Roadway Corridor Alternatives

Alternatives Considered

At the direction of the Project Oversight Group (POG) established for the proposed project by the Confederated Salish and Kootenai Tribes (CSKT), Montana Department of Transportation (MDT), and the Federal Highway Administration (FHWA) to establish and maintain policy and direct the environmental and design phases of the project, and consistent with the findings articulated in the US 93 Corridor MOA, new roadway corridor options to the east and the west of the existing US 93 alignment were considered.

The first phase of the alternatives development and screening process occurred between June 13, 2001 and July 25, 2001, with input from the citizen and technical advisory committees established for the proposed project. Using base maps depicting the locations of important environmental features, numerous preliminary corridor alignment options were identified to the east and west of the existing US 93 highway (Figure 3.1-1). These preliminary corridor alignment options were presented for public comment during two open house events held July 18, 2001 in the City of Ronan and a public meeting in the town of Charlo on November 1, 2001, at which a public opinion survey was taken. The results of the public opinion survey are summarized in *Section 7.4 Comments, Consultation, and Coordination.*

The preliminary corridor alignment options were further analyzed during several workshops conducted with FHWA, MDT, and CSKT (project proponents) staff from October 2001 to February 2002 to develop more refined corridor locations and potential lane configurations for the east, west, and existing corridors. The workshops resulted in 11 options that were carried into a preliminary analysis of level of service (LOS) to determine generally the beneficial and/or adverse effects on traffic of a relocated highway corridor either east or west of the existing US 93 highway. The results of the traffic analysis are discussed further in this section and in Sections 4.1 and 5.1 Traffic Operations and Safety.

In addition to level of service, the following environmental elements were also considered during the corridor screening process:

- Community character
- Socioeconomics
- Cultural and historic resources
- Ecological and physical environment
- Wildlife
- Construction/operation/maintenance costs.

Each of these factors is briefly described in the following paragraphs:

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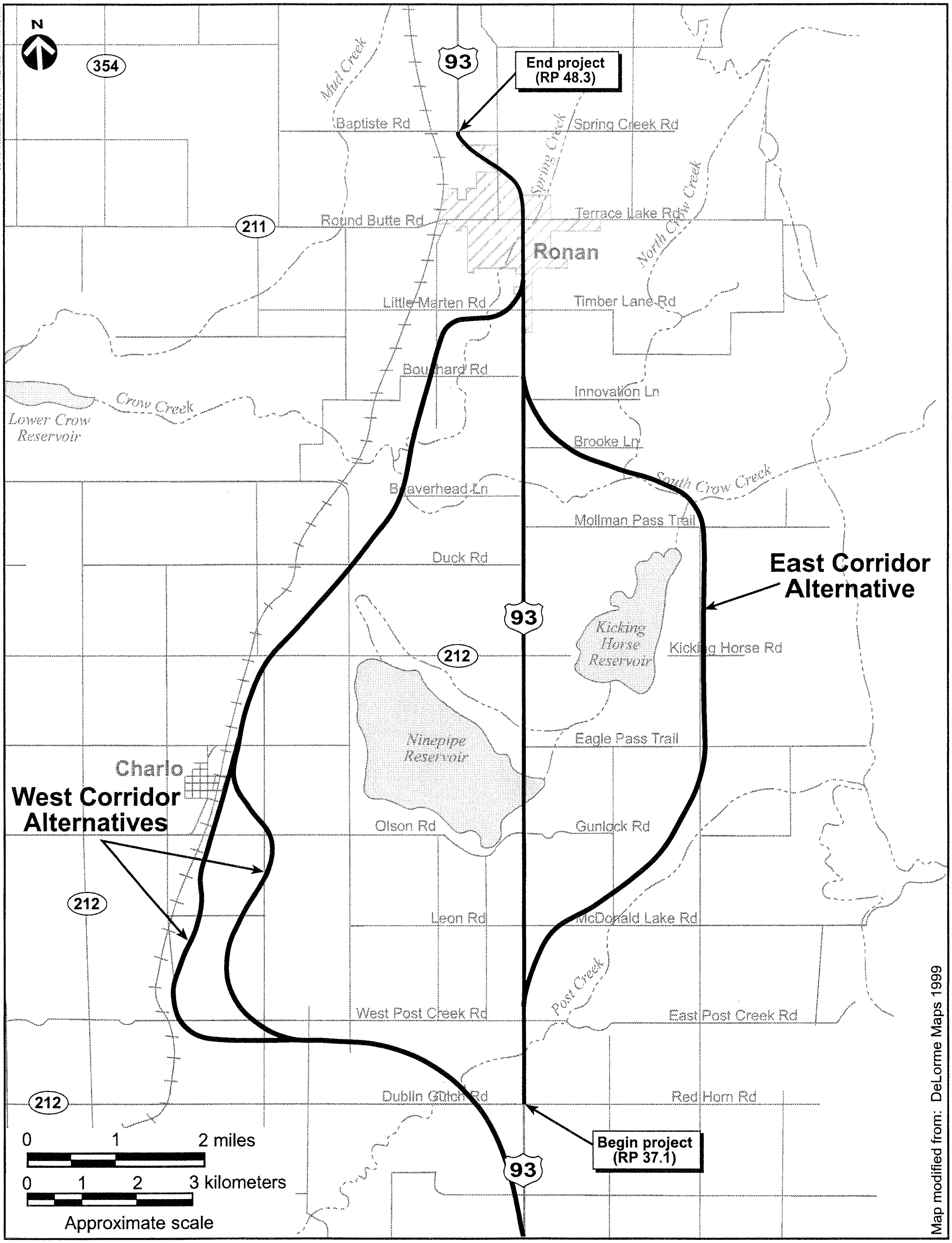

Figure 3.1-1. Roadway corridor alternatives considered for the US 93 Ninepipe/Ronan improvement project.

Community Character

Community character includes the numbers of homes and businesses that would require relocation, as well as the effects on community social patterns and quality of life. Elements of community character in the Ninepipe study area, that residents may perceive as defining lifestyle, include its rural setting with low residential densities and agricultural land uses, small commercial activity nodes (such as the town of Charlo), agricultural economic base, pastoral valley and mountain views, and quiet nights with low levels of noise and light.

Socioeconomics

Socioeconomics is the analysis of economic (real dollar) impacts associated with changes in community character. Elements of a socioeconomic analysis include changes in community tax base resulting from conversion of residential and commercial properties to public property (road right-of-way), local economic impacts resulting from short-term construction jobs, construction materials acquisition, and associated trickle-down economic effects, and gained or lost economic potential resulting from implementation of the roadway alternatives (business revenues associated with diversions of tourist traffic). For purposes of the screening analysis, the real dollar costs of right-of-way acquisition were included in the construction, operation, and maintenance category.

Cultural and Historic Resources

Cultural and historic resources can be organized into ethnographic cultural resources (reflecting meanings, ideologies, beliefs, values, and land use practices shared by a group of people) and vernacular cultural resources (reflecting repetitive human activities such as farming, fishing, or mining).

In the Ninepipe study area, ethnographic resources include:

- Wildlife, fish, and plants for food, medicinal, and spiritual purposes
- Native American traditional cultural places (archaeological, sacred and cultural sites, features, and trails)
- Native American living cultural landscapes (camas fields, streams, forests, prairies, and wetlands).

Vernacular resources include:

- National Register of Historic Places (NRHP) properties (Fort Connah)
- Structures over 50 years old or original homestead properties that are possibly eligible for the NRHP

- Historic agriculture features (irrigation canals)
- Historic transportation features (stagecoach route).

Ecological Environment

This evaluation factor includes both biological and physical habitat features. Biological resources considered include wetlands, streams, and vegetation communities. Physical features considered include air quality, water quality, and soil erosion potential.

Wildlife

The wildlife evaluation factor included considerations of habitat quality, rates of wildlife mortality, and connectivity for fish and wildlife, including threatened and endangered species. Impacts to federally protected wildlife preserves were also considered.

Construction, Operation, and Maintenance Costs

The hard dollar costs of right-of-way acquisition and of road construction and maintenance were considered in this evaluation factor.

Table 3.1-1 presents a consensus rating of the roadway corridor alternatives by the technical design committee (TDC) which is composed of representatives for the project proponents (CSKT, MDT, and FHWA) and various state and federal resource agencies either affected by or with jurisdiction over the roadway improvement project. The consensus rating was arrived at through TDC discussions and consideration of input received from the advisory committees and the public.

Table 3.1-1. Qualitative ratings by the US 93 TDC of beneficial and adverse impacts to selected environmental elements and public response to roadway corridor alternatives considered for the US 93 Ninepipe/Ronan improvement project.

	Develop New West Corridor		Develop New East Corridor		Improve Existing Roadway	
Environmental Elements Rated by TDC	Beneficial Impact	Adverse Impact	Beneficial Impact	Adverse Impact	Beneficial Impact	Adverse Impact
Social	Low	High	Low	High	Medium	Medium
Socioeconomics	Medium	Medium	Low	High	Low	Low
Cultural/Historical	Low	High	Low	High	Medium	Medium
Ecological	Low	High	Low	High	Medium	Medium
Wildlife	Medium	Medium	Low	High	Medium	Medium
Construction/Operation/Maintenance	NA	High	NA	High	NA	Medium
Public Response	Low	High	Low	High	High	Low

Roadway Corridor Alternatives Eliminated from Further Consideration

Based on the environmental elements identified in Table 3.1-1, the range of potential corridor alternatives was qualitatively evaluated to identify generally the beneficial and adverse impacts of a new US 93 alignment to either the east or west of the existing US 93 corridor. As a result of this qualitative evaluation and the response received from the public, the TDC determined that the potential adverse impacts of a new corridor alignment to either the east or west of the existing US 93 highway substantially outweigh the potential beneficial effects. The following paragraphs summarize the reasons for the TDC recommendation to the POG to reject the east and west roadway corridor alternatives. Additionally, an explanation is provided to document why there is not a rural alternative to realign the roadway slightly to the east in the vicinity of Ninepipe Reservoir, possibly avoiding some of the impacts to the waters of the Reservoir and associated wetlands.

The study of alternative corridors was initially founded on the premise that the glacial wetland complex in the central part of the US 93 Ninepipe/Ronan project corridor should not be bisected by US 93 and, that if an alternate corridor around this complex was to be implemented, the existing US 93 would be closed and removed. However, soon after the US 93 Ninepipe/Ronan SEIS commenced, a legal opinion was provided by the Legal Services Department of the MDT (Reardon 2001) that the State cannot abandon a highway or right-of-way that provides access to private landowners if two or more objections by those landowners are made to the State. If objections were voiced, then the existing US 93 highway would be required to remain open and maintained to some level to allow for its continued use. During the public open houses and community workshops conducted for the proposed project, over 72 percent of the attendees voiced their opinion that improving the existing US 93 highway would provide the greatest benefit to the Mission Valley and its residents. Numerous attendees, including more than two private landowners for which this portion of US 93 provides access, stated their objections to the potential closure of the existing US 93 highway if a new east or west corridor alignment were developed. Therefore, the qualitative evaluation of environmental effects of the east and west corridor alternatives assumed that the existing US 93 highway would remain open and that the environmental effects of developing an alternative corridor would include the combined effects of the new roadway and the existing roadway.

The preliminary traffic analysis also played an important role in the evaluation of corridor alternatives. The analysis of future traffic volumes and LOS both with and without the existing US 93 highway indicated that there would not be a substantial difference between the corridor alternatives, nor would there be a substantial improvement in overall traffic operations, unless additional lanes were provided. This was true for all alternatives; therefore, it was assumed that an acceptable LOS would be provided for any of the alternative alignments or for improvements of the existing corridor. Accordingly, the decision to eliminate the east and west corridor alternatives was based primarily on evaluation of the six environmental elements and public response identified in Table 3.1-1.

In general, the adverse impacts of a new east or west alignment are greater than the impacts of improving the existing US 93 roadway and benefits of a new alignment are less. Impacts to Tribal lands, cultural/historical sites, residences and businesses, and the overall rural community character of the area would be greater with a new alignment than with improvements to the existing highway.

Similarly, the natural environment would be more adversely affected by a new alignment than it would be by improvements to the existing US 93 roadway. While some benefits to fish and wildlife habitat and migration corridors would be derived from mitigation measures, these benefits would not substantially offset the adverse impacts associated with constructing a new highway on either the east or west corridor alternatives. This is due in large part to the assumption that the existing road must likely remain open. The combined effects of constructing and operating a new roadway along with maintaining the existing roadway would result in substantial adverse impacts to fish and wildlife habitat and would create additional potential barriers to wildlife movement.

The concept of a rural alternative that realigns the roadway slightly to the east in the vicinity of Ninepipe Reservoir was also considered, but was not fully explored for the following reasons: a slight realignment to the east, even though it might seem to minimize impacts to waters of Ninepipe Reservoir, would not actually minimize those impacts because these waters exist on both sides of the highway; a slight realignment to the east would not avoid the Ninepipe Reservoir associated wetlands (See Map, Appendix E, Preferred Alternative, Sheet 4 of 11 and Figure 3.2-10); and a slight realignment to the east would result in a drastic impact, relocation or obliteration of the Ninepipes Lodge, Motel and Museum, a local landmark business. The preferred alternative provides for an extended multi-span structure over the waters of Ninepipe Reservoir and removing the existing fill from the waters and portions of the associated wetlands, such that realignment is not necessary to accomplish these objectives. The extended structure also provides connectivity to the associated wetlands, which does not exist at the present structure. An overriding reason for not providing a slight realignment to the east is that it would also be a new encroachment on the Ninepipe Wildlife Refuge, which exists on both sides of the existing highway right-of-way, or even further east would require wetlands impacts and right-of-way from the Ninepipe National Wildlife Management Area (See Figure 6.1-1), both of which are protected by the requirements of Section 4(f) of the 1966 U.S. Department of Transportation Act (Title 23 of the Code of Federal Regulations [23 CFR 771.135]). New right-of-way from these facilities would only be allowed if there were no feasible and prudent alternatives. The preferred alternative, with its steepened slopes to minimize wetland impacts and lengthened structure to eliminate waters of the reservoir and associated wetlands impacts will be constructed in the existing highway right-of-way, thereby providing both a feasible and prudent alternative to the taking of any Wildlife Refuge lands.

Lane Configuration Alternatives

Following the decision to eliminate roadway corridor alternatives from further consideration, the POG directed its technical representatives to the TDC to develop lane configuration alternatives that generally follow the current alignment of US 93 in the rural portion of the US 93 Ninepipe/Ronan project corridor. Proponents did not explore options to align the roadway around the reservoir as this would have resulted in extensive impacts on the wildlife refuge, and historic and recreational properties, which are protected under Section 4(f) of the U.S.

Department of Transportation Act. Representatives to the TDC, with input from the proponents, the public, and the project advisory committees, considered numerous combinations of lane configurations to address the purpose and need of the proposed project. All potential alternatives were composed, essentially, of three typical lane configurations appropriate for a rural roadway. These typical lane configurations were analyzed previously in the *Final Environmental Impact Statement and Section 4(f) Evaluation; FHWA-MT-EIS-95-01-F; F 5-1(9)6, U.S. Highway 93, Evaro to Polson, Missoula and Lake Counties, Montana* (referred to as the US 93 Evaro to Polson FEIS) (FHWA and MDT 1996) and consist of: 1) a two-lane roadway with or without auxiliary lanes, 2) a four-lane undivided roadway, and 3) a four-lane divided roadway.

Through the rural alternatives development process, it became evident that the rural portion of the proposed project posed two distinct sets of roadway and environmental issues that could be separated geographically. Roadway efficiency and safety issues differed substantially between the Post Creek Hill area south of Olson Road/Gunlock Road and the more level part of the corridor north of Olson Road/Gunlock Road that traverses the Ninepipe wetland complex and adjacent lands managed for wildlife. The environmental sensitivity of the Ninepipe wetland complex and refuge area prompted additional concerns for the type of roadway improvements to be implemented. Based on these unique issues, the TDC recommended to the POG that the rural alternatives to be carried forward into the US 93 Ninepipe/Ronan draft SEIS should be analyzed in two segments, such that the segments and their respective sets of roadway improvements could be mixed and matched to develop a preferred alternative.

All of the potential lane configuration alternatives suggested by the TDC and the public for each of the two rural roadway segments were combined into ten rural action alternatives analyzed in the US 93 Ninepipe/Ronan draft SEIS. These alternatives were analyzed preliminarily for their potential improvement to roadway LOS and safety, consistent with the purpose and need of the proposed project to improve the transportation system on US 93. However, on advisement of the POG, a required standard for future roadway LOS was not stated and the rural action alternatives were not screened based on roadway LOS. All rural lane configuration alternatives that were developed by the TDC and the public were carried forward for full analysis in the US 93 Ninepipe/Ronan SEIS. The rural action alternatives are described fully in *Section 3.2.2 Rural Action Alternatives*.

Wildlife Crossing Structure Options

Improvement of natural processes, such as hydrologic connectivity and wildlife movement between habitat areas, is an important objective of the US 93 Evaro to Polson roadway improvement project. The project proponents acknowledge the importance of these natural processes to the Salish and Kootenai people for maintenance of their cultural integrity and health of their homeland. Safe movement of wildlife across the project corridor also is an important consideration for roadway safety. Consistent with the design efforts undertaken for the US 93 Evaro to Polson corridor, opportunities were sought within the US 93 Ninepipe/Ronan project corridor for improvements to wildlife crossings. Numerous discussions between the project proponents resulted in identification of five key locations for consideration of wildlife crossing improvements. These locations include Post Creek, Ninepipe Reservoir, two large kettle ponds located north of the Ninepipe Reservoir, and Crow Creek.

Representatives to the TDC conducted a field review in March 2002 to discuss potential wildlife crossing structure options at each key location. The term “wildlife crossing structures” is used in this final SEIS to refer to groupings of single- and multi-span bridges of varying lengths and large culverts, with their primary purpose being to serve as wildlife crossings for large animals. A range of wildlife crossing structure options was identified during the field review, based on known or anticipated wildlife activity at each site. Additional wildlife structure options at Ninepipe Reservoir and Crow Creek were identified by the project proponents during development of the preliminary preferred alternative (PPA) (see *Section 3.1.4 Process for Developing the Preferred Alternative*). Public input during the alternatives development process also resulted in identification of an additional option at Post Creek and an “elevated parkway” structure that encompasses the other four wildlife crossing locations at Ninepipe Reservoir, the two kettle ponds, and Crow Creek, both being unique to Alternative Rural 7.

The primary functional objectives that guided identification of the wildlife crossing structure options included: 1) improvement of hydrologic connectivity in wetlands and in streams and their associated floodplains, 2) improvement of wetland and riparian functions, and 3) improvement of wildlife habitat connectivity and wildlife passage. The wildlife structure options at each crossing location were analyzed preliminarily for their potential improvement to these three primary functional objectives. Based on this analysis and input received during development of the preliminary preferred alternative (see *Section 3.1.4 Process for Developing the Preferred Alternative*), a single set of wildlife structures was selected to be carried forward in the US 93 Ninepipe/Ronan final SEIS as part of all the rural action alternatives, except Alternative Rural 7 which has its own unique wildlife crossing structures.

The wildlife crossing structures reviewed for consideration included the following:

Post Creek (approximate RP 37.7)

Three wildlife crossing structure options were screened at Post Creek and are shown on Figure 3.1-2:

- Post Creek Option 1
  - One 30-meter (100-foot) single-span bridge
  - One 12-meter (40-foot) single-span bridge
  - One 3- X 4-meter (10- X 12-foot) culvert
- Post Creek Option 2
  - One 152-meter (500-foot) multiple-span bridge
  - One 3- X 4-meter (10- X 12-foot) culvert.
- Post Creek Rural 7 Option
  - One 365-meter (1,200-foot) multiple-span bridge.

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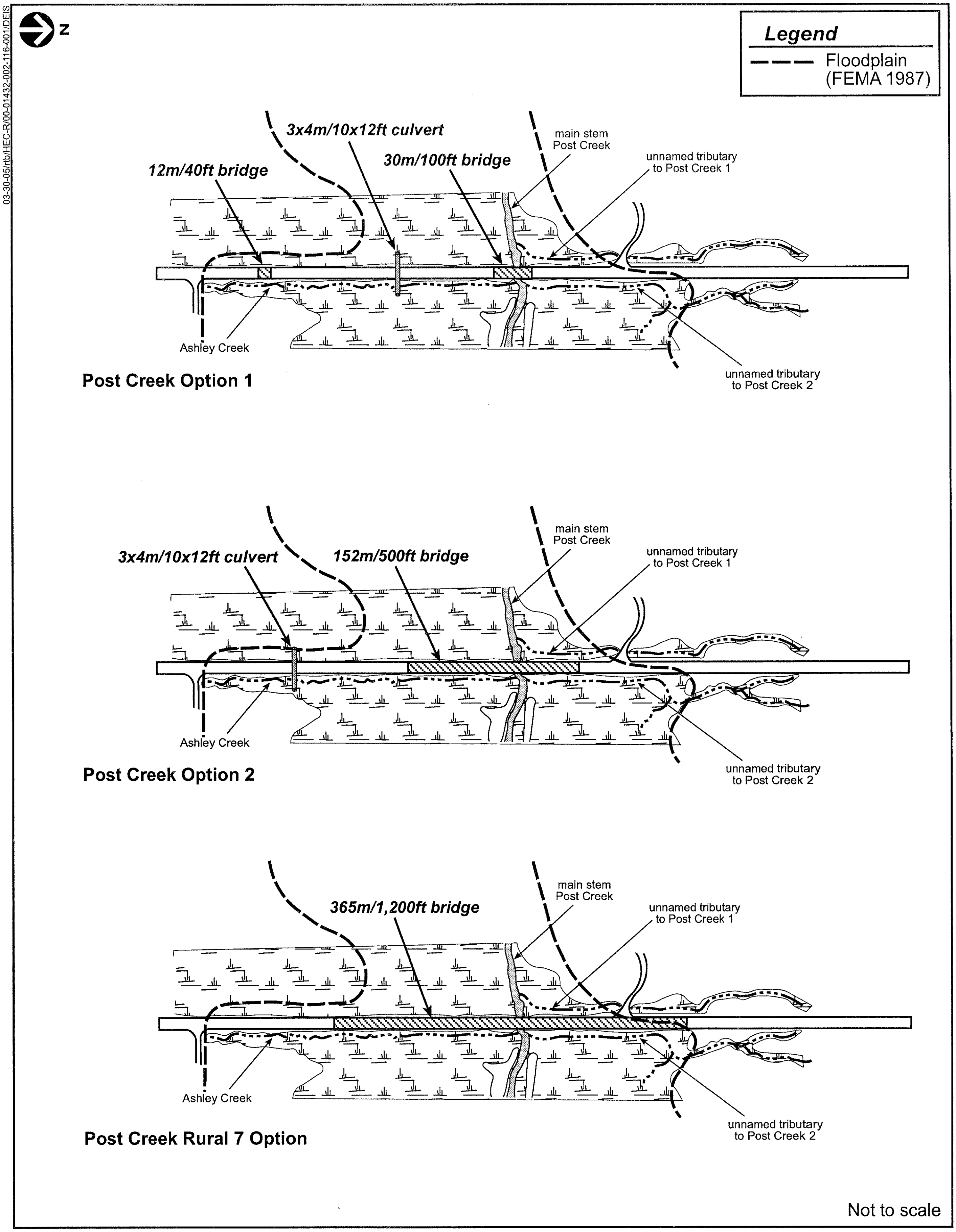

Figure 3.1-2. Post Creek Wildlife Crossing Structure Options.

Ninepipe Reservoir (approximate RP 40.5 to 40.8)

Five wildlife crossing structure options were screened at Ninepipe Reservoir and are shown on Figures 3.1-3 and 3.1-4:

- Ninepipe Reservoir Option 1
  - One 125-meter (400-foot) multiple-span bridge
  - Two 20-meter (65-foot) single-span bridges
  - Two 3- X 4-meter (10- X 12-foot) culverts

- Ninepipe Reservoir Option 2
  - One 200-meter (650-foot) multiple-span bridge
  - Three 20-meter (65-foot) single-span bridges

- Ninepipe Reservoir Option 3
  - One 200-meter (650-foot) multiple-span bridge
  - One 125-meter (400-foot) multiple-span bridge
  - Two 3- X 4-meter (10- X 12-foot) culverts

- Ninepipe Reservoir Option 4
  - One 760-meter (2,500-foot) multiple-span bridge

- Ninepipe Reservoir Option 5
  - Two 4- X 8-meter (12- X 22-foot) culverts
  - Two 3- X 4-meter (10- X 12-foot) culverts
  - One 200-meter (660-foot) multiple-span bridge.

Kettle Pond 1 (approximate RP 41.7)

Three wildlife crossing structure options were screened at Kettle Pond 1 and are shown on Figure 3.1-5:

- Kettle Pond 1 Option 1
  - Two 18-meter (60-foot) single-span bridges

- Kettle Pond 1 Option 2
  - Two 18-meter (60-foot) single-span bridges
  - Two 1.2- X 1.8-meter (4- X 6-foot) culverts

- Kettle Pond 1 Option 3
  - One 340-meter (1,100-foot) multiple-span bridge.

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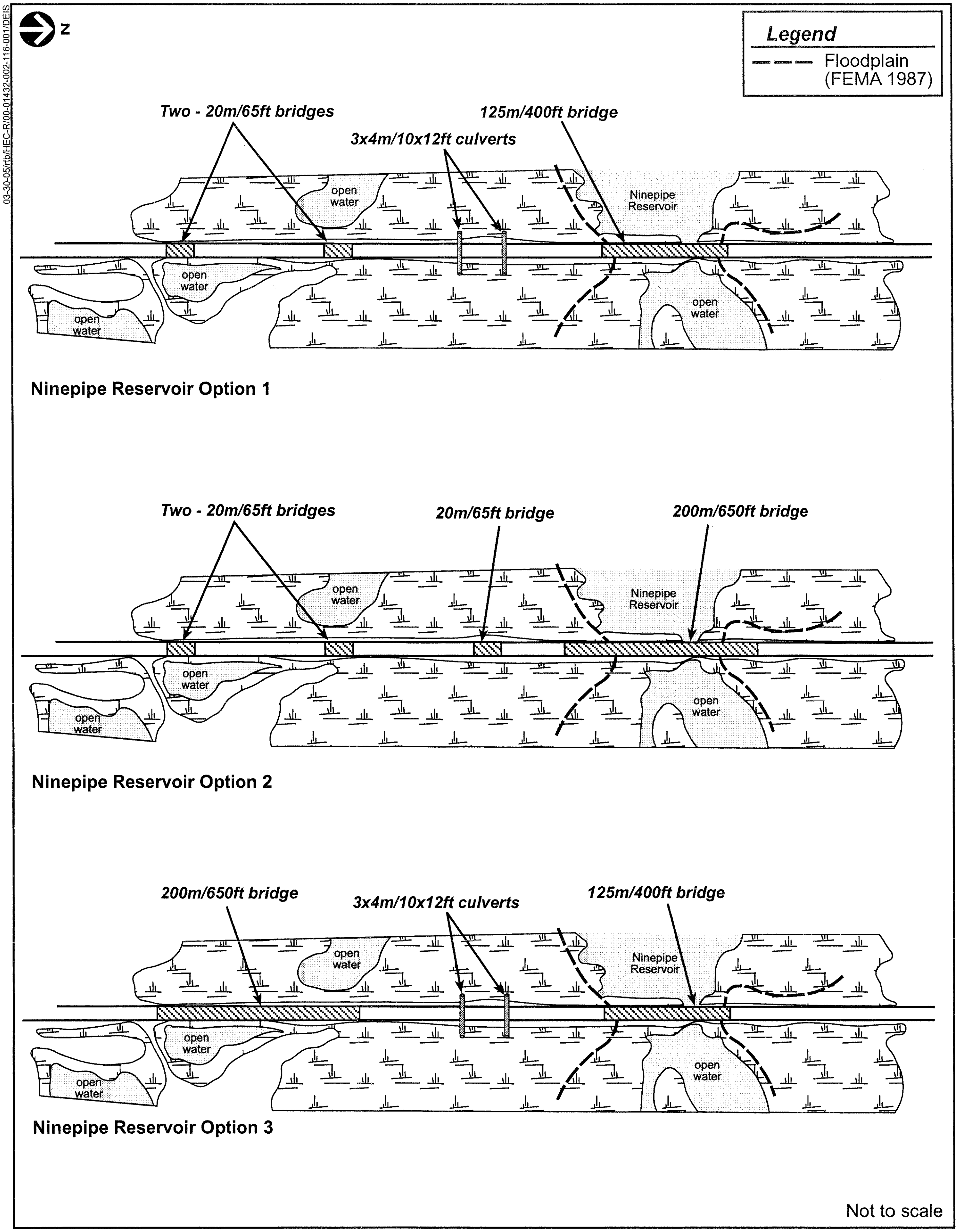

Figure 3.1-3. Ninepipe Reservoir Wildlife Crossing Structure Options 1, 2, and 3.

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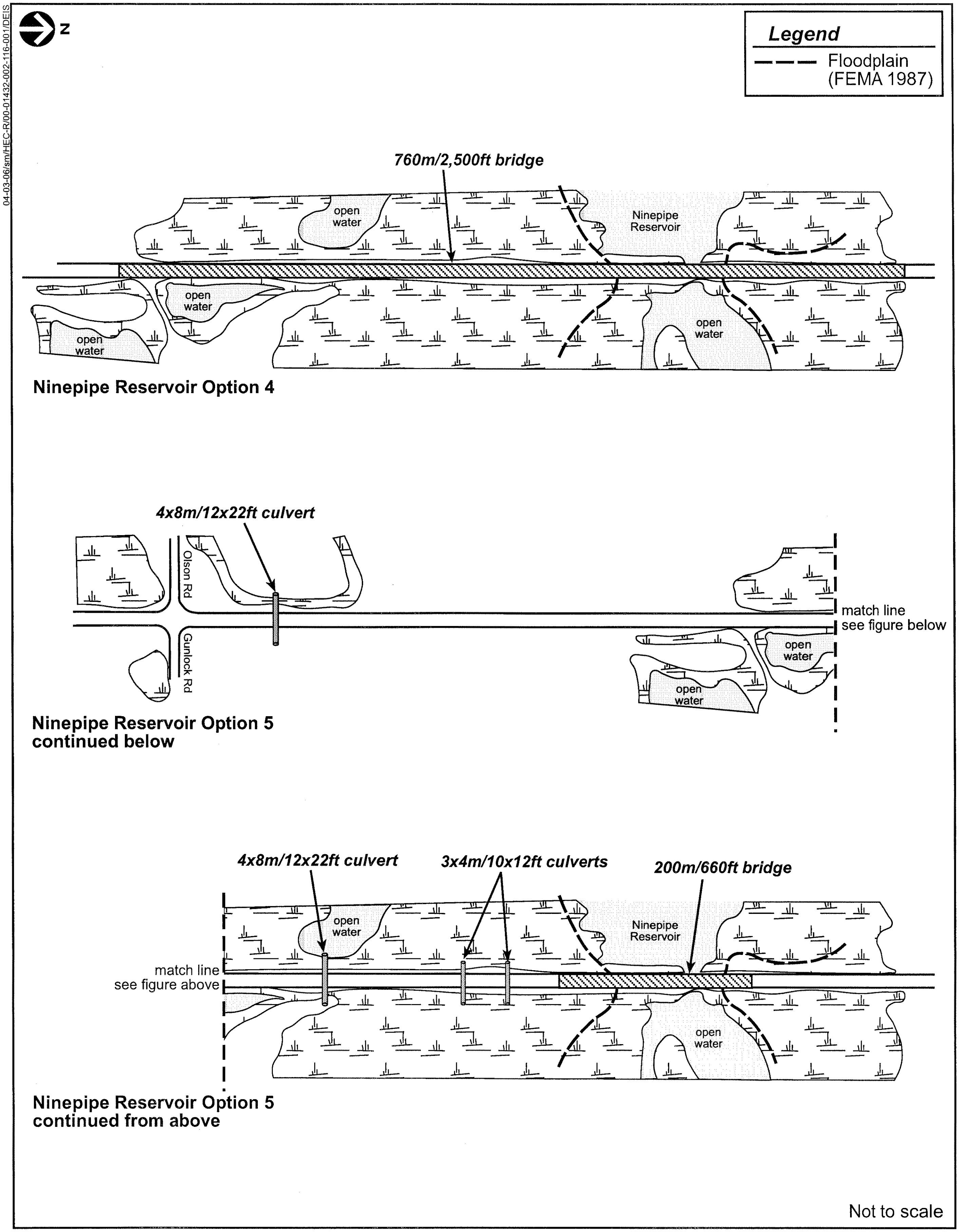

Figure 3.1-4. Ninepipe Reservoir Wildlife Crossing Structure Options 4 and 5.

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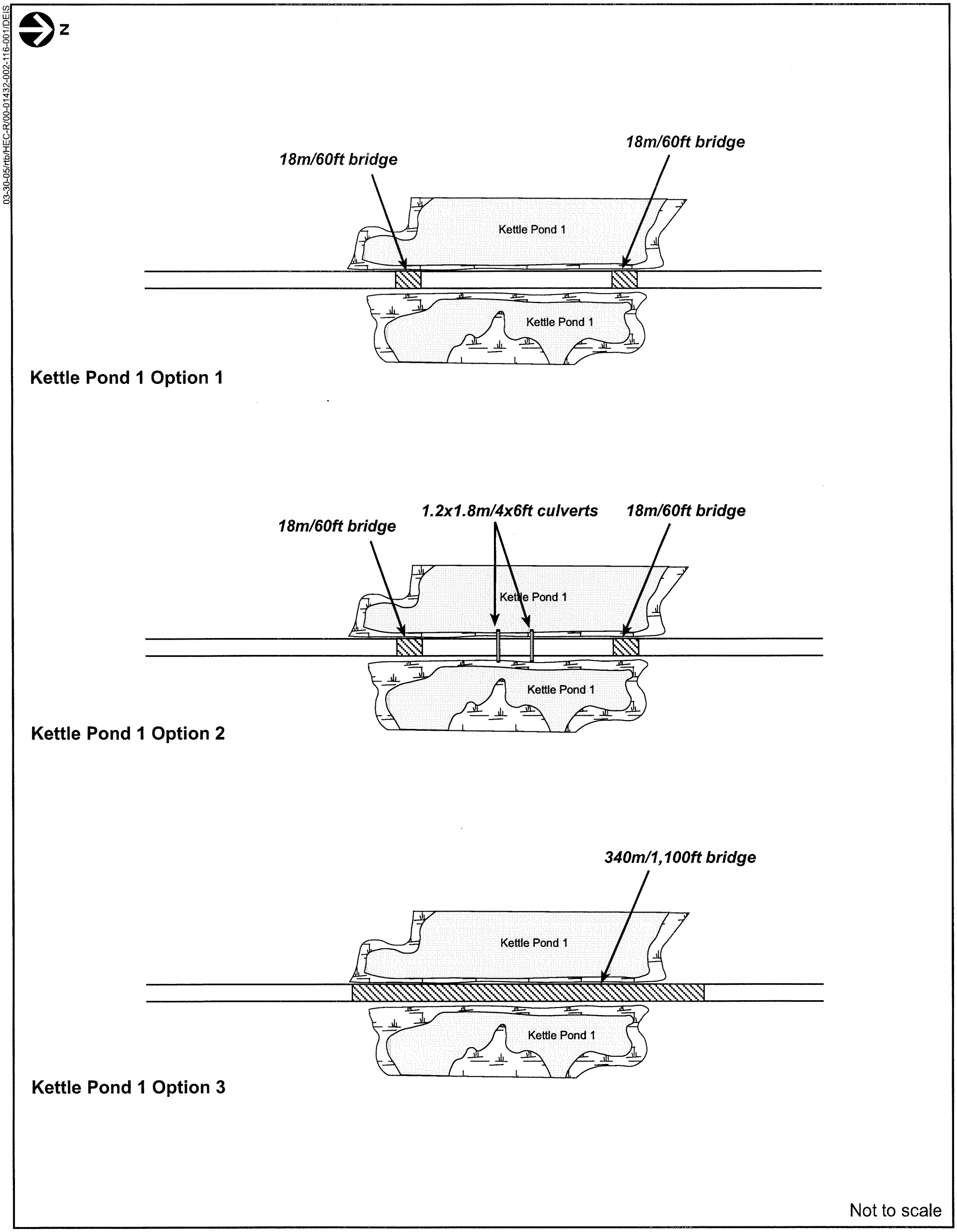

Figure 3.1-5. Kettle Pond 1 Wildlife Crossing Structure Options.

Kettle Pond 2 (approximate RP 42.5)

Three wildlife crossing structure options were screened at Kettle Pond 2 and are shown on Figure 3.1-6:

- Kettle Pond 2 Option 1
  - Two 18-meter (60-foot) single-span bridges
- Kettle Pond 2 Option 2
  - Two 18-meter (60-foot) single-span bridges
  - Two 1.2- X 1.8-meter (4- X 6-foot) culverts
- Kettle Pond 2 Option 3
  - One 340-meter (1,100-foot) multiple-span bridge.

Crow Creek (approximate RP 44.2)

Five wildlife crossing structure options were screened at Crow Creek and are shown on Figures 3.1-7 and 3.1-8:

- Crow Creek Option 1
  - One set of three 3- X 6-meter (10- X 20-foot) culverts
  - One set of two 3- X 6-meter (10- X 20-foot) culverts
- Crow Creek Option 2
  - One 23-meter (75-foot) single-span bridge
  - One 12-meter (40-foot) single-span bridge
- Crow Creek Option 3
  - Two 37-meter (120-foot) single-span bridges
- Crow Creek Option 4
  - One 183-meter (600-foot) multiple-span bridge
- Crow Creek Option 5
  - One 37-meter (120-foot) multiple-span bridge
  - One 46-meter (150-foot) multiple-span bridge.

3.1.3 Process for Developing and Screening Alternatives for the Urban Portion of the US 93 Ninepipe/Ronan Project Corridor

During the initial stages of the proposed project, a year was spent determining viable alternatives for the urban portion of the US 93 Ninepipe/Ronan improvement project. The City of Ronan played a major role in the design and configuration of the alternatives along with the three government proponents. Initially, a bypass highway was considered. It was taken off the table due to the City's opposition and the fact that Montana law does not allow the State to bypass the City without its consent. The City preferred to improve the existing highway.

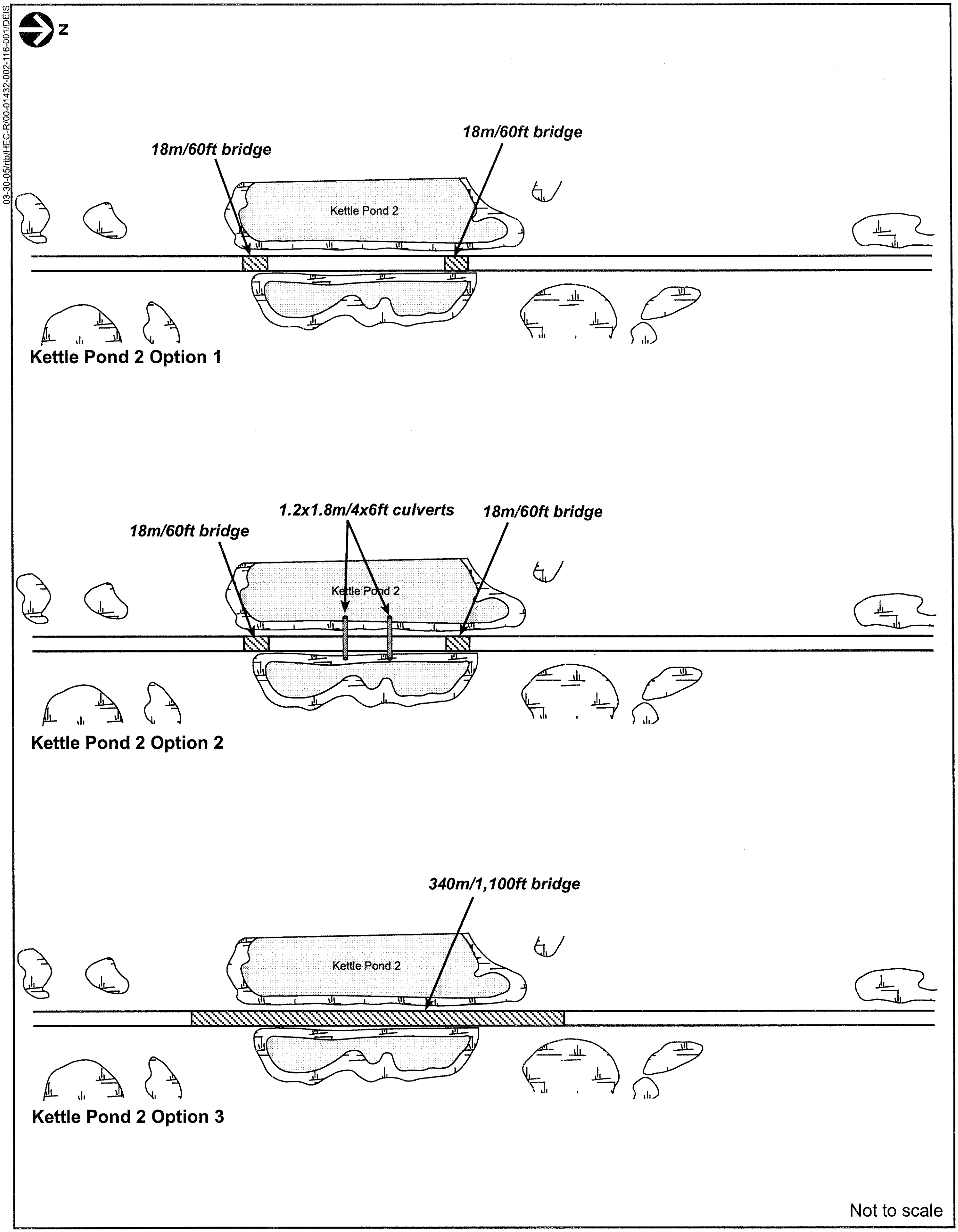

Figure 3.1-6. Kettle Pond 2 Wildlife Crossing Structure Options.

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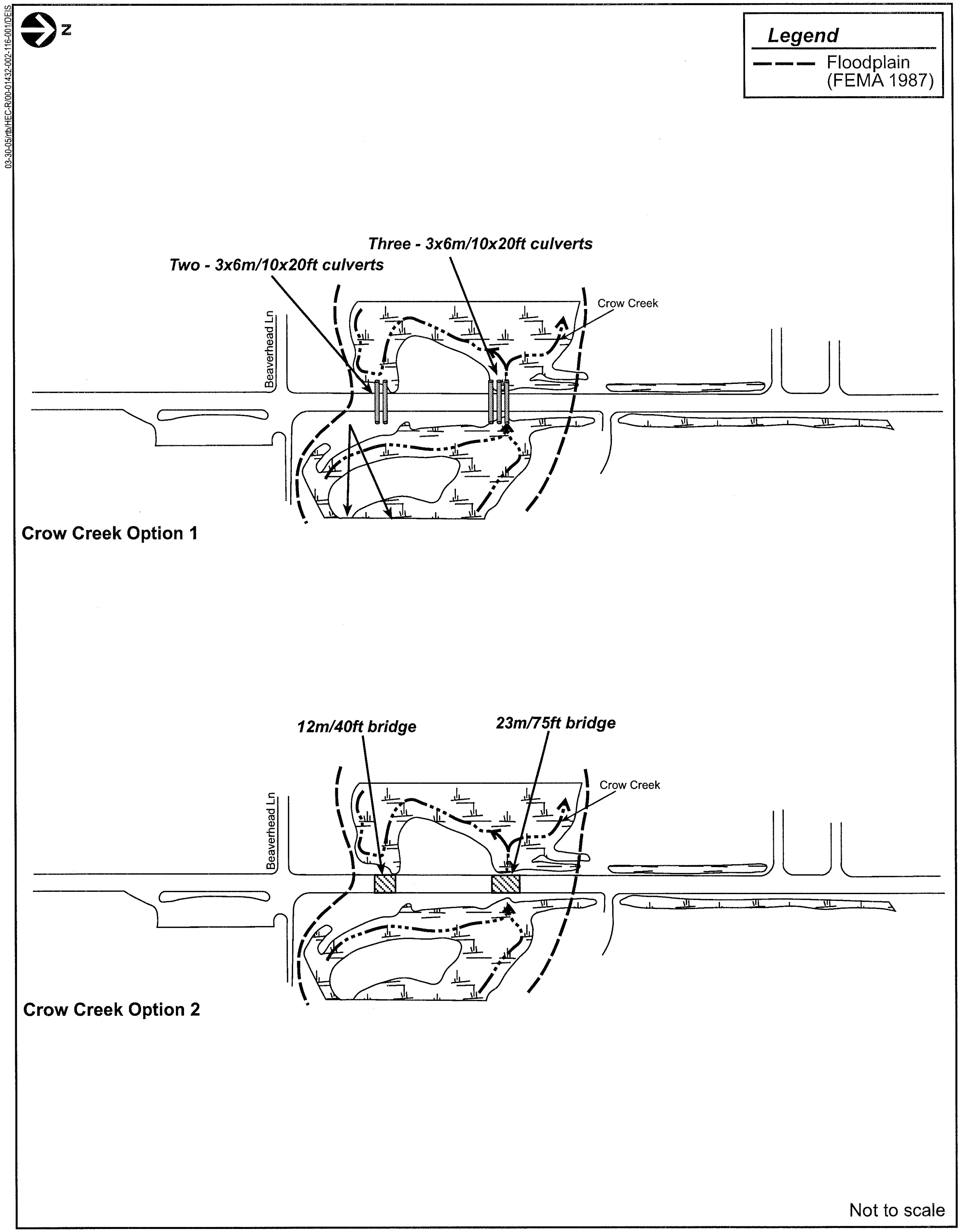

Figure 3.1-7. Crow Creek Wildlife Crossing Structure Options 1 and 2.

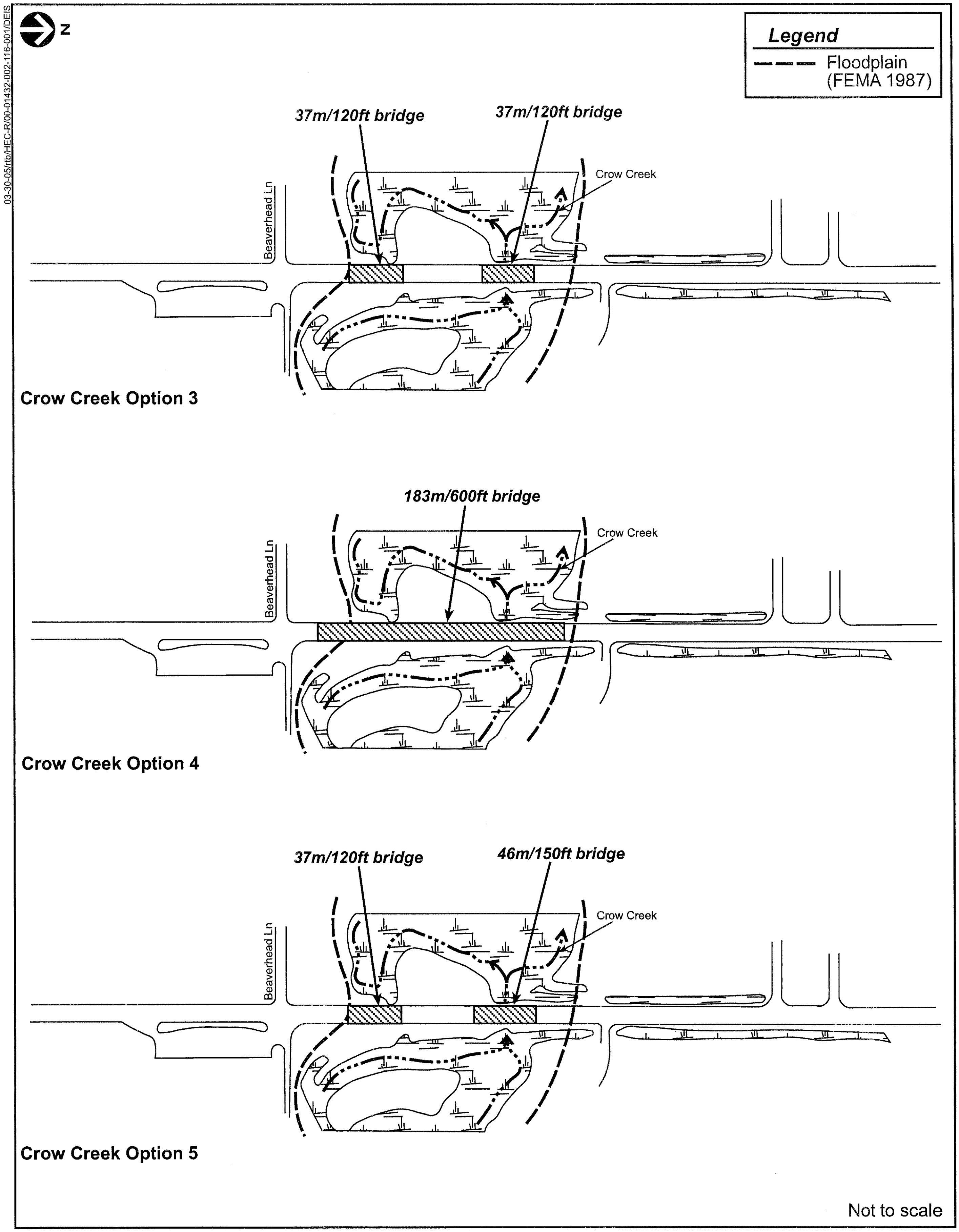

Figure 3.1-8. Crow Creek Wildlife Crossing Structure Options 3, 4, and 5.

After negotiations with CSKT and MDT, and utilizing input provided by the consultant team and the public, the City agreed to consider two couplet alternatives that utilize the existing highway for the northbound roadway and First Avenue SW for the southbound roadway. Final agreement was reached to include five action alternatives, in addition to the No-Action Alternative in the US 93 Ninepipe/Ronan SEIS. The action alternatives include two couplet alternatives and three alternatives that follow the existing US 93 highway. The urban action alternatives are described fully in *Section 3.2 Alternatives Considered in Detail*. Only the bypass highway alternative was eliminated from further consideration in the SEIS.

3.1.4 Process for Developing the Preferred Alternative

Due to the large number of alternatives and wide range of impacts being considered, the TDC determined that it would be beneficial to select a preliminary preferred alternative (PPA) prior to completing the draft SEIS. In addition, it was agreed that a preliminary preferred alternative would help in focusing comments during public review. A workshop for project proponents and cooperating agencies was held on April 9 and 10, 2003 to facilitate this selection process. Participants included representatives of MDT, FHWA, and CSKT as project proponents; the City of Ronan; Lake County; and the U.S. Army Corps of Engineers (USACE) and U.S. Fish and Wildlife Service (USFWS) as cooperating agencies. Technical summaries outlining the impacts of all the alternatives were provided to the attendees prior to the workshop, and the impacts were reviewed and discussed during the workshop. The three project proponents and the City of Ronan were then tasked with developing independent recommendations for the PPA for the rural and urban portions of the proposed project. Each group of representatives was provided with background materials and separate work areas for their discussions. Representatives of the resource agencies and members of the consultant team remained available to answer technical questions when requested to do so. When the three discussion groups (MDT/City of Ronan; FHWA/USACE/USFWS; and CSKT) had reached individual consensus, the larger workshop was reconvened for presentation by each group of their recommendations for the PPA. Where recommendations differed, those differences were discussed by the full workshop group in an effort to gain consensus on a PPA to carry forward for analysis in the draft SEIS.

Rural Preferred Alternative

A preliminary agreement was reached during the April 2003 workshop on the rural PPA for the rural portion of the proposed project. The rural PPA that was recommended at the workshop incorporated some design features that were not part of the other rural action alternatives, including a southbound passing lane in the Ninepipe segment. Subsequent discussions by the TDC resulted in further revisions for the recommended location and length of the southbound passing lane and for the length and location of the wildlife crossing structures at Ninepipe Reservoir and Crow Creek. The rural PPA included in the draft SEIS was Alternative Rural 10 (PPA) and was analyzed at an equal level of detail to the other rural action alternatives.

In choosing the preferred alternative, the project proponents needed to balance multiple factors, including vehicular safety and wildlife impacts among many others. All of the action alternatives include widening of the existing highway. There is no practicable alternative to increasing the capacity and safety in this corridor without widening the existing roadway. Wetland avoidance by realignment of the roadway would cause environmental impacts of substantial magnitude, mainly to wetlands, wildlife, wildlife habitat, and Section 4(f) resources. Of the rural alternatives, there are three alternatives (Rural 1, 2 and 10) that have slightly less total wetland impact than the preferred alternative, Rural 3. Alternatives Rural 1 and 2 do not adequately address the capacity and safety needs of the corridor, and Alternative Rural 10 was determined to have greater potential impacts on wildlife, which was objectionable to the resource agencies. Alternative Rural 7, which would have fewer permanent impacts but greater temporary impacts, was determined to be not practicable due to greatly increased cost, an estimated $162 million more than the final preferred alternative, and subsequent project delays and impacts to safety.

During the public comment period following publication of the draft SEIS, 43 agency and public comments were received that objected to the inclusion of a southbound passing lane through the Ninepipe Wildlife Refuge (comments received on the draft SEIS are included in Appendix J). A workshop attended by the project proponents was held on December 1, 2006, to discuss comments received and formulate options for a preferred alternative for the final SEIS. Based on these discussions, the TDC and POG convened on January 11, 2007, and February 7, 2007, respectively, to discuss recommendations for the preferred alternative (PA) for inclusion in the final SEIS. The three project proponents formally endorsed Alternative Rural 3 as the final rural preferred alternative at that time as well as the inclusion of a separated bicycle/pedestrian path for the entire rural portion of the project contingent on funding and maintenance. The decision to remove the caveats of funding and maintenance was agreed upon by MDT and CSKT in May 2007 and these caveats are no longer considered requirements for inclusion of the separated bicycle/pedestrian path for the entire rural portion of the project. A complete description of the rural PA is included in *Section 3.2.2 Rural Action Alternatives*.

Lane Configuration

The primary guiding principal for development of alternatives for the improvement project was to weigh roadway safety and capacity improvement against other environmental impacts. Alternatives Rural 1 through Rural 9 provide some improvement to roadway safety, with the greatest safety improvement obtained with a four-lane roadway. Although accident statistics suggest that the safety of two-lane highways is substantially improved when a passing opportunity is provided every 3.2 to 4 kilometers (2 to 2.5 miles), the project proponents and representatives to the TDC agreed during the development of rural lane configuration alternatives that protection of the sensitive natural resources of the Ninepipe segment was an important objective. Therefore, passing lanes were not included in the two lane alternatives Rural 1 through Rural 7 in the portion of the Ninepipe segment extending from Olson Road/Gunlock Road to Mollman Pass Trail. However, ongoing discussions of roadway safety included the need to provide a passing opportunity no less than every 6.4 kilometers (4 miles) and prompted the project proponents to reconsider inclusion of a southbound passing lane in the rural PPA along with additional design measures to avoid and/or minimize impacts to adjacent natural resources. The analysis of traffic accident data in the rural portion of the US 93

Ninepipe/Ronan project corridor indicated that the greatest need for safety improvement, other than the northbound climbing/passing lane on Post Creek Hill was a southbound passing lane located somewhere between West Post Creek Road/East Post Creek Road and MT 212. The rural PPA, Alternative Rural 10, was crafted to gain both safety and capacity improvements without additional impacts to natural resources. However, as discussed above, after receiving a number of public comments against the inclusion of a southbound passing lane in this section of road, project proponents agreed on a final preferred alternative, Alternative Rural 3. Alternative Rural 3 was chosen as the preferred alternative because it meets the project objectives of improving the capacity and safety while preserving the environmental values of the area. The proponents determined that neither the passing lane through the Ninepipe segment nor four lanes south of Brooke Lane were consistent with that goal. Wildlife Crossings

Participants at the April 2003 workshop recommended configurations for the wildlife crossing structures for the rural PPA, which were later modified by the TDC. These recommendations have not been changed under the final preferred alternative and are described under the heading *Wildlife Crossing Structures* in *Section 3.2.2 Rural Action Alternatives* and are considered in conjunction with all action alternatives.

Bicycle/Pedestrian Path

Following publication of the draft SEIS more than 100 comments requesting the addition of a separated bicycle/pedestrian path were received (comments received on the draft SEIS are included in Appendix J). As a result of these comments, several options were examined to provide a separated bicycle/pedestrian path for portions of the project south of Buchanan Street in Ronan. Table 3.1-2 summarizes the costs and impacts associated with the bicycle/pedestrian path options considered. After review of the proposed options the project proponents endorsed the inclusion of a bike path from Red Horn/Dublin Gulch Road to Buchanan Street in Ronan in the final PA. Correspondence with Lake County and the City of Ronan regarding the bicycle/pedestrian pathway is included in Appendix L.

Urban Preferred Alternative

Consensus was not reached during the April 2003 workshop on a PPA for the urban portion of the proposed project. The City of Ronan preferred Alternative Ronan 2 (four lanes with a continuous two-way left-turn lane) and CSKT preferred Alternative Ronan 4 (a couplet with wide neighborhood buffer). MDT and FHWA wanted to achieve consensus of all parties on an urban PPA. At the conclusion of the April 2003 workshop, the participants agreed to ongoing discussions of a potential compromise alternative with modifications of Alternative Ronan 1, including a more extensive planted median, more restricted left turns or U-turns, and consideration of additional small park features.

Table 3.1-2. Estimated costs and impacts of separated bicycle/pedestrian path options considered for the US 93 Ninepipe/Ronan improvement project.

Option		Cost ($ Million - Inflated to 2012)	Wetland Impacts [a] hectares (acres)	Additional R/W Required hectares (acres)
No.	Description			
1	Red Horn/Dublin Gulch Road to Buchanan in Ronan (included in final PA)	$ 12,200,000	1.7 (4.1)	0.2 (0.5)
2	MT 212/Kicking Horse Road to Buchanan in Ronan	$ 4,000,000	0.4 (0.9)	0
3	Mollman Pass Trail to Buchanan in Ronan	$ 2500,000	0.2 (0.6)	0
4	Beaverhead Lane (Scenic Viewpoint) to Buchanan in Ronan	$ 2,400,000	0.1 (0.2)	0
5	Little Marten/Timber Lane Road to Buchanan in Ronan	$ 200,000	0	0

[a] Wetland impacts are “temporary impacts” that would be converted to “permanent impacts”.

Additional coordination meetings were conducted pursuant to an agreement between the project proponents and the City of Ronan. The City asked for additional data on the economic impacts of couplets, as well as additional visual aids depicting the affects of each urban alternative on traffic LOS. A Ronan City Council meeting was held on May 12, 2003, where a computerized traffic simulation model of traffic operations in the design year for the alternatives was presented. This presentation showed substantial traffic backups southbound at the Round Butte Road/Terrace Lake Road signalized intersection and northbound at the Eisenhower Street signalized intersection. This presentation and the resulting discussion, spurred the City to begin concentrated discussions with MDT about the feasibility of the couplet. These discussions continued through the summer of 2003 as the City documented their concerns and coordinated possible mitigation measures with the MDT. Based on the effects demonstrated by the traffic simulation model and ongoing discussions with MDT, the Council agreed that Alternative Ronan 4 (a couplet with neighborhood buffers) could potentially be acceptable to the City. The Council directed the Mayor to contact various business and property owners to evaluate community concerns. If community concerns could be alleviated or mitigated sufficiently, then the Council agreed that it could support selection of Alternative Ronan 4 as the urban PPA to be carried forward for analysis in the US 93 Ninepipe/Ronan draft SEIS. The Mayor met personally with community members who had expressed concerns about the couplet alternatives and presented those concerns to representatives of MDT, and CSKT on September 4, 2003. The meeting participants agreed the concerns could be alleviated and/or mitigated sufficiently to allow identification of Alternative Ronan 4 as the urban PPA. This was documented with a September 19, 2003, letter on behalf of the proponents to the Mayor (Appendix K).

The Advisory Committee (AC)/Inter-Disciplinary Team (IDT) convened on September 30, 2003, and provided a formal recommendation to the proponents to proceed with the draft SEIS using Alternative Rural 10 and Alternative Ronan 4 as the rural and urban PPAs, respectively, for the rural and urban portions of the proposed project. This recommendation was formally endorsed by the three project proponents.

Following publication of the draft SEIS, few comments were received regarding the urban PPA. The TDC on January 11, 2007, reaffirmed its support of Alternative Ronan 4. The City of Ronan also reaffirmed its support by letter dated February 6, 2007. At its February 7, 2007 meeting, the POG discussed recommendations for the preferred alternative for inclusion in the final SEIS and the three project proponents formally endorsed Alternative Ronan 4 as the final urban preferred alternative. The preliminary designs presented in the draft SEIS incorporated a separate bicycle/pedestrian path for the north portion of the project from Baptiste Road/Spring Creek Road (where it would connect to the path extending south from Polson and Pablo) to Ronan at US 93 and Buchanan Street. As a result of comments received on the draft SEIS a separated path south to Timber Lane Road was endorsed by the POG to be added to the urban preferred alternative, Ronan 4, and a connecting separated path throughout the remainder of the project corridor was also added to the rural preferred alternative, Rural 3, all subject to additional funding and maintenance. Removal of the caveats for additional funding and maintenance was agreed to at a later date. A letter dated February 6, 2007 from the Mayor of Ronan reiterated the City's endorsement of Alternative Ronan 4 as the PA (Appendix K). A complete description of the urban PA is included in *Section 3.2.3 Urban Action Alternatives*.

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3.2 Alternatives Considered in Detail

3.2.1 Definition of Study Area and Assessment Methodology

The US 93 Ninepipe/Ronan project corridor has been divided into two major portions—the rural portion and the urban portion. The rural portion of the proposed project is further divided into two segments—the Post Creek Hill segment and the Ninepipe segment (Figure 3.2-1). These corridor divisions, which are described more fully below, were selected based on the unique roadway characteristics of the existing roadway in each segment and the unique array of potential solutions for transportation concerns in each segment. The project proponents (MDT, FHWA, and CSKT) comprising the POG determined that splitting the alternatives into segments would aid in finally determining the preferred alternative to be included in the final SEIS for the US 93 Ninepipe/Ronan improvement project. The proponents agreed that the preferred alternative may be composed of a recombination of the roadway treatments of the many alternatives included in the draft SEIS and/or additional treatments necessary to adequately respond to comments received from circulation of the draft SEIS to the cooperating agencies and the public.

The rural portion of the project corridor extends from the Dublin Gulch Road/Red Horn Road intersection (approximate [RP] 37.1) northerly to the Ronan south city limits (approximate RP 46). Impacts within the rural portion are divided into two additional segments; the Post Creek Hill segment and the Ninepipe segment. The Post Creek Hill segment extends from Dublin Gulch Road/Red Horn Road on the south to the top of Post Creek Hill (approximate RP 40), just south of Olson Road/Gunlock Road. The Ninepipe segment then extends from the top of Post Creek Hill northerly to the south city limits of Ronan.

The urban portion extends from the south city limits of Ronan northerly through Ronan to the Baptiste Road/Spring Creek Road intersection (approximate RP 48.3), which is the end of the proposed project. The termini of the US 93 Ninepipe/Ronan improvement project were defined in the US 93 Corridor MOA. These termini were established to encompass a comprehensive analysis of alternate routes and their environmental effects through the Ninepipe glacial pothole wetland complex and not foreclose a possible bypass of Ronan.

For Alternatives Rural 4, 5, 6 and 7, a southbound passing lane is proposed at the south end of the project corridor in the vicinity of Post Creek, extending south beyond the project limits. This southbound passing lane is intended to connect to a southbound passing lane beginning approximately 300 meters (980 feet) south of the project limits that is being constructed as a part of another project. If any of these alternatives are chosen, the continuous passing lane would be constructed as a separate project or as part of the Ninepipe/Ronan project. The construction of this continuous passing lane would occur within the right-of-way evaluated in the Reevaluation of the Final EIS and Section 4(f) Evaluation (FHWA and MDT 2001) and no additional impacts to wetlands or other resources would occur.

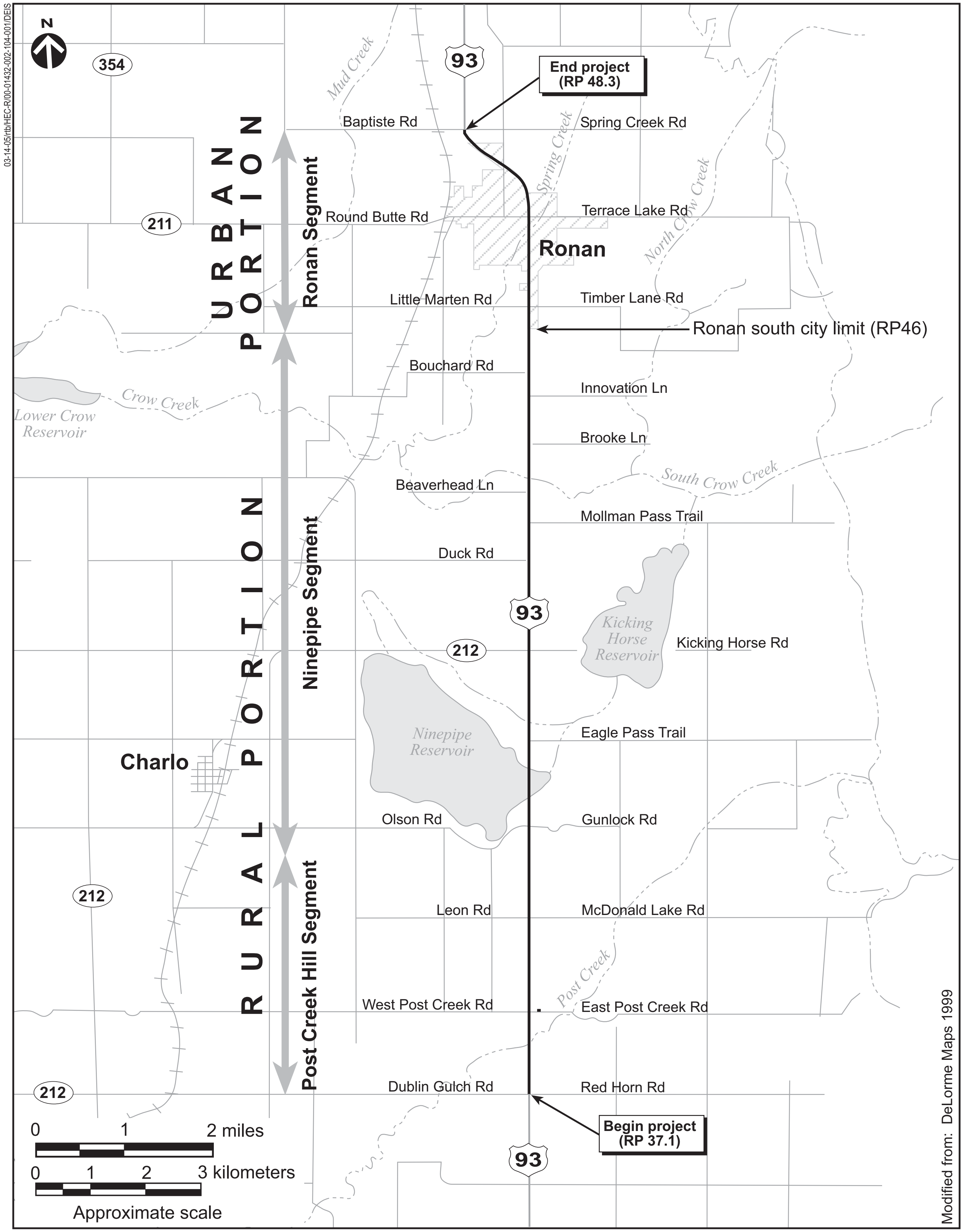

Figure 3.2-1. Study area for the US 93 Ninepipe/Ronan improvement project.

3.2.2 Rural Action Alternatives

Design Assumptions Common to All of the Rural Action Alternatives, Except Alternative Rural 7

All of the rural action alternatives, except the Rural 7 alternative, would include reconstruction of the existing roadway. The reconstruction would provide for curvilinear horizontal alignment roughly following the existing roadway to minimize impacts to adjacent lands. A curvilinear alignment is one that includes curves and meanders to follow the form of the landscape. The most noteworthy application of curvilinear alignment for the US 93 Ninepipe/Ronan project alternatives is in the Post Creek Hill area between Post Creek and Gunlock Road. The extent of curvilinear deviation from the existing roadway is depicted on maps in Appendix E.

Included would be construction of roadway shoulders of sufficient width to accommodate bicyclists and pedestrians. The design speed would be 100 kilometers per hour (km/h) (60 miles per hour [mi/h]). Channelization and left-turn lanes would be constructed at all public road intersections: Dublin Gulch Road/Red Horn Road; West Post Creek Road/East Post Creek Road; Leon Road/McDonald Lake Road; Olson Road/Gunlock Road; Eagle Pass Trail; MT 212/Kicking Horse Road.; Mollman Pass Trail; Beaverhead Lane; Brooke Lane; Innovation Lane; and Bouchard Road. Left-turn lanes currently exist at Dublin Gulch Road/Red Horn Road; MT 212/Kicking Horse Road and Mollman Pass Trail (southbound). 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 crossing waterways, streams, and riparian areas 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 feet), but with 3.6 meters (12 feet) desirable for the passage of large animals. The wildlife crossing structures associated with alternatives Rural 1 through Rural 6 and Rural 8 through Rural 10 are described below under the heading *Wildlife Crossing Structure Options*.

The rural action alternatives also include several measures incorporated in the design to avoid and minimize impacts on ecological and recreational features in the corridor. These measures include:

- The proposed preliminary design reviewed the possibility for steepened roadway slopes to minimize impacts on key features in the corridor. Proposed approximate locations are shown in Appendix A. During final design, the areas will be further investigated to determine if the proposed preliminary design is practicable and feasible. If during final design there are areas that slopes can be safely steepened, they would be incorporated into the proposed project's plans. (Note: Slope steepening would require approval from the MDT Highways Engineer and FHWA through the design exceptions process).
- Adding culverts and increasing bridge lengths and culvert sizes at major wetland and stream crossings to improve hydrologic connections.

- Proposing retaining walls through the center of the two kettle ponds to minimize fill.
- Restoring wetlands and streams underneath wildlife crossing structures.

Lastly, all slopes would follow the slope tables for rural principal arterials as shown in the MDT Design Standards, except as modified for the proposed project. These standards and exceptions, entitled *MDT Standards and Modifications,* are included in Appendix A. All of the rural action alternatives, except Alternative Rural 7, represent various combinations of the following three typical roadway cross-sections.

Two-Lane Roadway

The two-lane roadway is undivided with one travel lane in each direction, each 3.6 meters (12 feet) wide with 2.4-meter (8-foot) shoulders (Figure 3.2-2). The typical pavement width is 12 meters (40 feet). Auxiliary lanes may be added where needed for left-turn lanes and two-way left-turn lanes. Where auxiliary lanes are provided, turning lanes are typically 4.2 meters (14 feet) wide. The minimum desirable and proposed right-of-way width is 49 meters (160 feet). However, narrower widths have been used at selected sensitive locations to keep the new roadway within the existing right-of-way to minimize impacts. In isolated, less-sensitive areas, wider right-of-way widths could be needed to accommodate large excavations or embankments for the planned roadway.

Also considered is a variation of the two-lane roadway that includes one 3.6-meter (12-foot) passing lane. Where the passing lane is added, the minimum desirable and proposed right-of-way width would increase to 52 meters (174 feet) (Figure 3.2-2), with some narrower areas at selected sensitive locations to keep the new roadway within the existing right-of-way. In isolated, less-sensitive areas, wider right-of-way widths could be needed to accommodate large excavations or embankments for the planned roadway.

The two-lane roadway, either with or without a passing lane, corresponds to Lane Configuration A in the US 93 Evaro to Polson FEIS.

Four-Lane Undivided Roadway

The four-lane undivided roadway includes two travel lanes in each direction, each 3.6 meters (12 feet) wide with 2.4-meter (8-foot) shoulders (Figure 3.2-3). The typical pavement width is 19.2 meters (64 feet). At intersections where left-turn lanes are provided, the typical pavement width is 23.4 meters (78 feet) to accommodate a 4.2-meter (14-foot) turning lane. The minimum desirable and proposed right-of-way width is 55 meters (180 feet) with some narrower areas at selected sensitive locations to minimize impacts. In isolated, less-sensitive areas, wider right-of-way widths could be needed to accommodate large excavations or embankments for the planned roadway.

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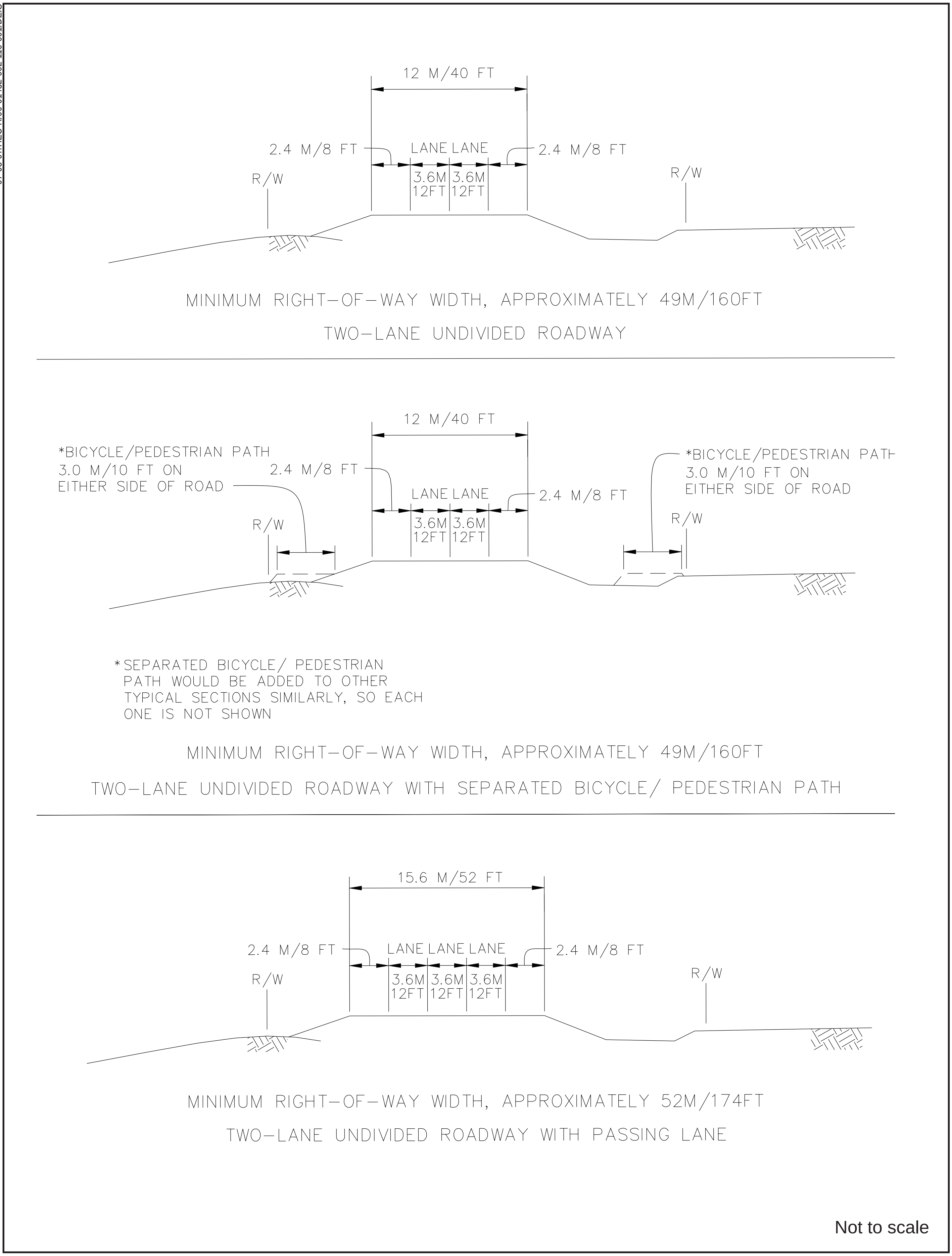

Figure 3.2-2. **Typical rural roadway cross-section for a two-lane undivided roadway.**

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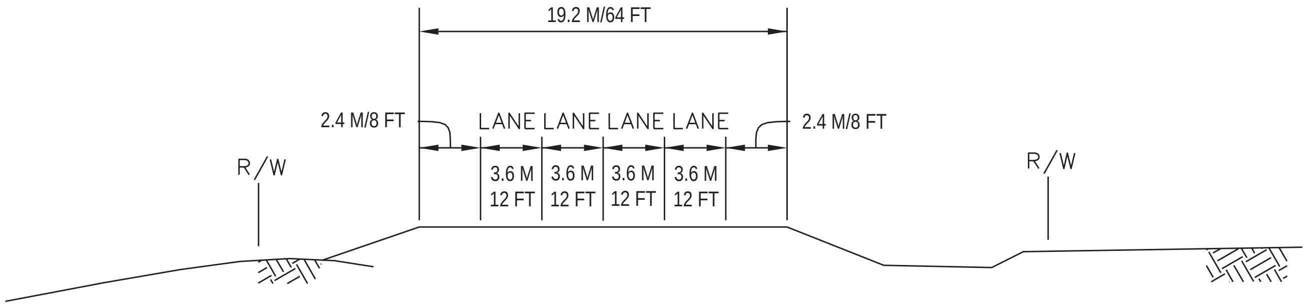
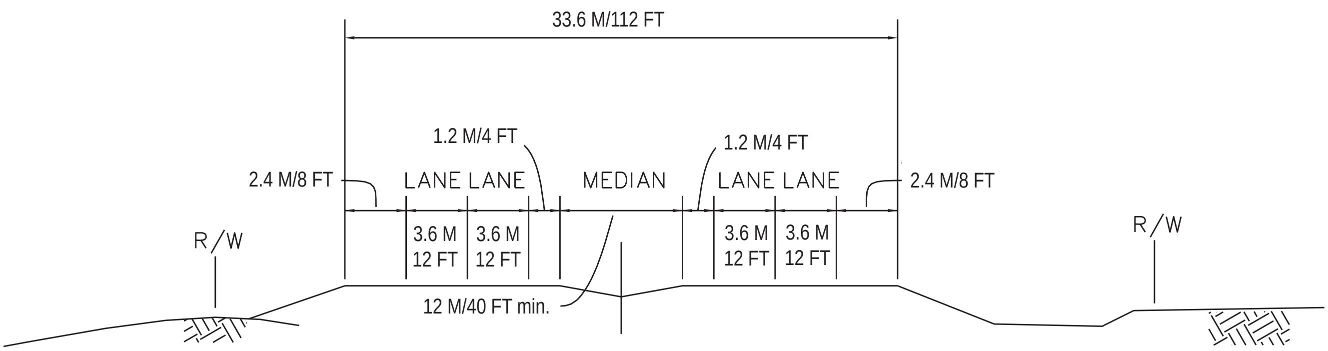


MINIMUM DESIRABLE RIGHT-OF-WAY WIDTH, APPROXIMATELY 55M/180FT

FOUR-LANE UNDIVIDED ROADWAY



MINIMUM DESIRABLE RIGHT-OF-WAY WIDTH, APPROXIMATELY 67M/220FT

FOUR-LANE DIVIDED ROADWAY

Not to scale

Figure 3.2-3. Typical rural roadway cross-sections for a four-lane undivided roadway and a four-lane divided roadway.

This alternative corresponds to Lane Configuration B in the US 93 Evaro to Polson FEIS.

Four-Lane Divided Roadway

The four-lane divided roadway (Figure 3.2-3) includes two travel lanes in each direction, each 3.6 meters (12 feet) wide, a 12-meter (40-foot) depressed center median, and 2.4-meter (8-foot) outside shoulders and 1.2-meter (4-foot) inside shoulders. At intersections where left-turn lanes are provided, the turning lane would be located within the center median area. The typical cross-section width is 33.6 meters (112 feet) and the minimum desirable and proposed right-of-way width is 67 meters (220 feet) with some narrower areas at selected sensitive locations to minimize impacts. In isolated, less-sensitive areas, wider right-of-way widths could be needed to accommodate large excavations or embankments for the planned roadway. This alternative corresponds to Lane Configuration D in the US 93 Evaro to Polson FEIS.

Also considered is a variation of the four-lane divided roadway that includes a two-lane roadway in each direction to create independently aligned southbound and northbound travel lanes. This variation is used in the Post Creek Hill segment for Alternative Rural 6, with a maximum right-of-way width of approximately 174 meters (570 feet).

Lane Configurations of the Alternatives in the Rural Portion of the Project – Dublin Gulch Road/Red Horn Road to South Ronan City Limits

No-Action Alternative

The No-Action Alternative would perpetuate the existing highway with no substantial improvements. Most of the existing US 93 through the rural portion of the proposed project consists of two 3.6-meter (12-foot) travel lanes with shoulders varying in width from approximately 0.3 meters (1.0 feet) to 2.4 meters (8 feet). Any improvements to the existing system would be considered on individual merits and could include spot safety improvements, channelization for turning lanes at intersections, climbing lanes, and signalization as dictated during the coming years. For example, MDT had been planning to construct a northbound climbing lane at Post Creek Hill as a safety improvement project, but has deferred that project until a determination on alternatives is completed for the proposed project. If the No-Action Alternative was selected, it is quite possible that this climbing lane project would resurface as a safety improvement project on its own merit.

The following sections provide information on combinations of lane configurations analyzed in the US 93 Ninepipe/Ronan draft SEIS rural action alternatives. The proposed locations and actual lengths of the various lane configuration treatments are approximate and would be determined during final design.

Action Alternatives

The lane configurations for the rural portion of the project corridor are shown on Figures 3.2-4 and 3.2-5 and are described in detail below.

Alternative Rural 1

Alternative Rural 1 consists entirely of the two-lane roadway typical cross-section (Figure 3.2-2).

Alternative Rural 2

Alternative Rural 2 is composed of the two-lane roadway typical cross-section with the addition of the following:

- A 2.9-kilometer (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 just south of Olson Road/Gunlock Road (RP 40).

Alternative Rural 3 (Preferred Alternative)

Alternative Rural 3 (PA) is composed mostly of two-lane roadway, with the addition of a separated bicycle/pedestrian path (Figure 3.2-2), a passing lane (Figure 3.2-2), and a section of four-lane divided roadway (Figure 3.2-3), including the following:

- A 2.9-kilometer (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)
- A 2.2-kilometer (1.4-mile) section of four-lane divided roadway from Brooke Lane (RP 44.6) to the south Ronan city limits (RP 46).
- A 3.0-meter (10-foot) wide separated bicycle/pedestrian path throughout the rural portion of the project (Figure 3.2-6).

This separated bicycle/pedestrian path has been added to Alternate Rural 3 (Preferred Alternative) in response to public comments received from circulation of the draft SEIS. The path will be on an independent alignment within the highway right-of way and will generally be located near the right-of-way line as shown on Figure 3.2-2. At culverts the path will gradually traverse up the fill slope to go over the extended culvert and gradually return to a location near the right-of-way line. At structures the path will gradually traverse up the fill and cross the widened structure with a barrier between the roadway and path and then gradually traverse down the fill slope to its prevailing location near the right-of-way line. Walls will be required at some locations to keep within existing right-of-way while the roadway and path are passing through the Wildlife Management Lands and Wildlife Refuge. While traversing steep slopes and over culverts, bicycle/pedestrian fencing will be required to protect bicyclists and pedestrians from injury of falling down the slopes or into culvert openings. The path has been located on the east side or west side of the roadway as shown on Figure 3.2-2 to minimize wetland impacts and additional right-of-way requirements. The crossings from one side to the other are achieved by using undercrossing structures at locations where topography and highway vertical alignment provide sufficient clearances.

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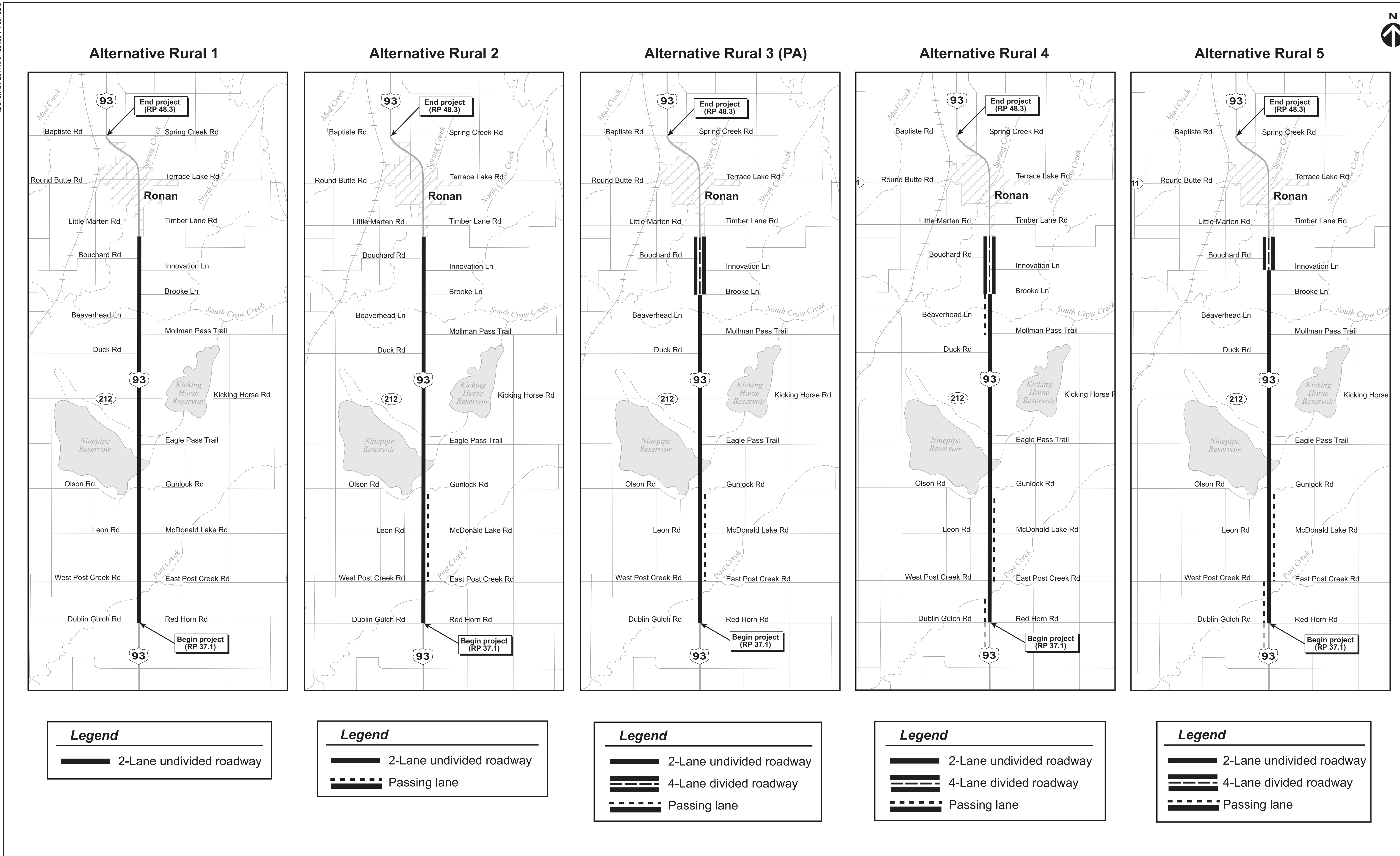

Figure 3.2-4. Alternatives Rural 1 through Rural 5 within the rural portion of the US 93 Ninepipe/Ronan project corridor.

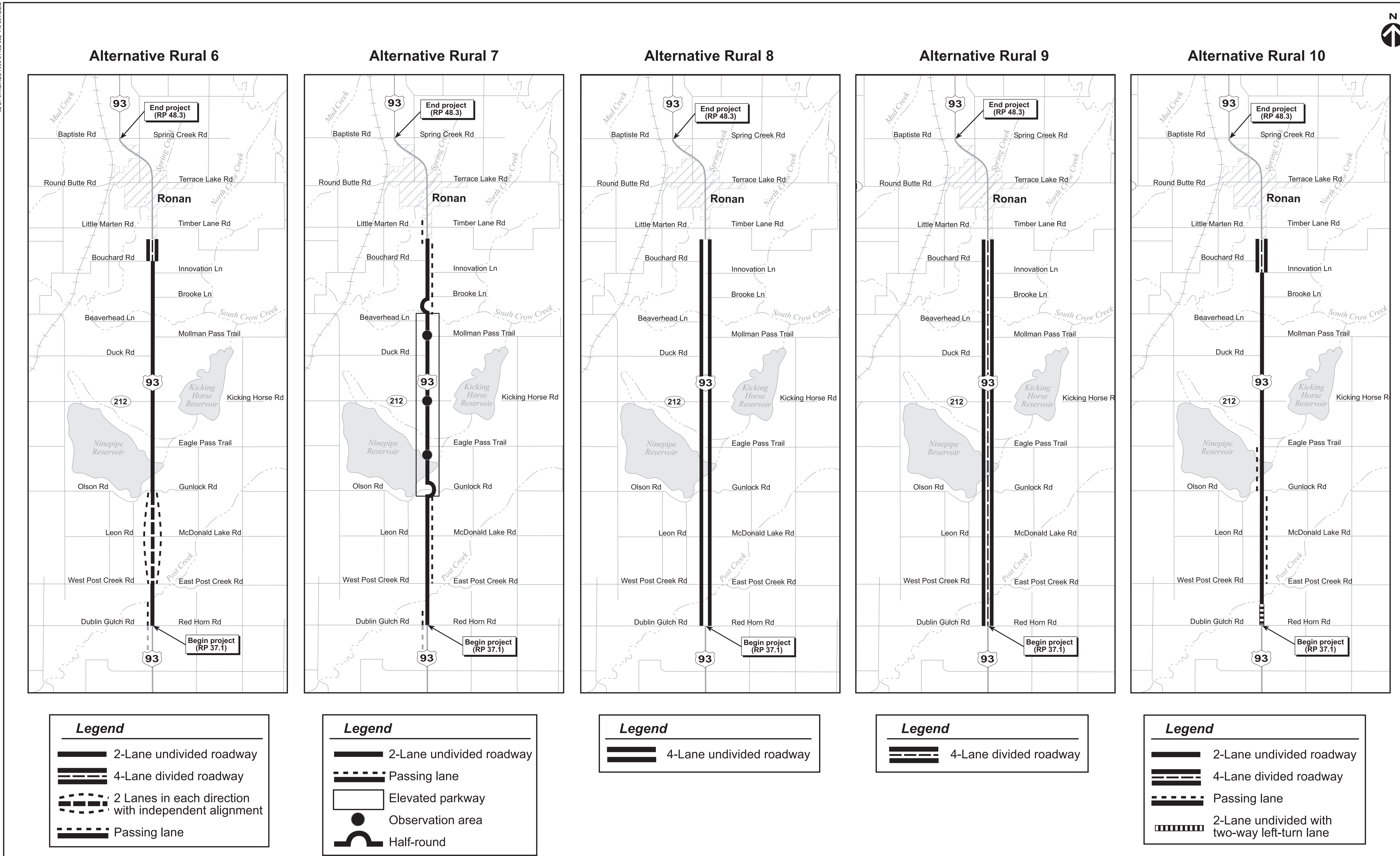

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Figure 3.2-5. Alternatives Rural 6 through Rural 10 within the rural portion of the US 93 Ninepipe/Ronan project corridor.

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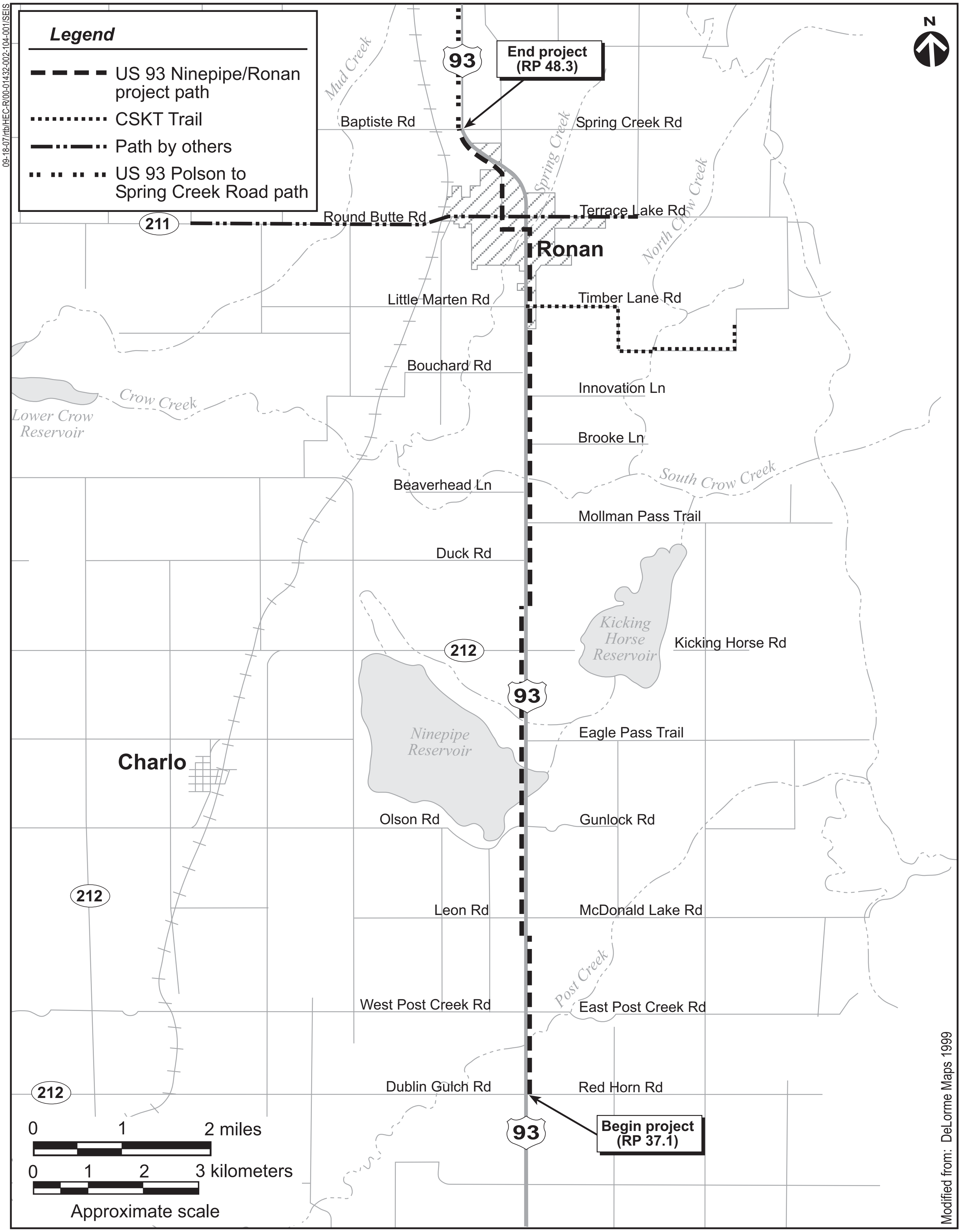

Figure 3.2-6. Separated bicycle/pedestrian path within the US 93 Ninepipe/Ronan project corridor.

The separated bicycle/pedestrian path is specifically designed as an addition to Alternate Rural 3, which was chosen as the rural preferred alternative independent of the bicycle/pedestrian path decision. Therefore, designs and estimated costs were not determined for adding the path to the other rural alternatives. The location and costs would be similar for Alternatives Rural 1 through 6 and for Alternative Rural 10. There would be considerable differences for Alternative Rural 7, due to significant additional costs for structure widening. To add a separated bicycle/pedestrian path to the four-lane alternatives, Rural 8 and 9 would require more costly structures at the crossing locations.

Alternative Rural 4

Alternative Rural 4 consists of a two-lane roadway through the middle section of the alternative, with the addition of the following passing lanes and a section of four-lane divided roadway at the north end:

- A 1.6-kilometer (1.0-mile) southbound passing lane extending from south of the project limits to Post Creek (RP 37.7)
- A 2.9-kilometer (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)
- A 1.6-kilometer (1.0-mile) southbound passing lane from Mollman Pass Trail (RP 43.6) to Brooke Lane (RP 44.6)
- A 2.2-kilometer (1.4-mile) four-lane divided roadway from Brooke Lane (RP 44.6) to the south Ronan city limits (RP 46).

Alternative Rural 5

Alternative Rural 5 is composed of a two-lane roadway through the middle part of the alignment, with the addition of passing lanes at the south end and four-lane divided roadway at the north end:

- A 2.1-kilometer (1.3-mile) southbound passing lane extending from south of the project limits to West Post Creek Road/East Post Creek Road (RP 38.2)
- A 2.9-kilometer (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)
- A 1.5-kilometer (0.9-mile) four-lane divided roadway section from Innovation Lane (RP 45.1) to the Ronan south city limits (RP 46).

Alternative Rural 6

Alternative Rural 6 consists of a two-lane roadway through the middle section of the alternative, with a passing lane and four-lane divided roadway near the south end and four-lane divided roadway at the north end of the alignment:

- A 1.6-kilometer (1.0-mile) southbound passing lane from south of the project limits to Post Creek (RP 37.7)
- A 2.9-kilometer (1.8-mile) section of four-lane divided roadway with independently aligned southbound and northbound travel lanes from West Post Creek Road/East Post Creek Road (RP 38.2) to the top of Post Creek Hill (RP 40)
- A 1.1-kilometer (0.7-mile) four-lane divided roadway from Bouchard Road (RP 45.3) to the Ronan south city limits (RP 46).

Alternative Rural 7

Alternative Rural 7 is a two-lane undivided roadway similar to the typical two-lane undivided roadway configuration described previously, with the exception of wider 3.0-meter (10-foot) shoulders instead of the 2.4-meter (8.0-foot) shoulders used for the other rural action alternatives (Figure 3.2-7). In addition to the two-lane cross-section with wide shoulders that comprises this alternative, the following passing lanes are included:

- A 1.3-kilometer (0.8-mile) southbound passing lane from south of the project limits (RP 36.7) to approximately 180 meters (600 feet) south of Post Creek (RP 37.5)
- A 2.9-kilometer (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)
- A 2.1-kilometer (1.3-mile) northbound passing lane from RP 44.2 (north of Crow Creek) to RP 45.5 (north of Bouchard Road)
- A 1.0-kilometer (0.6-mile) southbound passing lane from RP 45.5 (north of Bouchard Road) to RP 46.1 just north of Little Marten Road/Timber Lane Road.

The horizontal alignment of the Rural 7 alternative generally follows the existing alignment, similar to the other rural action alternatives. The vertical alignment of Alternative Rural 7 is a departure from the other rural action alternatives, as the major structures are much more extensive. There would be a major structure at Post Creek, similar to the other rural action alternatives. However, from approximately Olson Road/Gunlock Road (RP 40) to just north of

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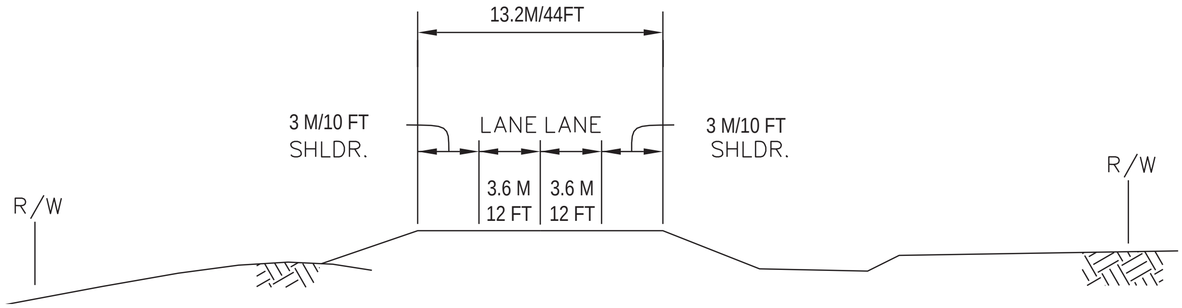
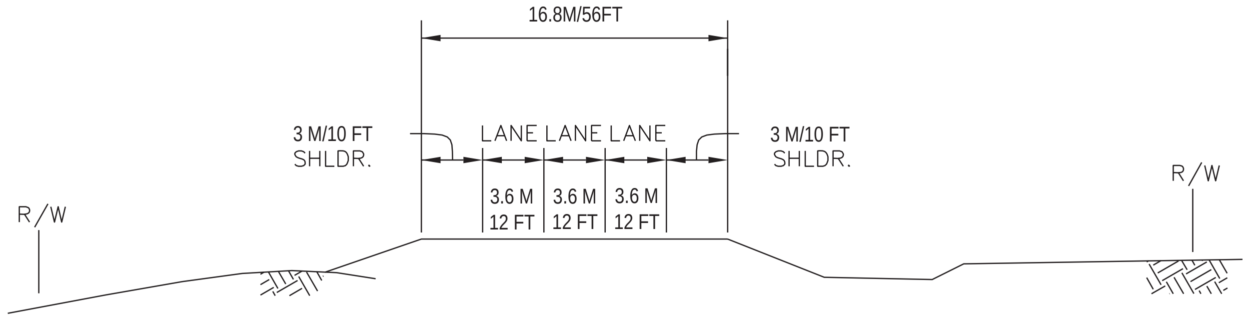


MINIMUM RIGHT-OF-WAY WIDTH, APPROXIMATELY 49M/160FT

TWO-LANE UNDIVIDED ROADWAY WITH WIDE SHOULDERS



MINIMUM RIGHT-OF-WAY WIDTH, APPROXIMATELY 55M/180FT

TWO-LANE UNDIVIDED ROADWAY WITH PASSING LANE AND WIDE SHOULDERS

Not to scale

Figure 3.2-7. Typical roadway cross-section for Alternative Rural 7, a two-lane undivided roadway with wide shoulders.

Crow Creek (RP 44.3), the roadway would be nearly entirely on elevated structures. This section of Alternative Rural 7 is referred to as the “elevated parkway” and would be approximately 6.9-kilometers (4.3-miles) in length. Passage of large animals throughout the lengths of these structures is the objective. Left-turn lanes would be provided only at Olson Road/Gunlock Road, Eagle Pass Trail, MT 212/Kicking Horse Road, and Mollman Pass Trail, and all other public roads would be terminated. All private accesses (i.e., driveways) would be right-turn in and right-turn out only, with no left turns provided to private driveways. There would be a half-round turnout at each end of the elevated parkway to provide parking and access to viewpoints for observing adjacent wetland areas (Figure 3.2-8). Additional observation areas would be constructed near Ninepipe Reservoir, MT 212/Kicking Horse Road, and Mollman Pass Trail. The speed limit in the elevated parkway section would be posted at 45 mi/h, if warranted. If chosen as the preferred alternative for the proposed project, the current 65 mi/h speed limit established by State of Montana law for this highway, cited in Section 61-8-303 of the Montana Code Annotated, would have to be revisited. Establishment of a special speed zone can be accomplished by the Transportation Commission under Section 61-8-309 of the Code, if warranted, based on an engineering and traffic investigation of safety conditions.

The elevated parkway section would be constructed within the existing right-of-way. Right-of-way widths in the remaining sections would be consistent with the common assumptions described previously for the two-lane roadway.

Alternative Rural 8

Alternative Rural 8 consists entirely of four-lane undivided roadway, as described previously.

Alternative Rural 9

Alternative Rural 9 consists entirely of four-lane divided roadway, as described previously.

Alternative Rural 10

Alternative Rural 10 is composed of a two-lane roadway with some sections of auxiliary lanes and four-lane divided roadway, including:

- A 0.8-kilometer (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 approximately RP 37.5
- A 2.9-kilometer (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)
- A 1.9-kilometer (1.2-mile) southbound passing lane from the top of Post Creek Hill (RP 40) to Eagle Pass Trail (RP 41.2)
- A 1.5-kilometer (0.9-mile) section of four-lane divided roadway from Innovation Lane (RP 45.1) to the Ronan south city limits (RP 46).

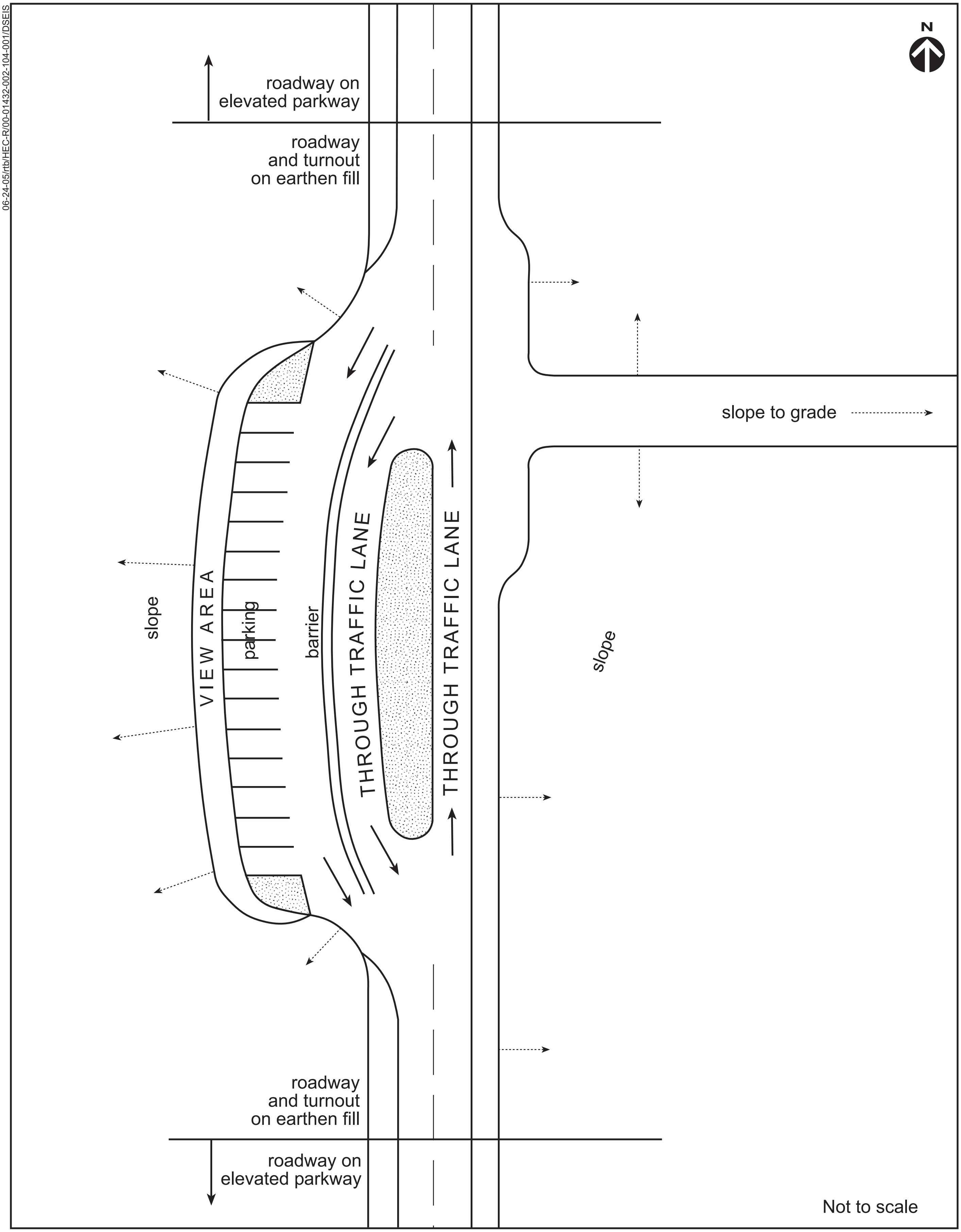


Figure 3.2-8. Conceptual half-round turnout.

Wildlife Crossing Structures

All of the rural action alternatives would 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 proposed project. The vertical alignment of the roadway would be revised to accommodate the wildlife crossing structures and provide a minimum vertical clearance of 3 meters (10 feet). The structures would provide benefit to the physical and biological environments derived from improved connectivity at the structure locations (e.g., reduced flood flow restriction, improved habitat connectivity for small terrestrial and aquatic species, and improved wetland and riparian function).

All of the rural action alternatives, except Alternative Rural 7, include wildlife crossing structures at five locations – Post Creek, Ninepipe Reservoir, two large kettle ponds, and Crow Creek, with additional smaller structures crossing waterways, streams, and riparian areas at intermediate locations throughout the project length. The vertical alignment of Alternative Rural7 is a departure from the other rural alternatives, as the wildlife crossing structures are much more extensive, including an "elevated parkway" structure that is unique to that alternative.

From the initial structure options considered, a preferred structure option was identified for each crossing location to be analyzed with all of the rural action alternatives, except Rural 7. The following section describes the locations and types of wildlife crossing structures analyzed in the US 93 Ninepipe/Ronan final SEIS. The proposed locations and actual sizes for the wildlife crossing structures are approximate and would be determined during final design.

Existing Culverts and Bridges at the Wildlife Crossing Structure Locations for the No-Action Alternative

The following existing culverts and bridges would be maintained in their current configurations under the No-Action Alternative and are shown on Figures 3.2-9 through 3.2-13:

- Post Creek No-Action Alternative (approximate RP 37.7)
  - One 15.2-meter (50-foot) two-span bridge
- Ninepipe Reservoir No-Action Alternative (approximate RP 40.5 to 40.8)
  - One 21.3-meter (70-foot) bridge
- Kettle Pond 1 No-Action Alternative (approximate RP 41.7)
  - One small-diameter culvert
- Kettle Pond 2 No-Action Alternative (approximate RP 42.5)
  - One small-diameter culvert
- Crow Creek No-Action Alternative (approximate RP 44.2)
  - Two 3.0- X 4.25-meter (10- X 14-foot) corrugated metal culverts.

Wildlife Crossing Structures Considered in Detail for all Rural Action Alternatives, except Rural 7

The following structures were analyzed for all of the rural action alternatives, except Rural 7. These structures are shown on Figures 3.2-9 through 3.2-13.

- Post Creek Preferred Structure Option (formerly Option 2)
  - One 152-meter (500-foot) multiple-span bridge and one 3- X 4-meter (10- X 12-foot) culvert.
- Ninepipe Reservoir Preferred Structure Option (formerly Option 5)
  - Two 4- X 8-meter (12- X 22-foot) culverts; two 3- X 4-meter (10- X 12-foot) culverts; and one 200-meter (660-foot) multiple-span bridge.
- Kettle Pond 1 Preferred Structure Option (formerly Option 2)
  - Two 18-meter (60-foot) single-span bridges and two 1.2- X 1.8-meter (4- X 6-foot) culverts
- Kettle Pond 2 Preferred Structure Option (formerly Option 2)
  - Two 18-meter (60-foot) single-span bridges and two 1.2- X 1.8-meter (4- X 6-foot) culverts
- Crow Creek Preferred Structure Option (formerly Option 5)
  - One 37-meter (120-foot) multiple-span bridge and one 46-meter (150-foot) multiple-span bridge.

Wildlife Crossing Structures for Alternative Rural 7

The wildlife crossing structures for Alternative Rural 7 would encompass the five wildlife crossing structure locations considered for the other rural action alternatives. However, the Alternative Rural 7 structures are substantially different from the other rural alternatives and, therefore, are described separately. At Post Creek, there would be a substantially longer bridge than the structure considered for the other rural action alternatives. Then from approximately Olson Road/Gunlock Road (RP 40) to just north of Crow Creek (RP 44.3), the roadway would be nearly entirely on an elevated structure, encompassing the other four wildlife crossing structure locations at Ninepipe Reservoir, the two kettle ponds, and Crow Creek. This section of Alternative Rural 7 is referred to as the “elevated parkway” and would be approximately 6.9 kilometers (4.3 miles) in length. Passage of large animals throughout the length of the elevated parkway is the objective. The wildlife crossing structures planned for the Rural 7 alternative are as follows:

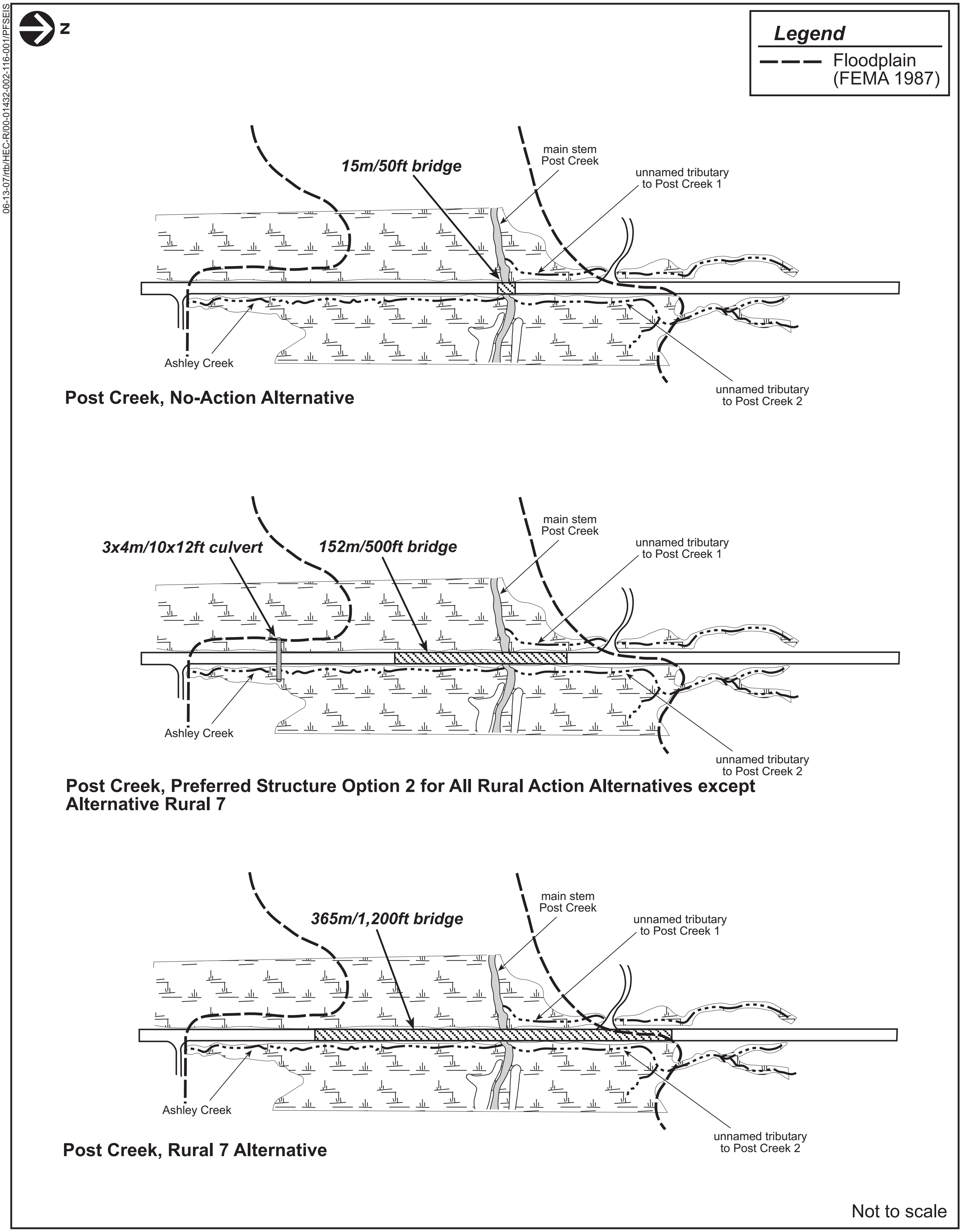


Figure 3.2-9. Post Creek Wildlife Crossing Structures, Rural No-Action, Preferred Structure Option, and Rural 7.

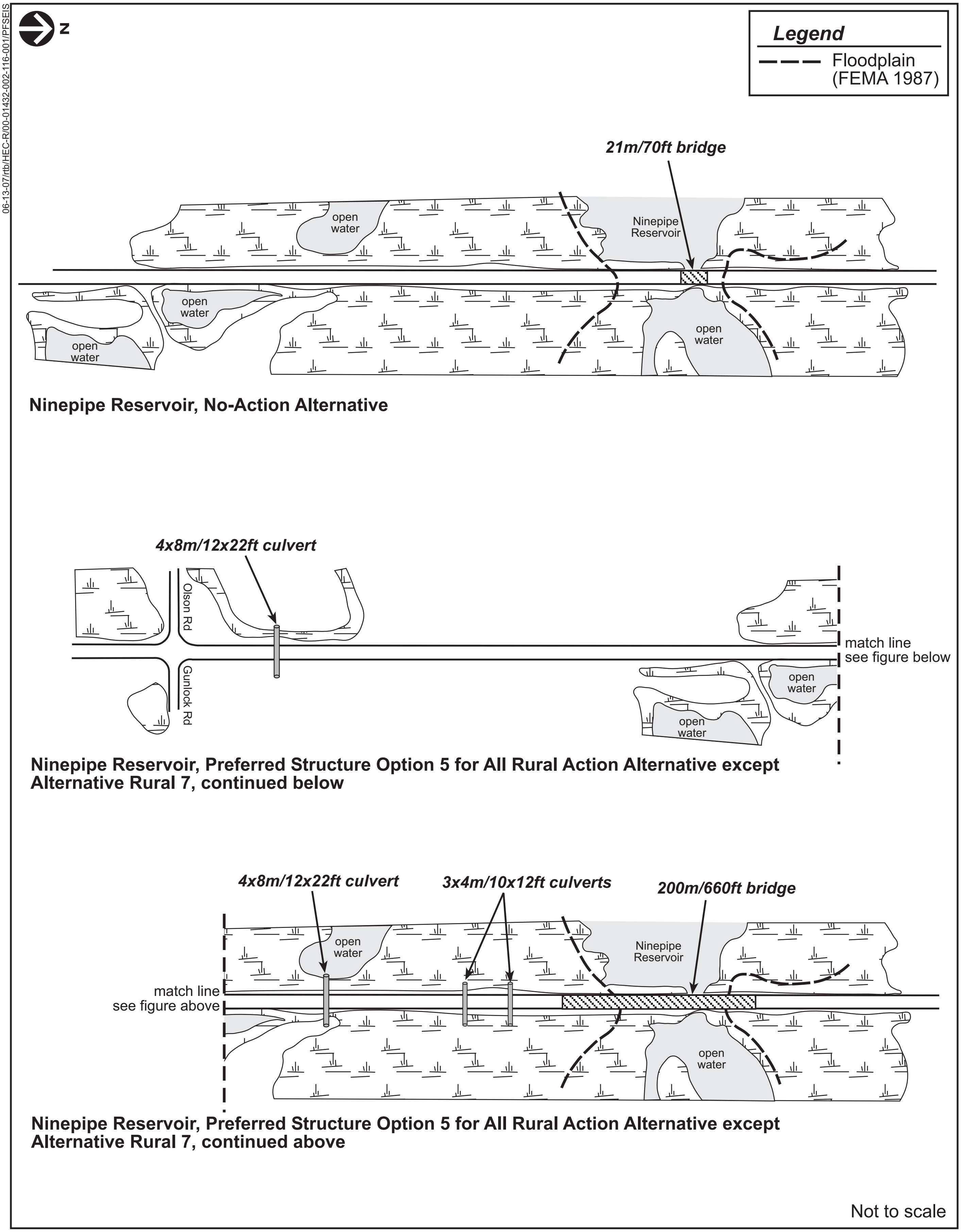


Figure 3.2-10. Ninepipe Reservoir Wildlife Crossing Structures, Rural No-Action and the Preferred Structure Option 5.

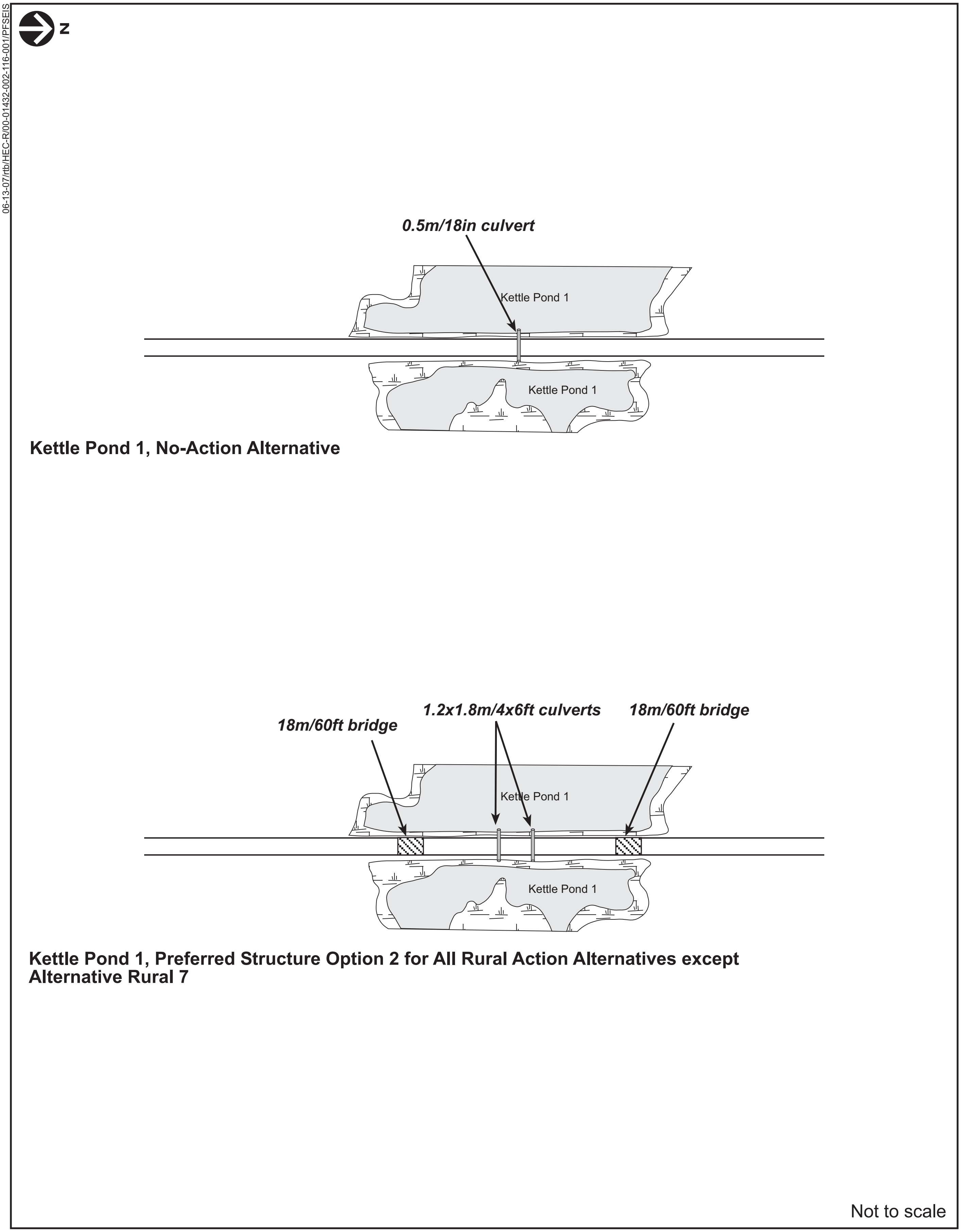


Figure 3.2-11. Kettle Pond 1 Wildlife Crossing Structures, Rural No-Action and the Preferred Structure Option.

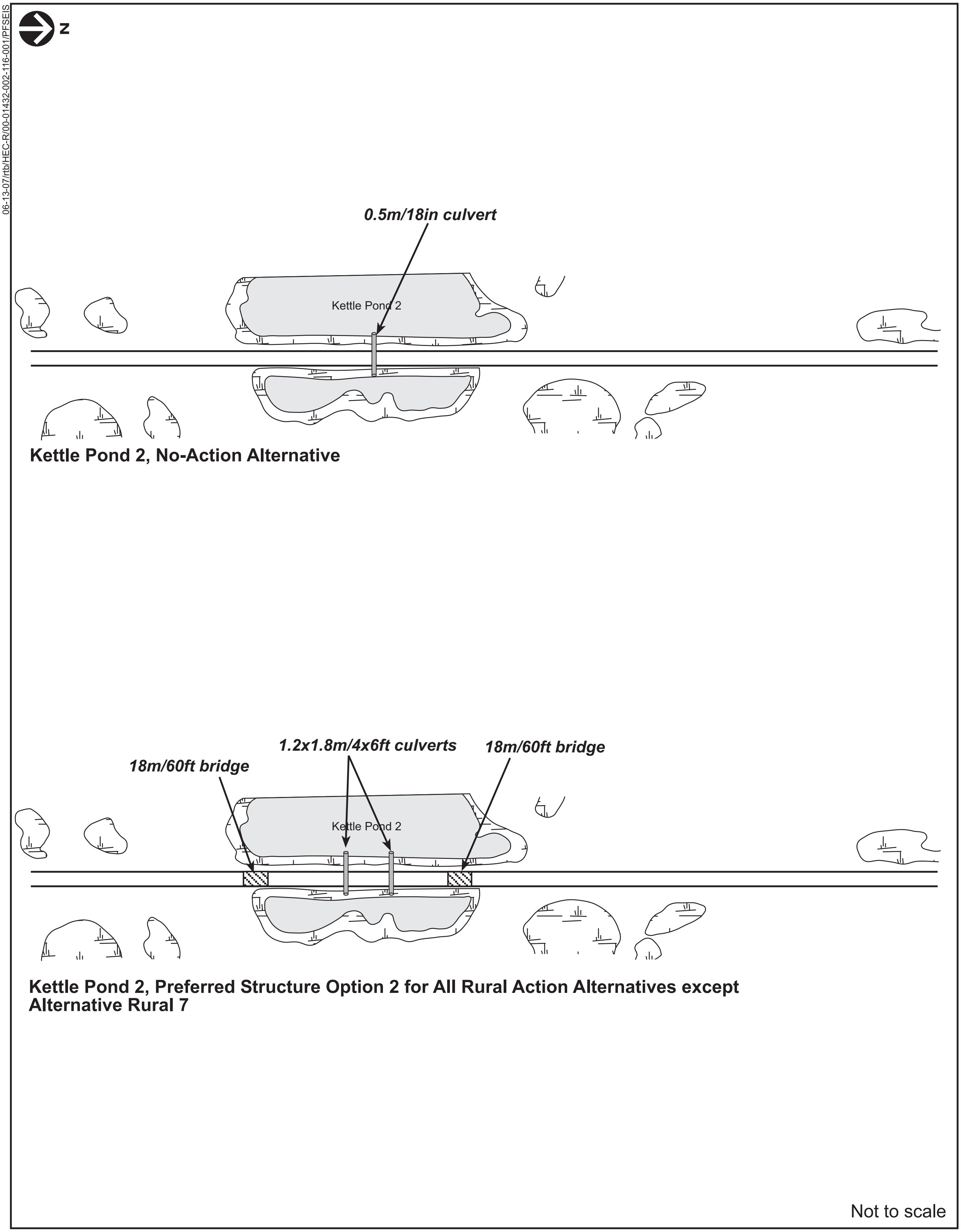


Figure 3.2-12. Kettle Pond 2 Wildlife Crossing Structures, Rural No-Action and the Preferred Structure Option.

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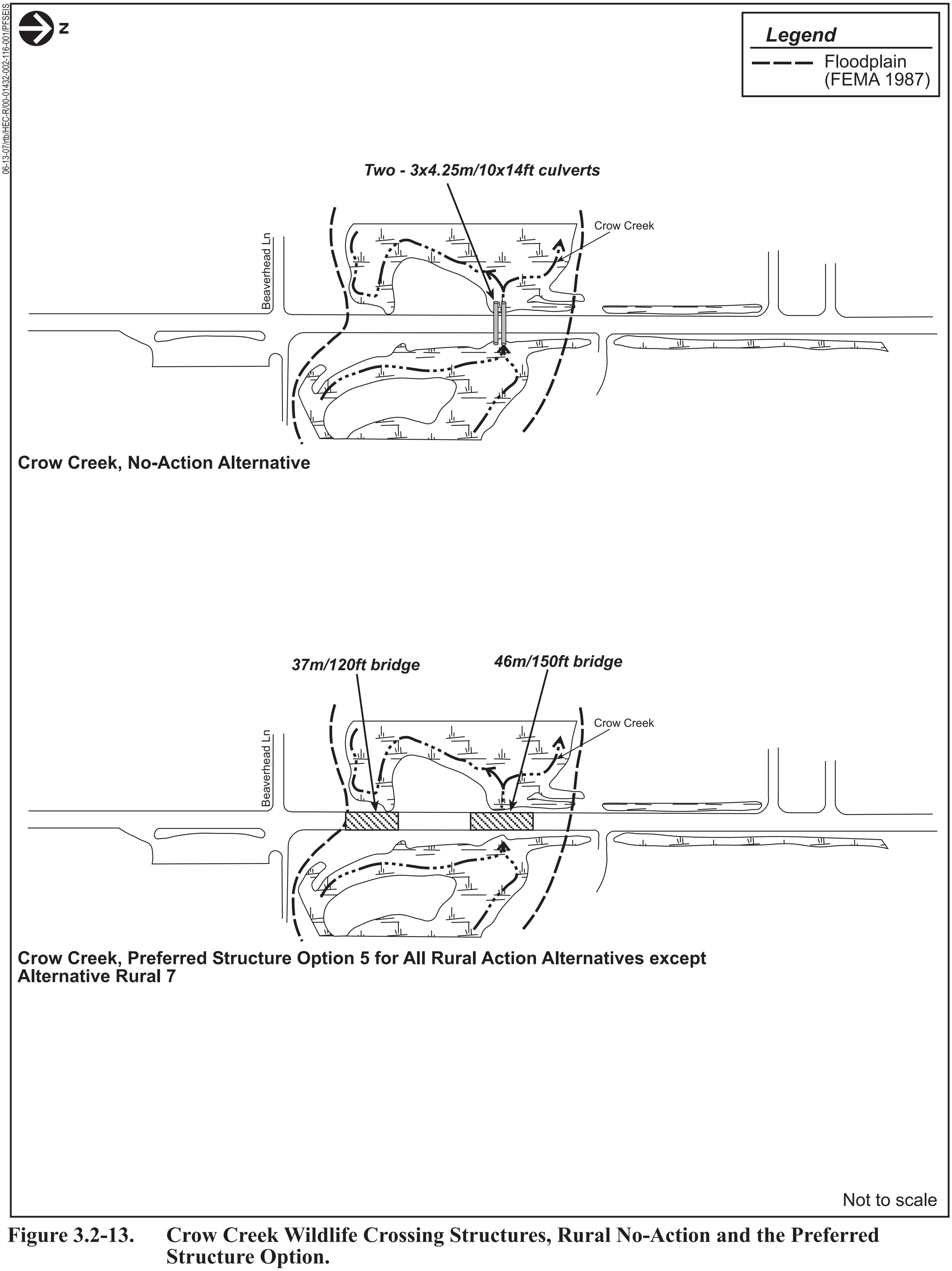

Figure 3.2-13. Crow Creek Wildlife Crossing Structures, Rural No-Action and the Preferred Structure Option.

Post Creek (approximate RP 37.7)

At Post Creek, there would be a substantially longer major structure than the alternative considered for the other rural action alternatives (see Figure 3.2-9):

- Post Creek Rural 7 Structure
  - One 365-meter (1,200-foot) multiple-span bridge.

Elevated Parkway (approximate RP 40 to RP 44.3)

- Ninepipe Reservoir, Kettle Pond 1, Kettle Pond 2, and Crow Creek
  - Four multi-span bridges totaling 6.4 kilometers (4.0 miles), with short sections of elevated fill-supported roadway at intersections with Eagle Pass Trail, MT 212/Kicking Horse Road, and Mollman Pass Trail.

Summary of Key Features of the Rural Action Alternatives

Several key features of the rural action alternatives are summarized in Table 3.2-1. The costs presented in the table include costs for right-of-way acquisition, relocation of irrigation system features, and construction of roadway and wildlife crossing structures. Earthwork volumes for excavation and fill, and right-of-way acquisition areas are two of the analysis components used to develop the preliminary cost estimates.

3.2.3 Urban Action Alternatives

Design Assumptions Common to All of the Urban Action Alternatives

All of the urban action alternatives would include reconstruction of some existing roadway through Ronan. Included would be construction of curb, gutter, and sidewalks on both sides of the roadway. Reconstruction at all major intersections throughout Ronan would include channelization to provide left-turn lanes and, in some instances, right-turn lanes. Channelized intersections and left-turn signals exist presently at Round Butte Road/Terrace Lake Road and Eisenhower Street. All alternatives would provide additional widening for turning lanes on both US 93 and the cross streets at Round Butte Road/Terrace Lake Road and Eisenhower Street, and new signals and turning lanes at Little Marten Road/Timber Lane Road, Buchanan Street, Main Street, and Old Highway 93, in the future as signals are warranted.

Ronan Spring Creek would be removed from its present culvert to flow in an open channel between US 93 and First Avenue SW. The site would be assessed for safety implications and appropriate measures would be taken to ensure it does not pose a safety risk for motorists or the local residents. Figure 3.2-14 provides a conceptual layout of how this would be achieved. The actual alignment and stream channel design have not been determined at this time.

Table 3.2-1. Summary of several key features of the proposed action alternatives in the rural portion of the US 93 Ninepipe/Ronan improvement project.

Alternatives	Approximate Cost ($ Million - Inflated to 2012)	Earthwork Volumes		Additional ROW Required hectares (acres)	Paved Surface hectares (acres)
		Excavation cubic meters (cubic yards)	Fill cubic meters (cubic yards)		
Rural 1	$ 49,000,000	221,000 (289,000)	199,000 (261,000)	14 (35)	18.7 (46.3)
Rural 2	$ 50,000,000	232,000 (304,000)	204,000 (267,000)	15 (37)	19.8 (48.9)
Rural 3 (PA) [a]	$ 65,000,000	287,000 (357,000)	255,000 (318,000)	19 (46)	26.3 (65.1)
Rural 4	$ 55,000,000	310,000 (406,000)	259,000 (339,000)	18 (45)	22.5 (55.7)
Rural 5	$ 53,000,000	262,000 (343,000)	228,000 (298,000)	17 (43)	21.7 (53.7)
Rural 6	$ 54,000,000	277,000 (363,000)	292,000 (382,000)	31 (76)	22.9 (56.5)
Rural 7	$ 227,000,000	211,000 (276,000)	291,000 (381,000)	19 (48)	20.4 (50.5)
Rural 8	$ 67,000,000	265,000 (347,000)	269,000 (352,000)	25 (62)	20.4 (50.5)
Rural 9	$ 80,000,000	299,000 (391,000)	490,000 (641,000)	42 (103)	32.5 (80.3)
Rural 10	$ 53,000,000	250,000 (327,000)	212,000 (277,000)	17 (42)	22.0 (54.4)

[a] Includes the separated bicycle/pedestrian trail which will cost $12 million, require less than an acre of additional ROW, and will impact 4.1 acres of wetlands by converting temporary impacts to permanent impacts.

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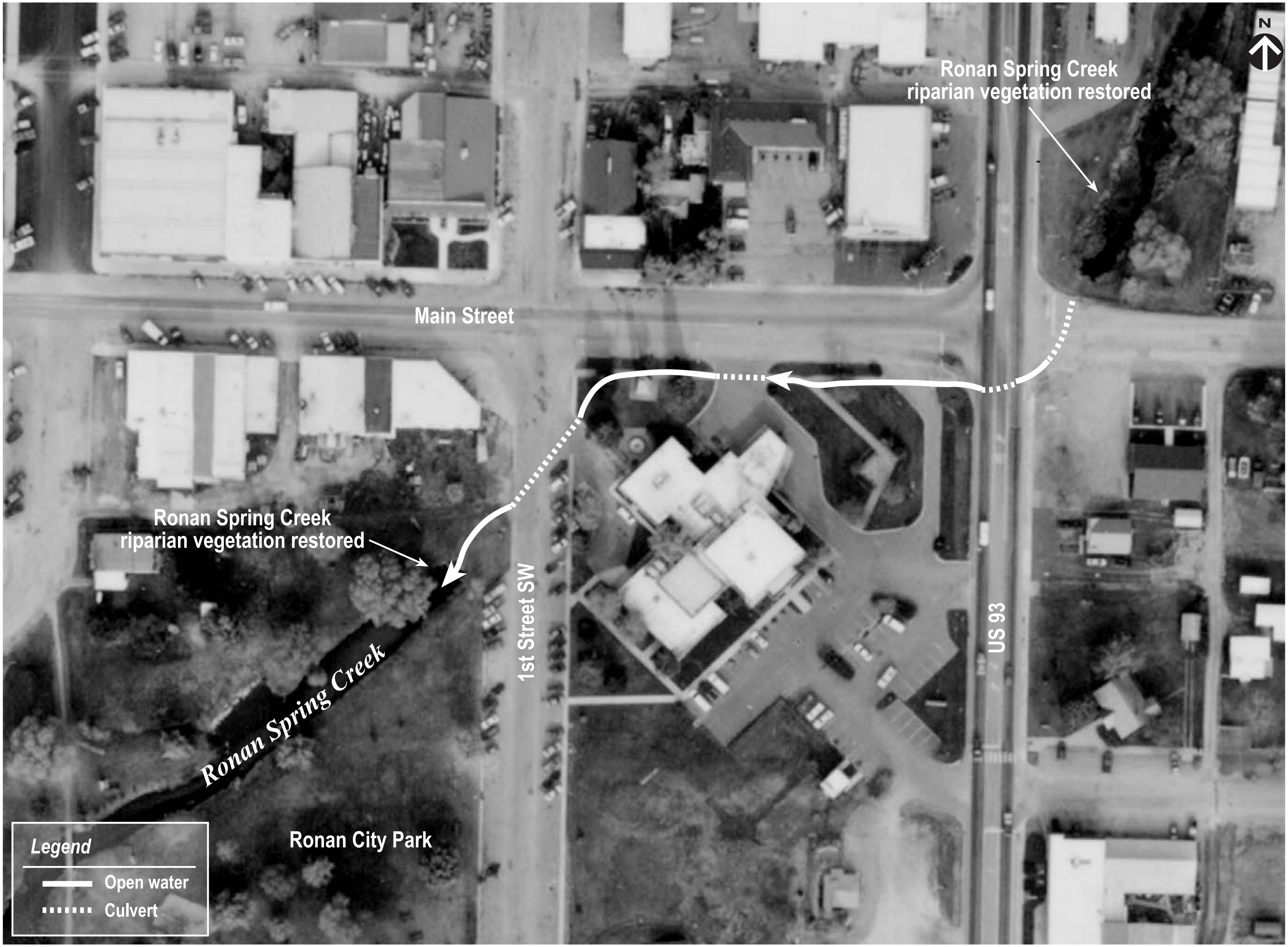

Not to scale

Figure 3.2-14. Conceptual plan for daylighting of Ronan Spring Creek.

All slopes would follow the slope tables for urban principal arterials as shown in the MDT Design Standards, except as modified for the proposed project. These standards and exceptions, entitled *MDT Standards and Modifications*, are included in Appendix A.

Lane Configuration Alternatives in the Urban Portion of the Project

The features of the urban action alternatives are shown in Figure 3.2-15.

No-Action Alternative

The No-Action Alternative would perpetuate the existing highway with no substantial improvements. Highway US 93 through the Ronan segment of the proposed project currently consists of two 3.6-meter (12-foot) travel lanes and a 4.2-meter (14-foot) continuous left-turn lane, with limited sections of curb, gutter, or sidewalk. Any improvements to the existing system would be considered on individual merits and could include spot safety improvements, channelization for left turns at intersections, access control and signalization as dictated during the coming years.

Alternative Ronan 1

The Ronan 1 alternative generally follows the existing US 93 through Ronan. It consists of four lanes with a raised landscaped median (Figure 3.2-16) throughout most of the length, transitioning from the selected rural lane configuration at the Ronan south city limits, and to a four-lane divided section (Figure 3.2-3) between Old Highway 93 and the Baptiste Road/Spring Creek Road intersection at the north end of the proposed project. Travel lane widths would be 3.6 meters (12 feet). The raised landscaped median would be 4.8 meters (16 feet) wide, and inside and outside shoulders would be 0.6 meters (2 feet). At intersections where left-turn lanes are provided, the turning lane would be located within the center median area. Planting areas would be provided between the curb and sidewalk. Pedestrians would be accommodated on 1.6-meter (5.25-foot) sidewalks, while bicyclists would be rerouted to First Avenue SW and First Avenue SE for passage through Ronan. The sidewalks would accommodate bicyclists where necessary, until they access First Avenue SW or SE. Typical right-of-way width would be 29.5 meters (98 feet) with an additional 3.6-meter (12-foot) widening for right turn lanes at Eisenhower Street, Main Street, and Round Butte Road/Terrace Lake Road, which would require from 4 to 10 meters (13 to 30 feet) of right-of-way acquisition throughout most of the length of this segment.

Alternative Ronan 1 includes a 3-meter (10-foot) wide pedestrian/bicycle pathway from the Ronan City Park to Baptiste Road/Spring Creek Road. The portion of the path within the US 93 Ninepipe/Ronan project area (the Ronan terminus) (Figure 3.2-16) would begin near the Ronan City Park, follow Buchanan Street westerly to Third Avenue SW and then extend north along Third Avenue SW to the Ronan north city limit, where Third Avenue SW becomes Old Highway 93. The pathway would continue north on the west side of Old Highway 93 within the right-of-way to Baptiste Road/Spring Creek Road (the northern terminus of the improvement project). This portion north of Old Highway 93 would be common to all urban action alternatives. Connections to the sidewalks and bicycle lanes within Ronan would be provided. Ultimately, the pedestrian/bicycle pathway would extend north to Polson. The northern portion, north of Ronan, is being designed and constructed under a separate project now underway to reconstruct US 93 between Ronan and Polson.

Alternative Ronan 2

The Ronan 2 alternative consists of four lanes on the existing alignment with a continuous two-way left-turn lane (Figure 3.2-17), transitioning from the selected rural lane configuration at the Ronan south city limits and to a four-lane divided section (Figure 3.2-3) at the north end of the proposed project between Old Highway 93 and the Baptiste Road/Spring Creek Road intersection. Travel lanes would be 3.6 meters (12 feet) wide and the continuous two-way left-turn lane would be 4.2 meters (14 feet) wide. A 1.5-meter (5-foot) bike lane would also be provided on both sides of the road. Pedestrians would be accommodated on 1.6-meter (5.25-foot) sidewalks. Typical right-of-way width would be 27 meters (90 feet) with an additional 3.6-meter (12-foot) widening for right turn lanes at Eisenhower Street, Main Street, and Round Butte Road/Terrace Lake Road. This alignment would fit somewhat within the existing right-of-way, except between Eisenhower Street and Round Butte Road/Terrace Lake Road, where additional right-of-way would be needed for the turning lanes.

Alternative Ronan 2 includes a 3-meter (10-foot) wide pedestrian/bicycle pathway from the Ronan City Park to Baptiste Road/Spring Creek Road as discussed under Alternative Ronan 1.

Alternative Ronan 3

Alternative Ronan 3 would be a couplet with a two-lane, one-way northbound roadway on the existing US 93 alignment and a two-lane, one-way southbound roadway on the First Avenue SW alignment. This alternative would be constructed largely within the existing right-of-way of US 93 and First Avenue SW, except at the north and south couplet connections between the existing US 93 alignment and First Avenue SW where new right-of-way would be required. Transition sections of four-lane roadways with a continuous two-way left-turn lane would be necessary south of the couplet where the roadway would connect to the selected rural lane configuration and north of the couplet to a four-lane divided section between Old Highway 93 and the Baptiste Road/Spring Creek Road intersection (Figure 3.2-17).

The northbound leg of the couplet would be on the existing US 93 alignment and would consist of two 3.6-meter (12-foot) travel lanes, a 3-meter (10-foot) parking lane on the west side of the road, and a 1.5-meter (5-foot) bicycle lane on the east side of the road (Figure 3.2-18). Curbs and gutters, 3-meter (10-foot) planting areas, and 1.8-meter (6-foot) sidewalks would be provided on both sides of the roadway, for a typical right-of-way width of approximately 23.6 meters (78.5 feet). Pedestrians would be accommodated on the sidewalks, and bicycle lanes would be provided on the right side of the traveled way on all sections.

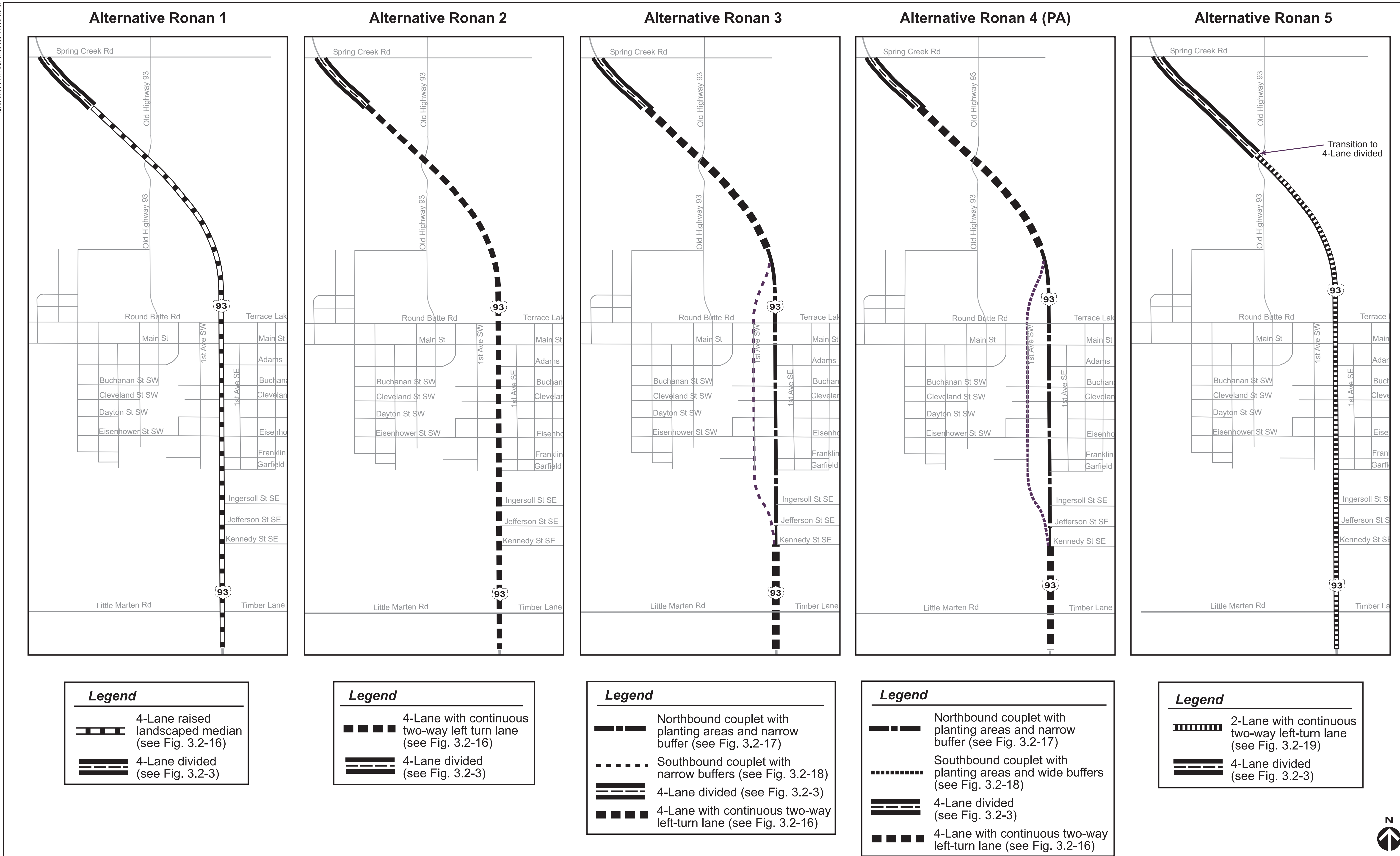

Figure 3.2-15. **Alternatives Ronan 1 through Ronan 5 within the urban portion of the US 93 Ninepipe/Ronan project**

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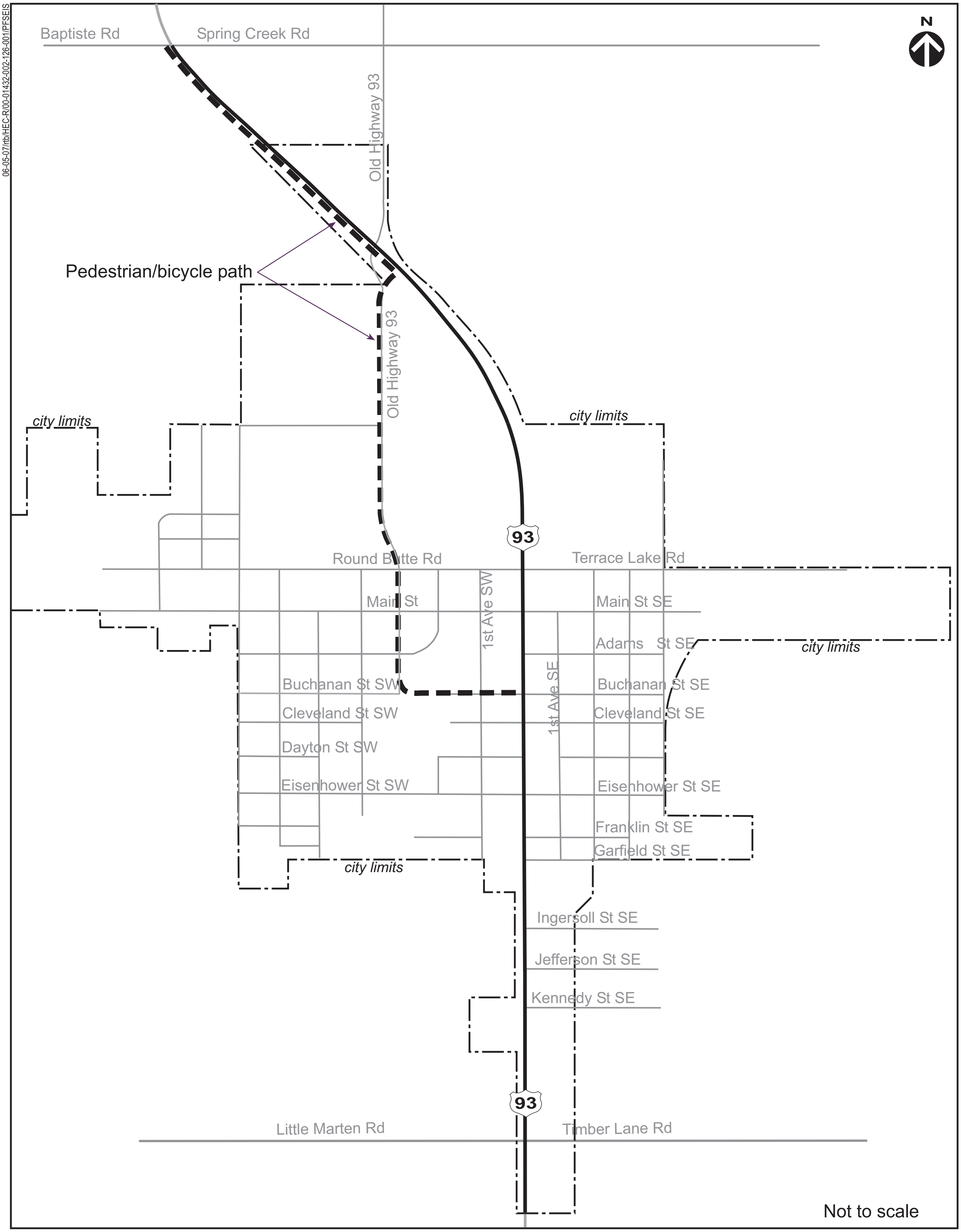

Figure 3.2-16. Pedestrian/bicycle pathway for Alternatives Ronan 1, 2, 3, and 5 of the US 93 Ninepipe/Ronan improvement project corridor.

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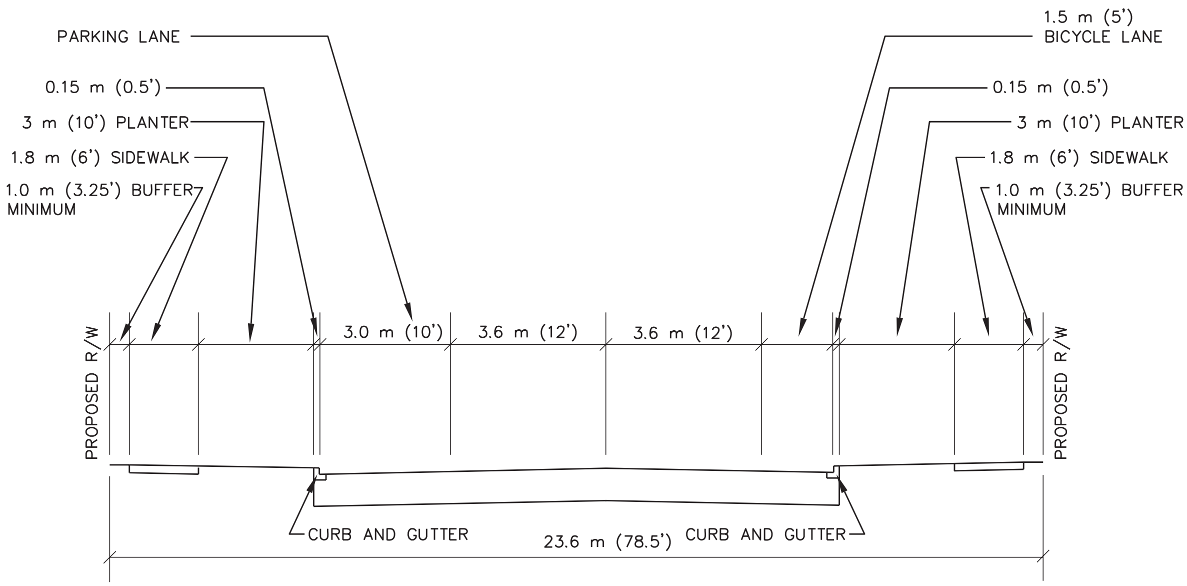

NORTHBOUND COUPLET WITH PLANTING AREAS AND NARROW BUFFERS

ALTERNATIVE RONAN 3 AND RONAN 4 (PREFERRED ALTERNATIVE)

LOOKING NORTH

Not to scale

Figure 3.2-17. Typical urban roadway cross-section for a two-lane, one-way couplet with planting areas and narrow buffers.

The southbound leg of the couplet on First Avenue SW (Figure 3.2-18) would consist of two 3.6-meter (12-foot) lanes, a 3-meter (10-foot) parking lane on the east side of the road, and a 1.5-meter (5-foot) bicycle lane on the west side of the road. Curbs and gutters, 1.6-meter (5.25-foot) sidewalks, and 1.0- to 1.9-meter (3.25- to 6.25-foot) buffers would be provided on both sides of the road. Typical right-of-way width would be approximately 18 meters (60 feet). The southbound leg on First Avenue SW would require the addition of signals and turn lanes at Eisenhower Street, Buchanan Street, Main Street, and Round Butte Road/Terrace Lake Road, at such time as signal warrants are met.

Alternative Ronan 3 includes a 3-meter (10-foot) wide pedestrian/bicycle pathway from the Ronan City Park to Baptiste Road/Spring Creek Road as discussed under Alternative Ronan 1.

Alternative Ronan 4 (Preferred Alternative)

Alternative Ronan 4 (PA) would be a couplet, with a two-lane, one-way northbound roadway on existing US 93 identical to Alternative Ronan 3 (Figure 3.2-18) and a two-lane, one-way southbound roadway on First Avenue SW similar to Alternative Ronan 3 but with a wider neighborhood buffer (Figure 3.2-19), which would require acquisition of additional right-of-way along First Avenue SW. Most of the right-of-way would be purchased from the east side of the road to provide the maximum buffer to the neighborhood on the west. Transition sections of four-lane roadway with a continuous two-way left-turn lane would be necessary south of the couplet where the roadway would connect to the selected rural lane configuration and north of the couplet to a four-lane divided section between Old Highway 93 and the Baptiste Road/Spring Creek Road intersection (Figure 3.2-17).

The northbound leg of the Alternative Ronan 4 couplet would be on the existing US 93 alignment and would be nearly the same as Alternative Ronan 3, with two 3.6-meter (12-foot) travel lanes, a 3-meter (10-foot) parking lane on the west side of the road, and a 1.5-meter (5-foot) bicycle lane on the east side of the road north of Buchanan Street (see the description of the separated bicycle/pedestrian path below for the portion between Timber Lane Road and Buchanan Street). Curbs and gutters, 3-meter (10-foot) planting areas, and 1.8-meter (6-foot) sidewalks would be provided on both sides of the roadway north of Buchanan Street. Curbs and gutters, a 1.8-meter (6-foot) sidewalk and a 3-meter (10-foot) planting area on the west side of the road, and a 2.7-meter (9-foot) planting area and 3-meter (10-foot) bicycle/pedestrian path on the east side of the road would be provided south of Buchanan Street. The typical right-of-way width would be approximately 23.6 meters (78.5 feet). Pedestrians would be accommodated on the sidewalks and bicycle/pedestrian path.

The southbound leg of the Alternative Ronan 4 couplet shares many of the features of the Alternative Ronan 3 couplet, including two 3.6-meter (12-foot) lanes, a 3-meter (10-foot) parking lane on the east side of the road, a 1.5-meter (5-foot) bicycle lane on the west side of the road, and curbs and gutters. The Alternative Ronan 4 southbound couplet roadway section is wider than the Alternative Ronan 3 southbound couplet with the addition of wider 1.8-meter (6-foot) sidewalks, a 3-meter (10-foot) planting area and 3.6-meter (12-foot) buffer on the west

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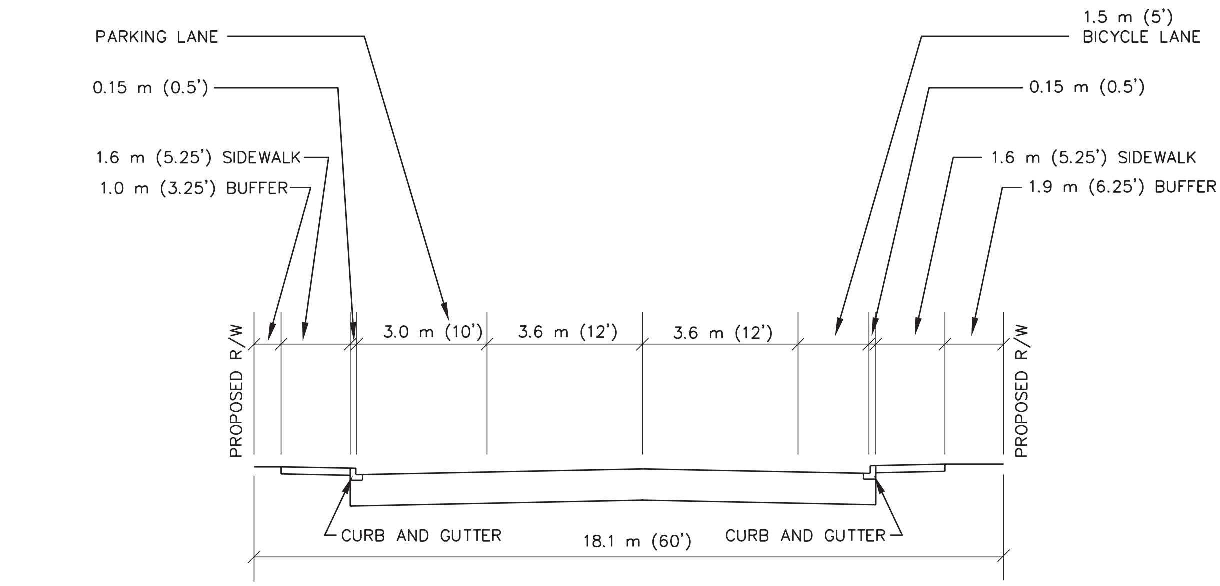
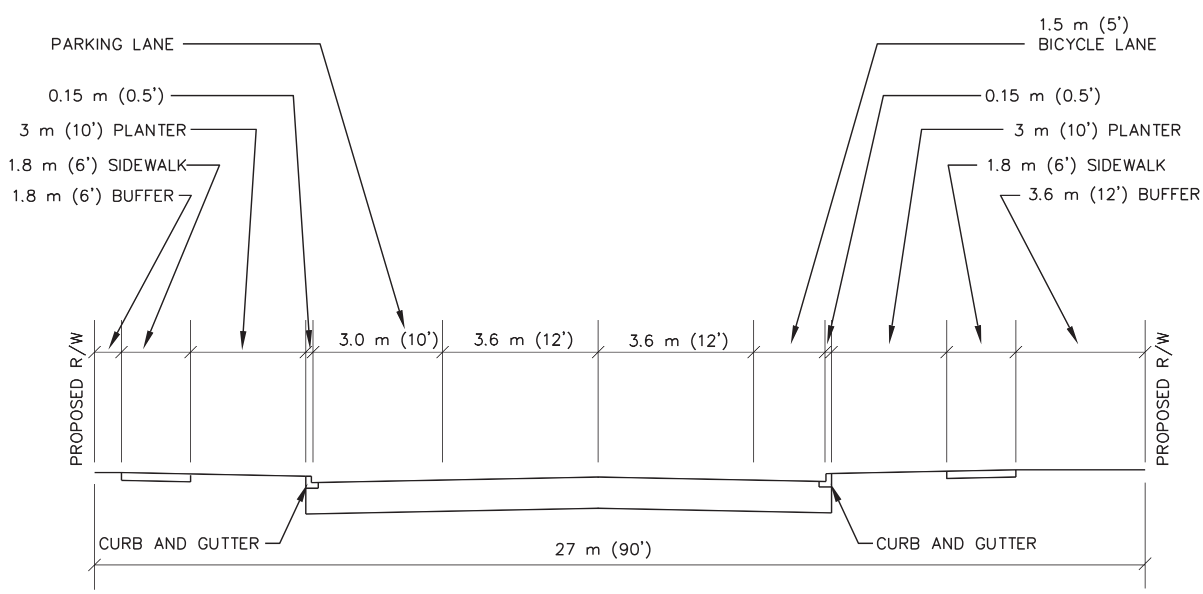


SOUTHBOUND COUPLET WITH NARROW BUFFERS

ALTERNATIVE RONAN 3

LOOKING SOUTH



SOUTHBOUND COUPLET WITH PLANTING AREAS AND WIDE BUFFERS

ALTERNATIVE RONAN 4 (PREFERRED ALTERNATIVE)

LOOKING SOUTH

Not to scale

Figure 3.2-18. Typical urban roadway cross-section for a two-lane, one-way couplet with narrow buffers or with planting areas and wide buffers.

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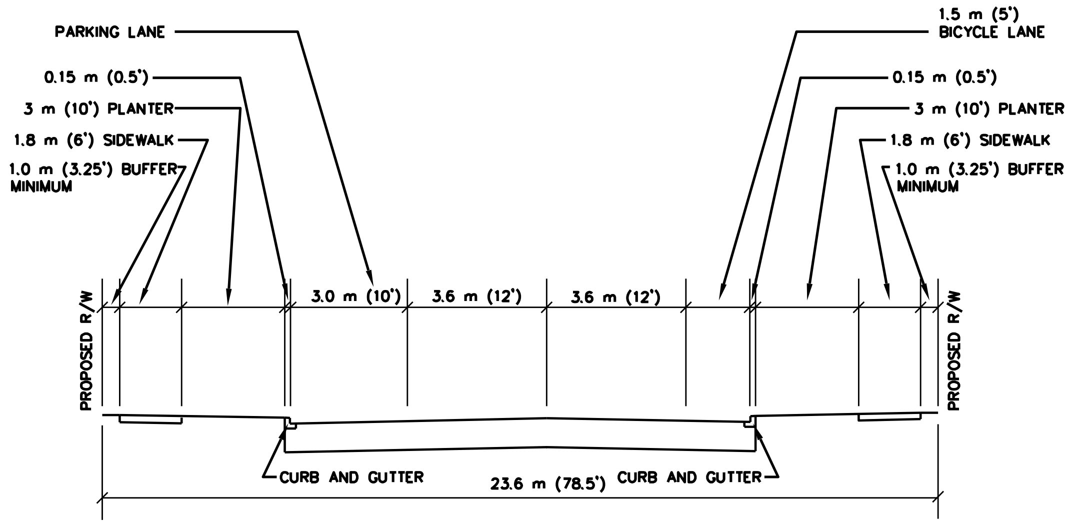
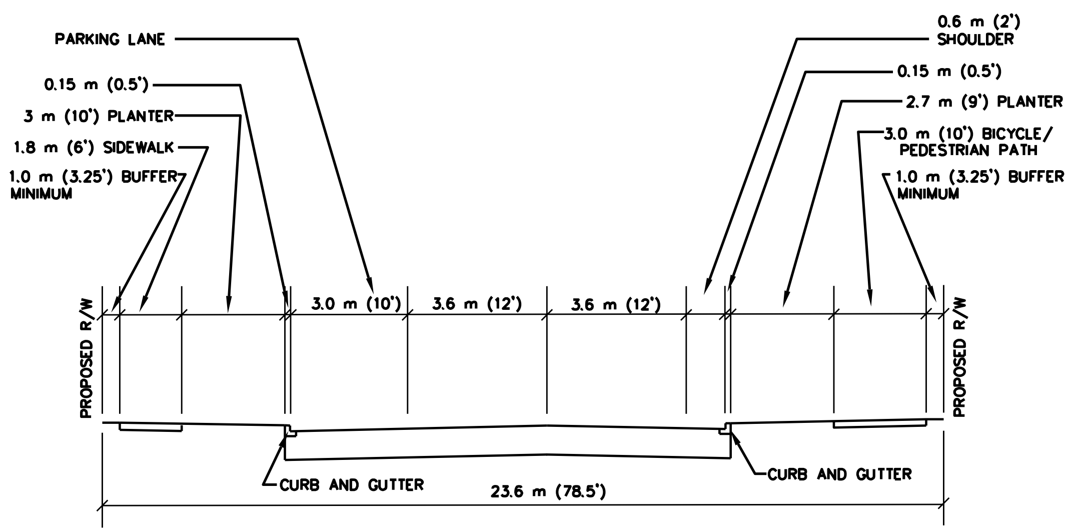


NORTHBOUND COUPLET WITH PLANTING AREAS AND NARROW BUFFERS
ALTERNATIVE RONAN 3 AND RONAN 4 (PREFERRED ALTERNATIVE)
(EXCEPT AS SHOWN BELOW)
LOOKING NORTH



NORTHBOUND COUPLET WITH PLANTING AREAS AND NARROW BUFFERS
ALTERNATIVE RONAN 4 (PREFERRED ALTERNATIVE)
WITH SEPARATED BICYCLE/ PEDESTRIAN PATH
BETWEEN BUCHANAN ST AND TIMBER LANE RD

LOOKING NORTH

Not to scale

Figure 3.2-19. Typical urban roadway cross-section for a two-lane, one-way couplet with narrow buffers or with planting areas and wide buffers.

side of the road, and a 3-meter (10-foot) planting area and 1.8-meter (6-foot) buffer on the east side of the road. The typical right-of-way width for the southbound leg of the Alternative Ronan 4 couplet would be 27 meters (90 feet).

Similar to the Ronan 3 alternative, the southbound leg on First Avenue SW would require the addition of signals and turn lanes at Eisenhower Street, Buchanan Street, Main Street, and Round Butte Road/Terrace Lake Road, at such time as signal warrants are met.

Alternative Ronan 4 includes a separated 3-meter (10-foot) wide pedestrian/bicycle pathway from the southern Ronan city limit, near Timber Lane Road, north to Baptiste Road/Spring Creek Road. The portion of the path within the Ronan segment (Figure 3.2-20) would begin on the east side of US 93 at the southern Ronan city limit near Timber Lane Road and follow the east side of US 93 north to Buchanan Street. At Buchanan Street near the Ronan City Park, the pedestrian/bicycle pathway would turn and follow along the north side of Buchanan Street westerly to Third Avenue SW and then extend north along the west side of Third Avenue SW to the Ronan north city limit, where Third Avenue SW becomes Old Highway 93. The pathway would continue north on the west side of Old Highway 93 within the right-of-way to Baptiste Road/Spring Creek Road (the northern terminus of the improvement project). This portion north of the junction with Old Highway 93 would be common to all urban action alternatives. Ultimately, the pedestrian/bicycle pathway would extend north to Polson. The northern portion, north of Ronan, is being designed and constructed under a separate project now underway to reconstruct US 93 between Ronan and Polson.

In the draft SEIS the pedestrian/bicycle pathway included as part of the PA ended at Buchanan Street as described under Alternative Ronan 1; however, in response to numerous comments on the draft SEIS, a bicycle/pedestrian path was added to the entire project length of both urban and rural portions of the project.

Alternative Ronan 5

The lane configuration of the Ronan 5 alternative would be similar to the No-Action Alternative, with two 3.6-meter (12-foot) travel lanes and a continuous two-way left-turn lane. However, reconstruction of the existing roadway for Alternative Ronan 5 would include curb and gutter, 1.6-meter (5.25-foot) sidewalks, and 1.5-meter (5-foot) bicycle lanes on both sides of the road (Figure 3.2-21). Transition sections would be necessary at the southerly end to the selected rural lane configuration and to a four-lane divided section (Figure 3.2-3) on the north end between Old Highway 93 and the Baptiste Road/Spring Creek Road intersection. The Ronan 5 alternative would also include routing traffic to First Avenue SW and First Avenue SE to provide for additional traffic circulation parallel to the US 93 roadway. This circulation would be for local traffic and may also be used as a bypass to the main roadway during periods of congestion.

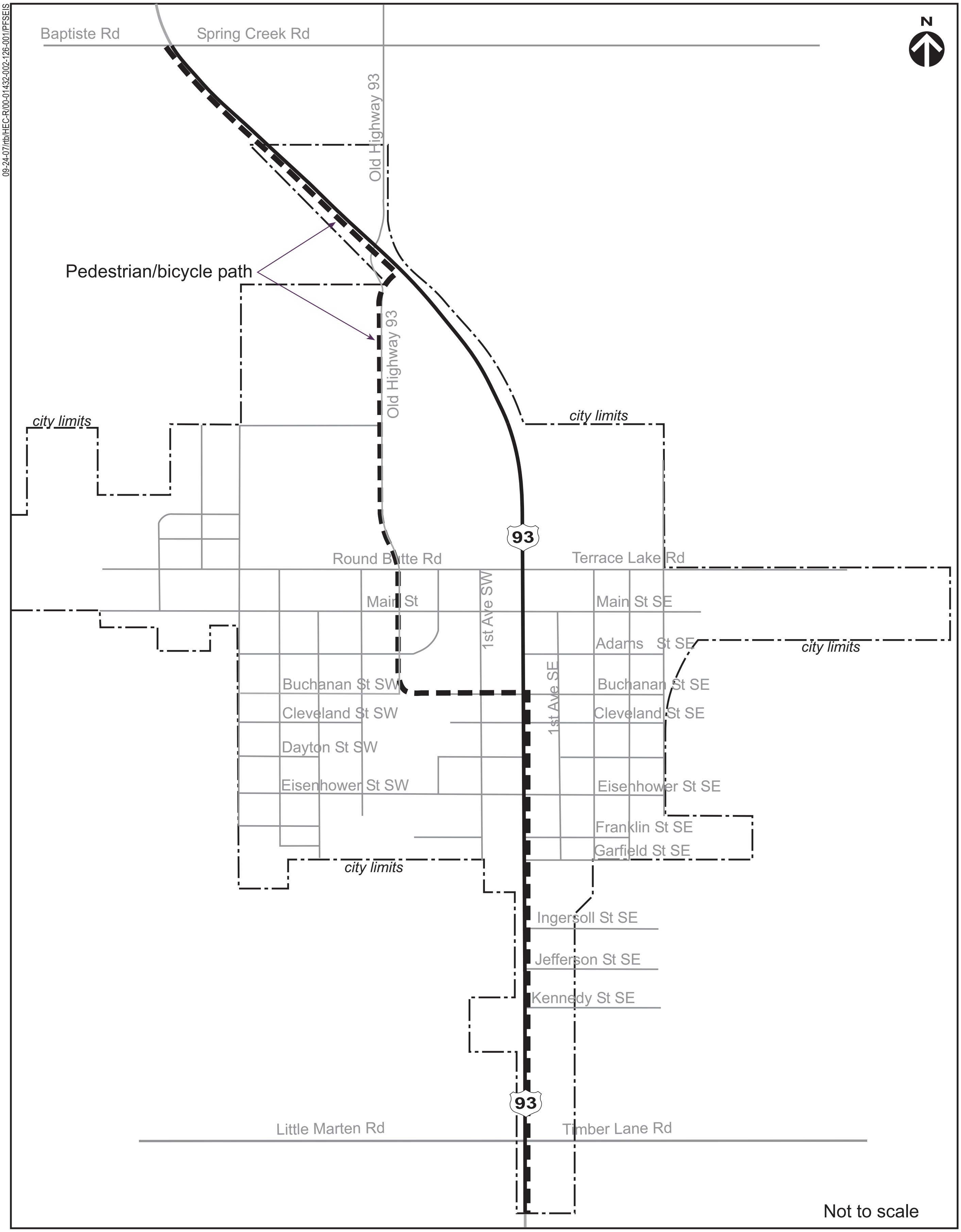


Figure 3.2-20. **Pedestrian/bicycle pathway for Alternative Ronan 4 (PA) of the US 93 Ninepipe/Ronan improvement project corridor.**

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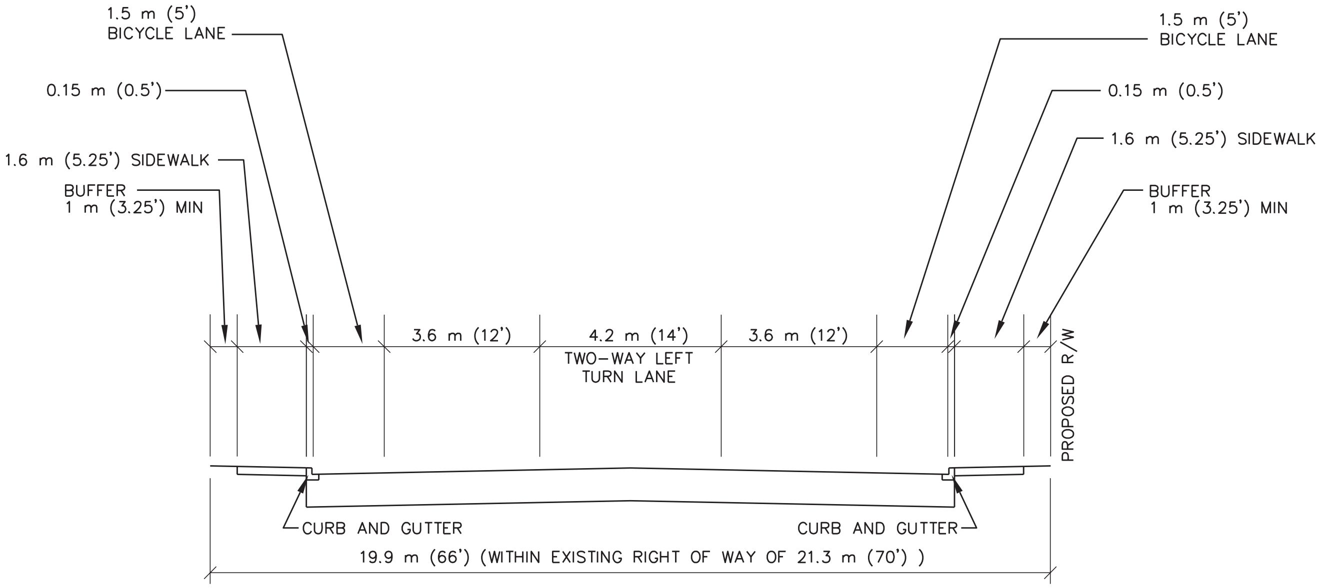

TWO-LANE ROADWAY WITH CONTINUOUS TWO-WAY, LEFT-TURN LANE

ALTERNATIVE RONAN 5

Not to scale

Figure 3.2-21. Typical urban roadway cross-section for a two-lane roadway with continuous two-way, left-turn lane.

Alternative Ronan 5 includes a 3-meter (10-foot) wide pedestrian/bicycle pathway from the Ronan City Park to Baptiste Road/Spring Creek Road as discussed under Alternative Ronan 1.

Summary of Key Features of the Urban Action Alternatives

Several key features of the urban action alternatives are summarized in Table 3.2-2. The costs presented in the table include costs for right-of-way acquisition, relocation of irrigation system features, restoration of the Ronan Spring Creek channel, and construction of the roadway. Earthwork volumes for excavation and fill, and right-of-way acquisition areas are two of the analysis components used to develop the preliminary cost estimates. The roadway footprint is the total area of paved surface for each of the urban action alternatives.

Table 3.2-2. Summary of several key features of the proposed action alternatives in the urban portion of the US 93 Ninepipe/Ronan improvement project.

Alternatives	Cost ($ Million - Inflated to 2012)	Earthwork volumes		Additional ROW Required hectares (acres)	Roadway Footprint hectares (acres)
		Excavation cubic meters (cubic yards)	Fill cubic meters (cubic yards)		
Ronan 1	$ 14,000,000	99,000 (129,000)	29,000 (38,000)	3.2 (8.0)	4.9 (12.2)
Ronan 2	$ 13,000,000	97,000 (127,000)	22,000 (29,000)	2.8 (6.8)	4.9 (12.2)
Ronan 3	$ 19,000,000	99,000 (129,000)	22,000 (29,000)	4.5 (11.0)	5.8 (14.4)
Ronan 4 (PA)	$ 21,000,000	100,000 (131,000)	21,000 (27,000)	4.9 (12.0)	5.8 (14.4)
Ronan 5	$ 12,000,000	80,000 (105,000)	15,000 (20,000)	1.1 (2.7)	7.2 (17.7)

Notes: All estimates are approximate; differences in conversions between hectares and acres are due to rounding.

Part 4 Affected Environment

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4.1 Traffic Operations and Safety

Information presented in this section is summarized from the *Final Environmental Impact Statement and Section 4(f) Evaluation; FHWA-MT-EIS-95-01-F; F 5-1(9)6, U.S. Highway 93, Evaro to Polson, Missoula and Lake Counties, Montana* (referred to as the US 93 Evaro to Polson FEIS) (FHWA and MDT 1996), and from the *Traffic Operational and Safety Analyses Technical Report: US 93 Evaro to Polson, SEIS Ronan to Ninepipe* (Skillings-Connolly 2004a) which summarizes the results of the following two studies:

- *Traffic Operational and Safety Analysis of Recommended Improvements for the US 93 Corridor from Evaro to Polson, Montana* (Skillings-Connolly and Midwest Research Institute 2000)
- *Traffic Operational and Safety Analysis of Recommended Improvements for the US 93 Corridor from Ninepipe to Ronan, Montana* (Midwest Research Institute 2003).

4.1.1 Analysis Methods and Assumptions

Background Traffic Growth

To develop design traffic volumes, traffic counts were conducted for the rural portions of the U.S. Highway 93 (US 93) Evaro to Polson corridor (including the rural portion of the US 93 Ninepipe/Ronan project corridor) during two specific traffic conditions:

- During normal weekday periods in April and May 2000
- During summer weekend periods in July and August 2000.

To develop design traffic volumes for cities and towns in the US 93 Evaro to Polson corridor (including Ronan), turning movement counts were conducted in the field during June 2000.

Future Traffic Volumes

Design volumes for rural portions of the US 93 corridor (including the rural portion of the US 93 Ninepipe/Ronan project corridor) were developed for three years: 2000, 2004, and 2024. The design volumes are based on data from the traffic counts discussed previously and historic traffic counts from the permanent traffic counter on US 93 just south of Ravalli, including hour-by-hour data for all hours with volumes over 500 vehicles per hour during 1999 and summary data for previous years. The highest volumes for normal weekdays occurred during the evening peak hour. In no case was the morning peak-hour volume higher than the evening peak-hour volume for both directions of travel combined. In most cases, the morning peak-hour volume for each direction of travel was lower than the evening peak-hour volume for that same direction of travel. Thus, design volumes based on the evening peak hour are appropriate for the corridor.

Design traffic volumes for rural portions of the corridor were derived using a traffic growth rate of 2.8 percent per year.

Design volumes for the cities and towns in the US 93 Evaro to Polson reconstruction project corridor (including Ronan) were developed using turning movement counts made in the field during June 2000. Morning and evening peak period counts were conducted. However, only the evening peak period counts were used to develop the design volumes because, at every count location, the volumes counted in the evening peak period were higher. The adjustment factor used in determining the design volumes for the year 2000 was derived from data for the month of June 1999, and data from the permanent traffic counter on US 93 just south of Ravalli. Design traffic volumes for cities and towns were derived using a traffic growth rate of 2.8 percent per year.

Capacity and Level of Service Analysis

Traffic operational analyses were conducted for the rural and urban portions of the US 93 Ninepipe/Ronan project corridor by estimating the existing levels of service (LOS) provided in these areas. Level of service (LOS) is a qualitative measure describing operational conditions within a traffic stream based on service measures such as speed and travel time, freedom to maneuver, traffic interruption, comfort and convenience.

Six levels of service are defined for each facility. The six levels are given letter designations, from A to F, with LOS A representing the best operating conditions and LOS F the worst. The following condensed definitions generally define the various levels of service. Each level of service is not a discrete condition, but rather a range of conditions for which boundaries are established.

- Level of service A represents free flow conditions. Individual users are virtually unaffected by the presence of others in the traffic stream.
- Level of service B is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable.
- Level of service C is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes substantially affected by the interactions with others in the traffic stream.
- Level of service D represents high-density, but stable, flow conditions. Small increases in traffic flow will generally result in the occurrence of operational problems at this level.
- Level of service E represents operating conditions at or near the capacity level of a given facility. Operations at this level are usually unstable, because small increases in flow or minor disturbances in the traffic stream lead to breakdown in traffic flow.

- Level of service F is used to define forced or breakdown flow. This condition exists whenever the amount of traffic approaching a point exceeds the amount that can traverse the point. Queues form behind such locations. Operations within the queue are characterized by stop-and-go, unstable waves.

Safety Analysis

An analysis of the recent safety performance of the US 93 Evaro to Polson corridor was conducted using traffic accident history data for the nine year period from 1995 through 2003, inclusive. The results of this analysis serve as the baseline for projection of the future safety performance of the US 93 Ninepipe/Ronan project corridor.

4.1.2 Regulations and Standards

Existing geometric design of the roadway is compared with American Association of State Highway and Transportation Officials (AASHTO) guidelines (1990) and Montana Department of Transportation (MDT) standards as follows:

- Horizontal degree of curvature of the roadway alignment was compared to the current 100 kilometers per hour (km/h) (60 miles per hour [mi/h]) design standard of a radius of 395 meters (1,296 feet) meaning the radius of a horizontal curve should not be less than 395 meters (1,296 feet).

- Vertical grades were compared to the MDT maximum design standard of 4 percent (meaning vertical grades should not exceed 4 percent).

- Vertical curves (a curve in the vertical alignment of the roadway designed to effect a gradual change between different vertical grades) were evaluated based on stopping sight distance requirements (based on 100 km/h [60 mi/h] design speed in rural areas and a 65 km/h [40 mi/h] design speed in communities). Stopping sight distance is defined as the length of roadway ahead, visible to the driver, and required to enable a vehicle traveling at or near the design speed to stop before reaching a stationary object in its path.

4.1.3 Road Conditions

US 93 in the Ninepipe/Ronan project corridor is generally a two-lane highway with seasonal traffic flow deficiencies in the rural portion and peak hour congestion in Ronan. This section of highway has a history of severe accidents with unusually high injuries and fatalities.

In the rural portion of the corridor, there are no traffic signals or designated pedestrian crossings.

In the urban portion of the corridor through Ronan, there is a continuous two-way-left-turn lane from Little Marten Road/Timber Lane Road to Third Avenue NW. There is an existing traffic signal at Round Butte Road/Terrace Lake Road and one at Eisenhower Street that was constructed in 2002. There are pedestrian crosswalks at the signals and a marked crosswalk at Adams Street.

The roadway is asphalt paved and the roadway surface is generally in good condition and is well maintained by MDT.

There are many approaches and intersections along the project corridor, including highway and street intersections; residential, commercial and industrial driveways; farm field approaches; and others. The number of private approaches to US 93 is increasing steadily as development occurs and as population increases. There are 14 highway/street intersections in the rural portion of the improvement project corridor, including MT 212, which intersects US 93 from the west. In the urban portion, there are 12 highway/street intersections.

Access currently is controlled under an access management plan where access is managed by MDT through application of road approach standards and permit requirements. Land owners desiring to construct a driveway approach need to obtain a permit from the Missoula District Engineer of MDT after demonstrating that it would be constructed properly and would not create a particular safety hazard. Sight distance for safety and spacing requirements are the primary factors used to determine if it is appropriate to issue a permit for an approach.

All horizontal curves in the US 93 Ninepipe/Ronan project corridor meet the design standard for 100 km/h (60 mi/h) highways.

One location in the US 93 Ninepipe/Ronan project corridor (Post Creek Hill RP 39.6 to 40) exceeds the MDT vertical grade guideline of 4 percent with grades of 4.8 to 5.9 percent.

4.1.4 Existing Traffic Circulation and Level of Service

US 93 from Evaro through Polson has one of the highest volumes of traffic of the non-Interstate National Highway System (NHS) rural principal arterials in Montana. The average daily traffic (ADT) for US 93 Ninepipe/Ronan (approximately 8,000 in year 2000) is more than 3.5 times the ADT for all non-Interstate NHS routes in Montana (2,242 in year 2001). The ADT is the total number of vehicles passing a point or segment of a roadway, in both directions, during a 24-hour period.

Existing traffic data for US 93 in and adjacent to the US 93 Ninepipe/Ronan project corridor is summarized in Table 4.1-1. US 93 is a popular recreational route where the highest volumes occur on summer weekends. The vehicle mix also differs substantially between normal weekdays and summer weekends, with low truck volumes and higher recreational vehicle volumes on weekends.

Table 4.1-1. Existing traffic data for the US 93 Ninepipe/Ronan improvement project.

Location	ADT [a]	DHV [b]	Growth Rate (percent)	Trucks (percent) [c]	RVs (percent) [c]
Rural portion					
Saint Ignatius to MT 212 [d]	7,550	880	2.8	2.0 to 5.0	2.0 to 3.0
MT 212 to Ronan	8,740	1,170	2.8	2.0 to 5.0	2.0 to 3.0
Urban portion [e]	–	1,240 to 1,710	2.8	–	–
North of Ronan [f]	12,070	1,510	2.8	2.0 to 5.0	1.0 to 3.0

Source: Skillings-Connolly and Midwest Research Institute (2000).
[a] ADT: Average annual daily traffic volume represents both northbound and southbound traffic.
[b] DHV: Design hour volume represents both northbound and southbound traffic.
[c] Range of values of percentage of trucks and RVs were calculated from traffic counts of both northbound and southbound traffic during normal weekday and summer weekend traffic conditions.
[d] This highway segment includes part of the rural portion of the US 93 Ninepipe/Ronan improvement project corridor.
[e] Urban portion data represents a range of values calculated at intersections within the City of Ronan.
[f] North of Ronan data is listed as 'Ronan to Polson' in source document.

The rural portion of the US 93 Ninepipe/Ronan project corridor has a poor LOS rating. While most non-Interstate NHS rural arterial highways in Montana have an LOS rating of A, B or C, US 93 between Saint Ignatius and Ronan has an LOS of D, as estimated in 2000. At LOS D, traffic is frequently congested, with long platoons of vehicles that cause time delays as much as 75 percent of the time a vehicle is on the road. With delays, driver frustration increases causing an increased frequency of unsafe driving practices.

In the urban portion, the LOS is A northbound and B southbound and the existing signalized intersections have LOS ratings of C and the unsignalized intersections have LOS ratings ranging between A and F, as estimated in 2000. Traffic operation on US 93 through Ronan is different than in the rural portion and has the following characteristics:

- The speed limit is 25 to 35 mi/h (40 to 60 km/h) in Ronan.
- There is a higher density of approaches and intersections in Ronan. The high traffic volumes in Ronan on US 93 cause congestion. This results in increased air and noise pollution, pedestrian conflicts, and a barrier effect through the community caused by difficulty experienced by pedestrians and vehicles in crossing the highway.
- There are pedestrian crossings at the traffic signals at Round Butte Road/Terrace Lake Road and Eisenhower Street and a pedestrian crossing at Adams Street.

- A high number of school children cross the highway both at designated crossings and at other areas.
- There are concentrations of businesses, particularly highway-oriented businesses. These business areas generate relatively high numbers of pedestrians, driveways, approaches, and demands for vehicle parking.
- Left and right turns from the highway and left and right turns onto the highway are frequent.

The previously described conditions create an environment in this community where traffic slows and flow is often interrupted. Conflicts with pedestrians, entering vehicles, and turning vehicles are frequent with resulting impacts on safety, operation, and efficiency.

4.1.5 Traffic Safety

The rural portion of the US 93 Ninepipe/Ronan improvement corridor experiences high numbers of accidents. Accidents in the US 93 Evaro to Polson corridor have particularly high severities. Five percent of accidents involve fatalities, in comparison to 1.7 percent for comparable facilities. There are also about three accidents per mile per year compared to one per mile per year for comparable facilities statewide. Both the fatality percentage and the accidents per mile per year are three times the comparable statewide rates, although due to high traffic volumes the US 93 accident rate of 0.98 per million vehicle miles of travel is slightly lower than the statewide rate of 1.30 accidents per million vehicle miles of travel for the nine-year period 1995-2003. The proportion of nonfatal injury accidents in the corridor (41 percent) is also greater than for comparable roads statewide (34 percent). Of these injury accidents, the proportion of "head-on" accidents is 6 percent versus 2 percent for comparable roads statewide. Accident severity statistics for fatal and injury accidents for US 93 are 2.86 per million vehicle miles of travel, which is also higher than the statewide average for Rural Non-Interstate NHS of 2.34 per million vehicle miles of travel. Thus, reducing the high rate of severe accidents (high risk of death or injury when an accident occurs) is an objective for the corridor. Table 4.1-2 provides information on accident frequency by location, roadway surface condition, and accident type.

The density of approaches and intersections along a roadway is a major contributor to the accident rate, particularly for a rural arterial highway such as the rural portion of the US 93 Ninepipe/Ronan project corridor. As indicated in Table 4.1-2, 76 (33 percent) of the recorded accidents in the rural portion of the US 93 Ninepipe/Ronan project corridor occurred at intersections or were intersection or driveway related.

Other accident types in the corridor of concern are non-intersection, head-on collisions and rear-end and side-swipe, same-direction collisions, because these accident types are generally correctable by design improvements that increase the availability of passing opportunities; such design improvements include passing lanes, climbing lanes, and four-lane sections.

Table 4.1-2. Accident frequency in the rural portion of the US 93 Ninepipe/Ronan improvement project corridor (1995 to 2003).

	Saint Ignatius to MT 212		MT 212 to Ronan		Total		Statewide Average (Percent)
	Number	Percent	Number	Percent	Number	Percent	
Accident Location							
Non-intersection	81	65.3	57	54.8	138	60.5	71
At intersection	22	17.7	22	21.2	44	19.3	12
Intersection related	15	12.1	17	16.3	32	14.0	14
Driveway	6	4.9	8	7.7	14	6.2	4
Total	124		104		228	100	
Roadway Surface Condition							
Dry	93	75.0	80	76.9	173	75.9	66
Loose gravel	1	0.8	0	0.0	0	0.4	1
Wet	16	12.9	14	13.5	30	13.2	9
Snow or slush	4	3.2	2	1.9	6	2.6	7
Ice	10	8.1	8	7.7	18	7.9	17
Total	124		104		228	100	
Accident Type							
Head on	5	4.0	8	7.7	13	5.7	2
Left turn opposite direction	8	6.5	2	1.9	10	4.4	2
Left turn same direction	3	2.4	2	1.9	5	2.2	1
Other	8	10.5	3	2.9	11	4.8	13
Rear end	25	20.2	22	21.2	47	20.6	17
Right angle	4	3.2	12	11.5	16	7.0	10
Right turn	1	0.8	1	0.9	2	0.9	1
Sideswipe opposite direction	5	4.0	5	4.8	10	4.4	3
Sideswipe same direction	6	4.8	9	8.7	15	6.6	4
Not stated	59	47.6	40	38.5	99	43.4	47
Total	124		104		228	100	

A review of accidents in the urban portion between Little Marten Road/Timber Lane Road and Baptiste Road/Spring Creek Road over a nine-year period was used to assess existing safety issues. In order to identify types of safety issues, a nine-year historical accident report from MDT for the years 1995 to 2003 was used. There were 179 accidents during this period. On an average, there were 20 accidents per year. Table 4.1-3 displays accident frequency by severity (fatal, injury, or property damage).

Three fatal accidents were identified during the period studied and were not intersection-related. Two of the fatal accidents occurred between Little Marten Road/Timber Lane Road and Garfield Street. The other fatal accident occurred at the north end of Ronan near Old Highway 93 and involved a pedestrian.

Table 4.1-3. Accident frequency by accident severity type in the urban portion of the US 93 Ninepipe/Ronan improvement project corridor (1995 to 2003).

Accident Classification	Intersection	Non-intersection	Total
Property Damage Only	66	45	111
Injury	45	20	65
Fatal	0	3	3
Total	111	68	179

The nine-year accident rate for all accidents in the community of Ronan is calculated to be 2.55 accidents per million miles of vehicle travel. This is higher than the accident rate for the US 93 Evaro to Polson corridor, which is 1.19 per million miles of vehicle travel. The accident severity rate (rate for injuries and fatalities) for all accidents through Ronan is 1.58 per million vehicle miles. Statistics for intersection and non-intersection accidents are presented by accident type, weather, light condition, time of year, and day of the week in Table 4.1-4.

Table 4.1-4. Accident frequency by accident type in urban portion of the US 93 Ninepipe/Ronan improvement project corridor (1995 to 2003).

	Intersection		Non-Intersection		Total	
	Number	Percent of Intersection Accidents	Number	Percent of Non-intersection Accidents	Number	Percent of All Accidents
Accident Type						
Rear End	38	39.2	37	45.1	75	41.9
Right Angle	23	23.7	8	9.8	31	17.3
Left Turn	14	14.4	5	6.1	19	10.6
Right Turn	2	2.1	0	0	2	1.1
Sideswipe	8	8.2	13	15.9	21	11.7
Pedestrian	0	0	3	3.2	3	1.7
Run Off the Road	0	0	1	1.2	1	0.6
Other	12	12.4	15	18.3	27	15.1
Total	97		82		179	
Weather						
Clear	58	59.8	54	65.9	112	62.6
Cloudy	25	25.8	16	19.5	41	22.9
Rain	6	6.2	3	3.7	9	5.0
Snow	4	4.1	6	7.3	10	5.6
Sleet, Hail, Freezing Rain	1	1.0	1	1.2	2	1.1
Fog, Smog, Smoke	2	0	2	2.4	4	2.2
Total	97		82		179	
Light Condition						
Daylight	81	83.5	65	79.3	146	81.6
Dawn / Dusk	7	7.2	3	3.7	10	5.6
Night	9	9.3	14	17.1	23	12.8
Total	97		82		179	
Time of Year						
Winter	18	18.6	19	23.2	57	20.7
Spring	30	30.9	18	22.0	48	26.8
Summer	31	32.0	27	32.9	58	32.4
Fall	18	18.6	18	22.0	36	20.1
Total	97		82		179	
Day of the Week						
Sunday	9	9.3	10	12.2	19	10.6
Monday	14	14.4	9	11.0	23	12.8
Tuesday	11	11.3	13	15.9	24	13.4
Wednesday	21	21.6	14	17.1	35	19.6
Thursday	14	14.4	6	7.3	20	11.2
Friday	16	16.5	19	23.2	35	19.6
Saturday	12	12.4	11	13.4	23	12.8
Total	97		82		179	

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4.2 Land Use

4.2.1 Analysis Methods and Assumptions

Existing and proposed Tribal and local government plans, policies, and regulations were reviewed. An inventory of land uses in the project corridor was conducted in March 2003. Tribal and local government planners were contacted to obtain and/or confirm information.

This section discusses land use policies, regulations, and patterns. Housing and population are discussed in *Section 4.4 Social*. Parks and recreation are discussed in *Section 4.15 Parks and Recreation*.

4.2.2 Comprehensive Plans and Zoning

The Confederated Salish and Kootenai Tribes (CSKT) adopted the Flathead Indian Reservation Comprehensive Resources Plan in June 1994 and partially revised the plan in April 1996. The Lake County General Plan, adopted in 1988 is Lake County's comprehensive land use plan. Lake County adopted a Growth Policy in August 2003. CSKT and Lake County have not established zoning regulations along the US 93 Ninepipe/Ronan project corridor. The City of Ronan has zoning regulations, but no comprehensive plan.

Confederated Salish and Kootenai Tribes

The purpose of the CSKT Comprehensive Resources Plan "is to guide natural resource management and development on the Flathead Indian Reservation," and the plan "defines policies and processes that will guide future resource management on the Reservation" (CSKT 1996). The plan's policies and objectives (CSKT 2001a) include several that address transportation, communications and utilities. These policies and objectives include the following five-year objectives:

> "Continue cooperation in the development of an Environmental Impact Statement on Highway 93 to plan a safe and efficient highway system that maintains the rural character and environmental qualities of the Reservation."
>
> "Explore avenues of cooperation between Tribal, federal and local governments for continued road maintenance and construction planning that includes land use and sign controls to protect scenic and other natural resource values, enhance traffic safety and accommodate sound growth."

> "Pursue and facilitate transportation enhancement projects to protect scenic and other resource values and improve safety."
>
> The plan's transportation policies and objectives also include the following long-term objectives:
>
> "Continue to require and participate in development of environmental studies and road management plans to establish construction, reclamation, mitigation, maintenance and closure requirements that protect resource values and minimize environmental damages."
>
> "Continue work to ensure roads are well marked and have adequate access, especially to assist emergency vehicle access."
>
> "Encourage landscaping, buffering and construction designs for transportation, communication and utility corridors and facilities that are compatible with the natural features of the surrounding environment."

In addition to policies and objectives related to transportation, communications, and utilities, the CSKT Comprehensive Resources Plan includes policies and objectives addressing air, water, fisheries, wildlife, forest, range, agriculture, minerals and energy, wilderness and primitive areas, land-based cultural resources, recreation and scenic areas, residential areas, commercial and industrial areas, and government and institutional facilities.

Lake County

The Lake County Growth Policy is an update to the 1988 Lake County General Plan (Lake County 1988). The adopted growth policy is not "a regulatory document," but does provide "a framework and rationale for developing procedures, policies and working on specific projects that are intended to guide future population growth and development in a cohesive and intelligent manner" (Lake County 2003). The growth policy's discussion of US 93 in Chapter 5 of that policy document includes a recommendation that "(d)uring construction, it would be a great benefit to residents, visitors and businesses if a system of chip-sealed or paved detours was established that could allow smooth traffic flow while limiting the impacts to the surrounding communities and environment." Chapter 5 also contains the following specific objectives that relate to US 93:

> "Work in conjunction with the Federal Highway Administration, the Montana Department of Transportation and the Confederated Salish and Kootenai Tribes to develop local traffic alternatives to U.S. Highway 93 that link the communities of southern Lake County."
>
> "Encourage the establishment and use of public transportation that links population centers in order to reduce congestion and increase safety and efficiency along U.S. Highway 93."

> "Develop parking, circulation, landscaping, buffering, signage and design standards for commercial and high-impact residential projects."

Ronan

Properties on both sides of the existing US 93 within the city limits are zoned C-Commercial. Properties on the east side of First Avenue SW within the city limits are also zoned C-Commercial. Properties on the west side of First Avenue SW north of Adams Street are zoned C-Commercial, while properties on the west side south of Adams Street are zoned A-Residential.

4.2.3 Land Uses in the Project Vicinity

Flathead Indian Reservation

Encompassing 532,920 hectares (1,316,871 acres), the Flathead Indian Reservation overlaps with approximately two-thirds of Lake County, and also extends west and south of Lake County, overlapping portions of Flathead, Sanders, and Missoula counties. The CSKT own the majority of land on the Flathead Indian Reservation. Other land is contained within allotments owned in whole or in part by individuals and the CSKT. The remainder of the land on the Flathead Indian Reservation is in federal, state, or fee ownership. Fee land is "land that is not in trust status, nor is it federally, Tribally or state owned" (CSKT 1996).

The CSKT have divided the Flathead Indian Reservation into planning units called study areas (CSKT 1996). The US 93 Ninepipe/Ronan project corridor is located within the Mission Valley study area, which covers the east-central part of the Flathead Indian Reservation and extends from Flathead Lake on the north, the Flathead River corridor on the west, the Jocko River-Mission Creek divide on the south, and the Flathead Indian Reservation boundary on the east. Land status within the study area is shown in Table 4.2-1.

Table 4.2-1. Land status within the Mission Valley study area.

Land Status	Area in Hectares	Area in Acres	Percentage of Total Study Area
Tribal	60,806	150,255	43.4
Allotted	8,025	19,830	5.7
Fee	67,187	166,023	48.0
Federal-State-Town	4,131	10,208	2.9
Total	140,149	346,316	100

Source: CSKT 1996.

The predominant land uses in the study area are shown in Table 4.2-2.

Table 4.2-2. Land uses within the Mission Valley study area.

Land Use Category	Approximate Area in Hectares	Approximate Area in Acres	Percentage of Total Study Area
Irrigated cropland	41,642	102,900	30
Mission Mountains Wilderness	37,141	91,778	27
Forest (excluding wilderness)	24,247	59,916	17
Rangeland	19,597	48,425	14
Rural and suburban	9,122	22,541	7
Non-irrigated cropland	6,216	15,360	4
Water (major reservoirs)	1,569	3,878	1
Urban and built-up	615	1,519	<1

Source: CSKT 1996.

Lake County

Lake County encompasses 427,652 hectares (1,056,748 acres). Land ownership in Lake County is shown in Table 4.2-3.

Table 4.2-3. Land ownership within Lake County.

Land Ownership	Area in Hectares	Area in Acres	Percentage of Total County Area
Fee (Tribal and non-Tribal)	147,663	364,882	35
Tribal	117,401	290,103	27
Federal	68,388	168,989	16
Water [a]	41,478	102,495	10
State	26,575	65,668	6
Large Corporate	25,900	64,000	6
Conservation Organization	212	524	.05
Local Government	35	87	.001
Total	427,652 [b]	1,056,748 [b]	100

[a] The Ninth District Court of Appeals found that the CSKT own the bed and banks of the southern half of Flathead Lake.
[b] Figures for the total area within the county vary between sources with the U.S. Census Bureau showing a total area of 428,311 hectares (1,058,377 acres).
Source: Lake County 2003.

The majority of land in the county is used for agriculture and timber production. Development is occurring rapidly in the county with more than 800 land divisions resulting in several thousand new lots recorded in the county between 1993 and 2002 (Lake County 2003). This development was paralleled by rapid population growth, with the county experiencing a 26 percent increase in population between 1990 and 2000 according to the U.S. Census Bureau.

Project Corridor

The 18.2-kilometer (11.3-mile) US 93 Ninepipe/Ronan project corridor can be divided into three distinct land use sections:

From the south end of the corridor at Dublin Gulch Road/Red Horn Road (RP 37.1) to the south city limits of Ronan at RP 46.0 (this section corresponds to the designated rural portion of the corridor and encompasses the Post Creek Hill segment and the Ninepipe segment), land uses adjacent to the roadway are primarily rural and dominated by low density residential and agricultural uses, although some commercial/industrial uses, a new church, and a major wildlife refuge (Ninepipe National Wildlife Refuge) are also located in this section of the corridor. Commercial land uses in this section of the corridor are typically highway or tourist oriented and include a motel, restaurant, and nearby museum (RP 41.0) at the Ninepipe National Wildlife Refuge. Industrial land uses include a large employer in the area, Jore Industries.

From the south city limits of Ronan to Old Highway 93 at RP 47.7 (this section of the project corridor corresponds to the southern three-quarters of the designated urban portion of the corridor), land uses adjacent to the roadway are dominated by urban density residential, commercial/industrial, and institutional uses. Important community institutions and land uses within this section of the US 93 Ninepipe/Ronan project corridor include a senior citizens' center and a church along US 93. A hospital, several schools, and other public and private community-based land uses are located near the corridor in Ronan. Recreational uses and facilities are discussed in *Section 4.15 Recreation*. As indicated in Table 4.2-4, the stretch of US 93 in downtown Ronan between Jefferson Street and the north end of the proposed couplet (Alternative Ronan 3 Alternative Ronan 4) is predominantly commercial, while the stretch of First Avenue SW through downtown Ronan is predominantly residential.

From Old Highway 93 to the north end of the corridor at Baptiste Road/Spring Creek Road at RP 48.3 (this section corresponds to the northern one-quarter of the urban portion of the corridor), land uses adjacent to the roadway are dominated by rural, low density residential and agricultural uses.

An inventory of land uses adjoining the US 93 Ninepipe/Ronan project corridor is provided in Table 4.2-4.

Table 4.2-4. Inventory of land uses by parcel along the US 93 Ninepipe/Ronan improvement project corridor.

Corridor Section	Residential	Commercial/Industrial/ Institutional	Other or Unknown [a]	Land Use Density per Kilometer (mile) of Roadway
Rural Portion (Dublin Gulch/Red Horn Road to the south city limits of Ronan)				
Post Creek Hill Segment	8	7	1	3.7 (5.9)
Ninepipe Segment	16	10	2	2.8 (4.5)
Rural Portion Total	24	17	3	3.1 (4.9)
Urban portion (South city limits of Ronan to Baptiste/Spring Creek Road)				
South city limits of Ronan to Jefferson Street	1	11		17.1 (27.6)
Jefferson Street to north end of potential couplet along US 93	8	28		25.7 (41.4)
Jefferson Street to north end of potential couplet along 1st Ave. SW	16	7	1	17.1 (27.6)
North end of potential couplet to Old Highway 93	1	4		6.2 (10.0)
Subtotal for the south city limits of Ronan north to Old Highway 93	26 (including both US 93 and 1st Ave. SW)	50 (including both US 93 and 1st Ave. SW)	1 (including both US 93 and 1st Ave. SW)	17.9 (28.5)
Old Highway 93 to north end of the project corridor			2	2.0 (3.2)
Urban Portion Total	26 (including both US 93 and 1st Ave. SW)	50 (including both US 93 and 1st Ave. SW)	3 (including both US 93 and 1st Ave. SW)	14.9 (23.9)

[a] Other lands includes recreational land, parks, or open space. Unknown means the current use is not known. Farmland was classified as residential.

4.3 Prime and Unique Farmland

4.3.1 Analysis Methods and Assumptions

Background research included a literature and map review and communications with personnel from agencies including the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) and Lake County to obtain farmland/soil mapping. The analysis of potential impacts on farmland described in this section follows the *Guidelines for Implementing the Final Rule of the Farmland Protection Policy Act for Highway Projects* (FHWA 1989), herein referred to as the Federal Highway Administration (FHWA) Farmland Guidelines. Parts I, II, III, and IV of Farmland Conversion Impact Rating Form AD-1006 have been completed and are included in Appendix G.

4.3.2 Regulations and Standards

The Farmland Protection Policy Act (FPPA) of 1981 (Title 7 USC, Chapter 73, Sections 4201-4209) has as its purpose "to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to assure that federal programs are administered in a manner that, to the extent practicable, will be compatible with State, unit of local government, and private programs and policies to protect farmland." The FPPA requires that before implementing any action that would result in conversion of farmland, the effects of the action should be examined and, if there are adverse effects, actions to lessen them should be considered.

Farmland is defined by the FPPA in Section 4201 as including:

- Prime farmland
- Unique farmland
- Farmland, other than prime or unique farmland, that is of statewide or local importance.

The characteristics of these categories of farmland are described in detail in Soil Conservation Service Departmental Regulation 9500-003 dated March 22, 1983. Farmland, as defined by the FPPA, does not include land already in or committed to urban development or water storage. Land already in urban development or water storage includes all such land "with a density of 30 structures per 16-hectare (40-acre) area" and also includes "lands identified as "urbanized area" (UA)" by the U.S. Census Bureau, as "urban area mapped with a "tint overprint" on the USGS topographical maps," or as "urban-built-up" on the USDA Important Farmland Maps (7 CFR Part 658.2). Downtown Ronan (defined as being bound on the south by Ingersoll Street SE on the east side of US 93 and by Garfield Street SW on the west side of US 93, and bound on the north by Terrace Lake Road on the east side of the existing US 93 and the north end of the couplet on the west side of US 93) meets the definition of land already in urban development based on the 30 structures per 16-hectare (40-acre) standard. The FHWA Farmland Guidelines state: “Unique farmlands and farmlands of statewide or local importance are, however, subject to the FPPA (even in areas already in or committed to urban development).”

4.3.3 Existing Farmland in the Project Corridor

In 1997, Lake County had 241,487 hectares (596,726 acres) of land in 1,011 farms (Lake County 2003). Of this total land area, approximately 19,000 hectares (47,000 acres) are FPPA farmland (prime, unique, or of statewide or local importance). There are no unique farmlands mapped in the corridor. Approximately 94 percent of the linear extent of the US 93 Ninepipe/Ronan project corridor is on land mapped as prime farmland, farmland of statewide importance, or farmland of local importance. The areas within the corridor that contain mapped farmlands are listed in Table 4.3-1.

Table 4.3-1. Locations of mapped farmland within the US 93 Ninepipe/Ronan improvement project corridor.

Approximate Reference Post Location	No Mapped Farmland	Prime Farmland	Farmland of Statewide Importance	Farmland of Local Importance
Rural portion				
Post Creek Hill segment				
37.1 – 37.3				X
37.3 – 37.4		X		
37.4 – 37.5	X			
37.5 – 37.6				X
37.6 – 37.7				X
37.7 – 38.0	X			
38.0 – 39.0				X
39.0 – 39.1	X			
39.1 – 39.7				X
Ninepipe segment				
39.7 – 40.7				X
40.7 – 44.1				X
44.1 – 44.2	X			
44.2 – 44.3		X		
44.3 – 45.1				X
45.1 – 45.2		X		
45.2 – 46.0				X
Urban portion				
46.0 – 46.9				X
46.9 – 47.0		X		
47.0 – 47.1	X			
47.1 – 47.2				X
47.2			X	
47.2 – 47.4		X		
47.4 – 47.5			X	
47.5 – 47.7	X			X
47.7 – 47.9		X		
47.9 – 48.0				X
48.0		X		
48.0 – 48.1				X
48.1 – 48.2		X		
48.2				X
48.2 – 48.3		X		
48.3				X

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4.4 Social

A discussion of social considerations in an environmental document is intended to provide the decision-makers with information about how a proposed project might affect people living or working in the vicinity of the project.

Issues of concern include:

- Lifestyle
- Population and demographics
- Housing
- Community cohesion
- Impacts on public utilities and services
- Environmental justice.

Social issues frequently addressed in environmental documents include environmental or social justice, including disproportionate impacts on low-income or minority populations, and disruption of existing communities. Social considerations are relevant for the proposed US 93 Ninepipe/Ronan improvement project because of the important role of US 93 in the social environment of the area. In addition to transporting people throughout the local area, traffic and the physical nature of the highway acts as a barrier to social interaction within the urban and rural communities it serves.

4.4.1 Analysis Methods and Assumptions

Published data were consulted to determine the racial and ethnic composition of the area to be affected by the proposed project, and this information was compared to the composition of the county and state as a whole. A similar effort was made to determine if the proposed project would have a disproportionate impact on low-income people. The potential for disruption to existing communities was estimated by looking at the layout of the proposed project and nearby residences to see if the proposed project divides any communities, isolates any areas, or negatively affects access. Public services in the project corridor were determined through conversations with local agency personnel, and by a review of the literature cited in this public services and utilities section. Social issues are discussed in an environmental document in order to inform the public and agency decision-makers about how a proposed project might affect people living or working in the project vicinity, and to help identify differences between alternatives.

Data sources used for the preparation of this section include:

- U.S. Census Bureau 2000 Census

- *An Economic Assessment for the U.S. Highway 93 Supplemental Environmental Impact Statement* prepared by the Flathead Valley Community College Center for Business Information and Research (CBIR 2002)

- Final Environmental Impact Statement and Section 4(f) Evaluation; FHWA-MT-EIS-95-01-F; F 5-1(9)6, U.S. Highway 93, Evaro to Polson, Missoula and Lake Counties, Montana (referred to as the US 93 Evaro to Polson FEIS (FHWA and MDT 1996).

4.4.2 Regulations and Standards (including Title VI and Environmental Justice)

The following analysis is consistent with the requirements of the National Environmental Policy Act of 1969 (NEPA); Department of Transportation Order on Environmental Justice (DOT Order 5610.2); FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (FHWA 1998); FHWA Technical Advisory T6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents (FHWA 1987); Title VI of the Civil Rights Act of 1964; Executive Order 12898 regarding Environmental Justice, as well as generally accepted professional standards for economic analyses.

According to FHWA, "all reasonably foreseeable adverse social, economic, and environmental effects on minority populations and low-income populations must be identified and addressed." Adverse effects include but are not limited to the following:

- Bodily impairment, infirmity, illness, or death

- Air, noise, and water pollution and soil contamination

- Destruction or disruption of manmade or natural resources

- Destruction or diminution of aesthetic values

- Destruction or disruption of community cohesion or the economic vitality of a community

- Destruction or disruption of the availability of public and private facilities and services

- Vibration

- Adverse employment effects

- Displacement of persons, businesses, farms, or nonprofit organizations
- Increased traffic congestion, isolation, exclusion, or separation of minority or low-income individuals within a given community or from the broader community
- Denial of, reduction in, or significant delay in the receipt of benefits of U.S. Department of Transportation programs, policies, or activities.

4.4.3 Setting

The proposed US 93 Ninepipe/Ronan improvement project is located in Lake County, Montana. Improvements would occur within the roadway segment from Dublin Gulch Road/Red Horn Road to Baptiste Road/Spring Creek Road, passing through the City of Ronan. The proposed project is situated within Lake County Census tracts 9405 and 9406, as delineated by the 2000 Census and direct impacts from the proposed project, such as property acquisition, would occur within these two Census tracts. Census tracts were chosen instead of smaller census blocks as a means to obtain data more closely reflecting conditions in the greater US 93 service area. Indirect economic impacts, such as increased demand for construction material and job creation, would occur throughout a much wider area, probably the entire State of Montana.

The project area is generally rural, with the City of Ronan serving as the local market center. Ronan includes a number of commercial services, including grocery stores, service centers, restaurants, and auto dealers. Ronan's location between Missoula and Kalispell makes it a prominent regional trade and service center. The City of Missoula, located 88 kilometers (55 miles) to the south, has a population of 57,053 (U.S. Census 2002). As the largest population center in western Montana, Missoula serves as a service center for the project area. The economy of Ronan is dependent on trade and services, with over 50 percent of its employment base directly tied to these industries. Several sectors of the economy were identified as being heavily dependent on outside sales, food and beverage stores, gasoline service stations, sporting goods, hardware and building supplies, and eating and drinking establishments. Many residents in the project area commute to work outside the project area.

The entire project area is located within the Flathead Indian Reservation.

4.4.4 Lifestyle

Lifestyle in the project area is rural, and residents have strong ties to the land and to neighboring communities. Residents include long-time residents as well as new permanent and seasonal residents, many of whom are drawn to the area by recreational opportunities and by the slower-paced, small town atmosphere. As discussed in the US 93 Evaro to Polson FEIS and expressed at recent public meetings, concerns among local residents include managing the rate of population growth and preserving the area's rural lifestyle, including its productive agriculture, abundant wildlife populations, and clean air and water that make the area attractive.

4.4.5 Population and Demographic Characteristics

Population and Patterns of Natural Increase and Migration

As shown in Table 4.4-1, Lake County's population in 2000 was 26,507, a 26 percent increase over its 1990 population of 21,041 (U.S. Census Bureau 2002; 1990). This population growth was well above the statewide average of 12.9 percent for the same timeframe, and Lake County ranked among the fastest growing counties in the state. The county experienced faster growth during the early 1990s, with approximately 3,400 new residents moving into the county from 1990 to 1995, compared to only 1,000 doing so between 1995 and 2000. The Native American population increased at a faster rate than did other groups (CBIR 2002).

Table 4.4-1. Population and net migration for the State of Montana, Lake County, and the City of Ronan for 1990, 1995, and 2000.

	Persons			Annual Growth		Net Migration	
	1990	1995	2000	1990-95	1995-00	1990-95	1995-00
Montana	799,065	868,500	902,195	1.7%	0.8%	46,700	11,000
Lake County	21,041	24,411	26,507	3.0%	1.7%	3,400	1,000
American Indians	4,498	NA	6,306	3.4%		NA	NA
Other	16,543	NA	20,201	2.0%		NA	NA
Project Area [a]	NA	NA	8,277	NA		NA	NA
City of Ronan	1,547	NA	1,812	1.6%		NA	NA
American Indians	388	NA	599	4.4%		NA	NA
Other	1,159	NA	1,213	0.5%		NA	NA

Source: U.S. Census Bureau, 2002.
[a] Consists of census tracts 9405 and 9406.
Notes: NA means data was not available. The census tracts used to approximate the project area changed in configuration from the 1990 to 2000 Census.

The population of the City of Ronan was 1,812 persons in 2000, up from 1,547 persons in 1990 (see Table 4.4-1). Population growth in the City of Ronan averaged 1.6 percent per year during the 1990s, less than that of Lake County and comprises 6.8 percent of the county's population. The number of American Indians in Ronan rose from 388 in 1990 to 599 in 2000. The population growth rate for American Indians was 4.4 percent per year, far exceeding the 0.5 percent for all other categories (U.S. Census 2002).

There was net in-migration into Lake County throughout the decade, but it slowed toward the end of the 1990s. Net in-migration totaled roughly 3,400 persons (or about 850 per year) from 1990 to 1995, and approximately 1,000 (or about 200 per year), between 1995 and 2000.

There were 6,306 self-identified American Indians living in Lake County in 2000, up from 4,498 in 1990. The number of American Indians increased at an average rate of 3.4 percent per year during the 1990s, as compared to a 2.0 percent per year growth for all other categories (U.S. Census 2002).

According to the U.S. Census Bureau (2002), the population of the Flathead Indian Reservation, which contains parts of Lake, Missoula, Flathead, and Sanders counties, increased 23 percent from 21,260 in 1990 to 26,172 in 2000.

Race and Age Characteristics

Age data for the project area are based on the 2000 census, and are presented in Table 4.4-2.

Table 4.4-2. Regional and local age distribution.

	Montana	Lake County	Project Area [a]	City of Ronan
Age	Percent of Total	Percent of Total	Percent of Total	Percent of Total
0-4	6.1	6.7	7.3	7.9
5-19	22.5	24.2	27.7	23.9
20-24	6.5	5.1	6.3	7.1
25-44	27.1	24.5	24.8	23.5
45-64	24.4	25	21.6	20.7
65+	13.4	14.5	12.4	16.9
Total	100.0	100.0	100.0	100.0
Median Age	37.5	38.2	33.5	35.3

Source: U.S. Census Bureau, 2002.
[a] Includes Census Tracts 9405 and 9406.

As shown on Table 4.4-2 previously, the age distribution within the project area includes a higher percentage of children below the age of 20 and a lower percentage of adults over 65 than the other areas. As a result of this distribution, the median age of the project area (33.5) is substantially lower than Lake County (38.2) and the State of Montana (37.5).

Data related to the racial composition of the state, county, city, and project area were obtained on-line from the U.S. Census Bureau and are based on the 2000 Census. Table 4.4-3 illustrates that the population of the project area (Census Tracts 9405 and 9406) includes a greater number of Native Americans than Lake County or the State of Montana. Native Americans account for 34.2 percent of the population in the project area, compared to 23.8 percent in Lake County, and only 6.2 percent in Montana as a whole. Census Bureau statistics show that very few members of other minority groups live in the project area, Lake County, or the State of Montana. Because of the greater percentage of Native Americans in the project area, the racial composition of the project area is substantially different than compared with Lake County and the State of Montana.

Population Projections

As discussed in the US 93 Evaro to Polson FEIS and substantiated by recent data from the U.S. Census, population growth in Lake County is expected to remain consistent with current trends. Citing estimates from the Montana Department of Commerce, Census and Economic Information Center (CEIC), the US 93 Evaro to Polson FEIS estimated the 1990-2000 population growth rate of Lake County at between 9 percent and 13 percent, to a level between 22,900 and 23,800. During the period 2000-2010 the rate of growth was expected to be between 7 and 9 percent, resulting in a population between 24,400 and 25,900. More recently, the 2000 U.S. Census found the actual 2000 population of Lake County to be 26,507, higher than the projected range. Based on a continued growth rate of 7 to 9 percent, Lake County's population was projected to be between 26,100 and 28,200 in 2010, although the 2000 Census figures suggest that this level may be surpassed. Projections are generally not made for geographic areas smaller than the county level.

Table 4.4-3. Racial composition of Montana, Lake County, the project area, and the City of Ronan based on 2000 U.S. census data.

	State of Montana	Lake County	Project Area	City of Ronan
White	817,229 90.6%	18,922 71.4%	5,089 61.5%	1,131 62.4%
Black	2,692 0.3%	31 0.1%	9 0.1%	2 0.1%
Native American	56,068 6.2%	6,306 23.8%	2,832 34.2%	599 33.0%
Asian/Pacific Islander	5,161 0.6%	90 0.3%	18 0.2%	3 0.2%
Hispanic or Latino	18,081 2.0%	668 2.5%	254 3.0%	61 3.4%
Other	2,964 0.3%	490 1.8%	75 0.9%	16 0.9%
Total	902,195	26,507	8,277	1,812

Source: U.S. Census Bureau 2002.

The US 93 Evaro to Polson FEIS also discussed the estimated population growth on the Flathead Indian Reservation for the 30-year period 1990-2020. The estimate was based on population projections available from the CEIC for Lake, Missoula, Sanders, and Flathead counties; parts of each of these counties are contained within the boundaries of the Flathead Indian Reservation. The estimate indicated that the population of the Flathead Indian Reservation would increase from 21,260 in 1990 to 24,000 in 2000, 26,200 in 2010, and 28,600 in 2020. The 2000 Census found that the actual population on the Flathead Indian Reservation was 26,172, substantially higher than the projection of 24,000.

4.4.6 Housing

Housing Vacancy Rates

Vacancy rates are close to 8 percent in the project area and the City of Ronan (Table 4.4-4). Lake County, in contrast, has a substantially higher vacancy rate of 25 percent (Table 4.4-4). Both of these rates are well above the national vacancy rate of 5.9 percent (U.S. Census 2002) and well above the generally accepted equilibrium rate of 5 percent for housing vacancies. The generally accepted equilibrium rate is defined as the level where vacancies are in balance with the demand for housing and neither the landlord nor the prospective tenant has the ability to affect the price of housing. However, vacant housing includes more than residences that are available to buyers or renters; vacant housing includes second homes that are for “seasonal, recreational, or occasional use,” housing for migrant workers; and other residences that were vacant when the 2000 Census was taken. The number of housing units available for purchase or rent in Lake County is actually much lower than shown in Table 4.4-4 because 19.5 percent of the housing units in Lake County (2,659) are for “seasonal, recreational, or occasional use.” Removing vacant “seasonal, recreational, or occasional use” housing from consideration reduces the vacancy rates in the county, project area, and city to around the national average.

Table 4.4-4. Regional and local housing occupancy.

	Lake County	Project Area	City of Ronan
Occupied	10,192	2,946	699
Vacant	3,413	250	56
Total	13,605	3,196	755

Source: U.S. Census Bureau 2002.

Affordable Housing

There were 13,605 housing units in Lake County, according to the 2000 U.S. Census. Of the 10,192 units that were permanently occupied, 71.4 percent were single-family, owner occupied, while 28.6 percent were rental units. This is slightly higher than the national average of 68 percent owner-occupied housing (U.S. Census 2002).

The average monthly rental for a single-family house is $600, and $475 for an apartment. The median price of a single-family home (exclusive of lakefront properties) was $103,000 in 2001. Average household income in Lake County was $28,740 in 1999. The monthly mortgage payments for the average home is estimated to be approximately $620 per month (assumes a 30 year conventional mortgage, with 5 percent down payment, and a 6.5 percent interest rate), or 26 percent of the average household’s monthly income. In order to be affordable, mortgage payments and taxes should not be more than 28 percent of household income (U.S. Census 1999); therefore, the average family can afford the average house in Lake County. By way of comparison, the U.S. Census found that in 1995 (the latest date for which detailed information is available) only 39.8 percent of the families and unrelated individuals in the United States could afford the median priced home (U.S. Census 1999).

4.4.7 Community Cohesion

Community cohesion is the level of interaction among individuals, groups, and institutions in a community. Because of its importance as a major thoroughfare and its role as the business center in the City of Ronan and the surrounding area, US 93 is an important element of this interaction. The US 93 Evaro to Polson FEIS and concerns raised at recent public meetings identified traffic congestion and difficulties in crossing from one side of US 93 to the other as barriers to the easy flow of residents and visitors between their homes, workplaces, schools, and shopping and recreational activities. Additionally, because the majority of vehicles traveling along US 93 do not stop in Ronan or do so only for food, drink, or gasoline (CBIR 2002), the highway may be perceived as a way to pass through the community rather than a way to access the community. This perception of the highway as a regional transportation corridor would be an impediment to social interaction rather than a means to facilitate community interaction and cohesion.

Social Stability

The availability of employment opportunities has a profound impact on social stability in rural communities. High unemployment would tend to force people to leave an area in search of more reliable employment. Unemployment in the project area appears to be slightly higher than the statewide average. Lake County's unemployment rate was 4.8 percent in 2000, down from 5.3 percent in 1990. The unemployment rate in the project area as comprised by census tracts 9405 and 9406 was 5.4 percent in 2000, with no comparable number available for 1990. Both the Lake County and project area unemployment rates are higher than the state average (4.1 percent in 2000, and 4.4 percent in 1990), but lower than those of the City of Ronan, where the unemployment rate was 6.0 percent in 2000 and 6.9 percent in 1990.

Compared to the State of Montana as a whole, unemployment rates were progressively higher in Lake County, the project area, and the City of Ronan. The decline in unemployment from 1990 to 2000 was also more pronounced in the smaller jurisdictions. This is one indication that social stability may be more volatile in the areas closest to the US 93 Ninepipe/Ronan improvement project.

As discussed in the US 93 Evaro to Polson FEIS and expressed at recent public meetings, the social stability of the area is also affected by the conflict between the desire to maintain a rural lifestyle and the desire to expand economic opportunities. If the economy grows and new jobs are created, local residents are likely to feel that the area is being altered as new residents move in. If economic growth does not occur, a lack of jobs may force younger residents to leave in search of economic opportunities. As the local economy expands, traffic volumes would increase and local residents are likely to complain of traffic congestion. Redeveloping US 93 could reduce the traffic congestion, but a more intensively developed US 93 may make local residents feel that the area is becoming too developed.

Social Mobility

Two types of information have been used from the U.S. Census to describe social mobility: 1) place of residence for persons five years prior to the census; 2) the number of employed persons who commute to work outside their place or county of residence.

Since 1980, people moving to Lake County from places outside the county and Montana have been an important part of the growth of population. The number of people who moved to Lake County from another county within Montana or outside Montana in the five-year period before the decennial U.S. Census was 25.7 percent in 2000, 22 percent in 1990, and 29 percent in 1980. (U.S. Census 2002)

The area's population growth has contributed to increased commuter travel between the area of the proposed action and areas both inside and outside the county, including both Missoula and Kalispell.

4.4.8 Public Utilities and Services

This section describes the existing conditions of public services and utilities within the US 93 Ninepipe/Ronan project corridor. The discussion provides general descriptions of public services, including fire and emergency response services and local law enforcement; and utilities including electrical service, telecommunication service, wastewater and stormwater collection, water supply, and solid waste collection. US 93 is the primary travel route used by police or other emergency response providers and service times could be affected during construction. Public utilities, including electrical service and telecommunications, are located alongside US 93 and could potentially be affected by any redevelopment of the roadway.

Fire and Emergency Response Services

The US 93 Ninepipe/Ronan project corridor is covered by the Ronan Fire Department and the Saint Ignatius Fire Department. Saint Ignatius provides coverage up to the Ninepipe Area, while Ronan covers the area to the north of Ninepipe (Stanley 2003 personal communication). In addition, the CSKT respond to wildland fires in the area.

Ronan has two fire stations, one in located in Pablo, and one in Ronan. Between the two stations they have 42 personnel, all of whom are volunteers. They also have two, 5,678-liter per minute (1,500-gallon per minute) fire engines, three, 3,785-liter per minute (1,000-gallon per minute) engines, four type-6 brush trucks, and three water tenders with combined capacity of 37,854 liters (10,000 gallons) (Stanley 2003 personal communication).

Saint Ignatius, located south of the project corridor, has one fire station in the city, and 23 personnel, all of whom are volunteers. They have two fire engines, one mini-pumper truck, and a (5,678-liter) 1,500-gallon water tender (Stanley 2003 personal communication).

The CSKT Division of Fire has a fulltime staff of 15, and a seasonal staff of approximately 25. The division responds to wildland fires only, not to structure fires. They participate in fire suppression, prescribed fire activity, wildland search and rescue, and other activities. The Division of Fire includes helicopter service from July to September through a contract with a third party. They also staff the Mission Valley Fire Crew, housed next to the airport in Ronan, from May to October (Harwood 2003 personal communication).

Hazardous materials response is shared between Lake County and the CSKT. A hazmat team based in Missoula is also available (Stanley 2003 personal communication).

Ambulance service provides emergency response in Ronan. Fire investigations are directed from the Lake County Sheriff's office. Ronan and Saint Ignatius have a building inspector to conduct code enforcement, with the help of a volunteer fire chief.

The local fire departments are kept busy with a high number of calls in the area. The most common type of call involves motor vehicle accidents (Stanley 2003 personal communication).

Law Enforcement

Law enforcement services in the US 93 Ninepipe/Ronan project corridor are provided by the Lake County Sheriff, the Ronan Police Department, the Saint Ignatius Police Department, and Confederated Salish and Kootenai Tribal Law and Order Department.

Law enforcement services in Lake County are provided by the Lake County Sheriff's Office, which includes 20 full-time officers (including administrative personnel and detectives), 25 civilian employees, and 40 reserve deputies (Barron 2003 personal communication).

The Ronan Police Department employs three full time officers, with an unfilled fourth position, as well as five part-time officers. The department has four patrol cars (Sgt. Finkel 2003 personal communication).

The Saint Ignatius Police Department includes two full-time and three reserve officers. Motor vehicle accidents comprise the majority of events for the department. Saint Ignatius Chief of Police Chuck Willis indicated a couple of problem intersections that seem to be especially dangerous because of downhill slopes, limited visibility, and traffic drawn to some local businesses that are open 24 hours a day (Willis 2003 personal communication). The Saint Ignatius Police Department does not normally respond to calls outside the city limits. US 93 in itself has not posed a problem regarding access or response times, although the city of Saint Ignatius' street address system is apparently numbered inconsistently and can make locating a specific address difficult (Willis 2003 personal communication).

The CSKT have criminal jurisdiction over "any Tribal member, American or Canadian Indian, or Alaskan Native found within the Flathead Reservation and accused by the Tribes of the commission, within the Flathead Reservation," of a Tribal offense (CSKT 2003). The Tribes have jurisdiction over Tribal offenses classified as misdemeanors and concurrent jurisdiction, with the State of Montana, for Tribal offenses classified as felonies. The Confederated Salish and Kootenai Tribal Law and Order Department enforces the laws of the CSKT. The Department consists of 16 officers, 10 detention officer / dispatchers, three drug investigators, three community officers, a police clerk, and one police cook (CSKT 2004). The police department provides services 24 hours a day seven days per week.

Electrical Service

Electric service to the project area is provided by Mission Valley Power, which is operated by the CSKT under contract to the Bureau of Indian Affairs (BIA) (LCCDC 2002).

A visual inspection of the route indicates that a 12.5 kV transmission/distribution line runs along portions of the right-of-way and that other similar lines cross the right-of-way at several points along the project corridor.

Natural Gas Service

Natural gas service is not available in Lake County. Heating oil and propane are available from several local distributors.

Telecommunications

There are three independent telephone companies that provide service in Lake County. Ronan Telephone Company serves the project area and the areas of Ronan and Pablo. Mobile phone service is growing but is not yet available throughout the entire project area (LCCDC 2002).

Water-Related Utilities

The incorporated communities of Ronan and Saint Ignatius operate municipal water and wastewater treatment facilities. Residential, commercial, and industrial developments in rural areas outside the communities use individual water wells with septic tanks and drain fields for sewage disposal.

The CSKT operate community water and sewer systems at Turtle Lake (east of Polson), Saint Ignatius Southside, and three community developments 1.6 to 3.2 kilometers (1 to 2 miles) east of Ronan.

Solid Waste

The Lake County Landfill is located at 3500 Kerr Dam Road in Polson (Recycle Montana 2003) and the landfill is accessible from US 93. The Lake County Landfill is expected to close in 2004 and after that time waste generated within the project area would be dropped at a transfer station situated west of US 93 between Polson and Pablo and hauled to a large regional landfill. A private solid waste hauling service, BFI Waste Systems of North America, Inc., also operates in the area and residents in Lake County utilize their services (CSKT undated).

Schools

There are five public high school districts and five public elementary school districts in Lake County. Each school district operates school bus routes that require travel and stops on US 93. In addition, Salish Kootenai College and Two Eagle River School, a private high school, are located adjacent to US 93 at Pablo.

Health Care and Social Facilities

Several hospitals, mental health and social services offices, nursing homes, and community and senior citizen centers are located in the vicinity of the proposed project. One Tribal facility located adjacent to US 93 in Ronan includes, but is not limited to the following services: Tribal Head Start Program, Ronan Tribal Health and Human Services Center, court appointed Special Advocate, the Tribal Gaming Commission, Senior Citizens Center, and a Boys and Girls Club with an adjacent skate park.

Other Services

Other services in the project area include municipal airports operated by the communities of Polson, Ronan and Saint Ignatius. Montana Rail Link (MRL) operates a railroad freight line between Missoula and Polson. Passenger bus service is available, but no passenger rail service is available between Missoula and Kalispell.

Churches of many denominations are located in all of the communities; several churches have direct approaches to US 93, while others are in areas away from the highway.

4.4.9 Environmental Justice

FHWA (1998) guidance defines “disproportionately high and adverse effects on minority and low-income populations” as an adverse effect that:

1. Is predominately borne by a minority population and/or a low-income population; or

2. Will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and or non-low-income population.

The FHWA guidance document *Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (1987) states “the benefits of transportation must be available to all Americans, including economically and socially disadvantaged, minority, young and old, and disabled citizens.”

The project area supports both minority and low-income populations.

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4.5 Economics

4.5.1 Analysis Methods and Assumptions

Economics is discussed in an environmental document in order to inform the public and agency decision-makers about how a proposed project might affect people living or working in the project vicinity, and to help identify differences between alternatives.

Economic issues of concern include:

- Overall economy, including employment
- Personal income
- Housing, especially affordable housing, in the area.

Economic issues are addressed by reviewing published data describing the strength of the local economy, including population growth, job creation and unemployment, and the availability and cost of housing. These establish the basis for the affected (existing) environment discussion. Economic impacts are evaluated based on estimates of project employment and related changes to the demand for housing and personal income. Data sources used for the preparation of this section include the:

- U.S. Census Bureau 2000 Census
- Montana Department of Labor and Industry (MDLI)
- *An Economic Assessment for the U.S. Highways 93 Supplemental Environmental Impact Statement* prepared by the Flathead Valley Community College Center for Business Information and Research (CBIR 2002)
- *Final Environmental Impact Statement and Section 4(f) Evaluation; FHWA-MT-EIS-95-01-F; F 5-1(9)6, U.S. Highway 93, Evaro to Polson, Missoula and Lake Counties, Montana* (referred to as the US 93 Evaro to Polson FEIS) (FHWA and MDT 1996).

Economic considerations are relevant for the proposed US 93 Ninepipe/Ronan improvement project because:

- All of the action alternatives would bring capital resources into the project area and the local economy, which would generate new employment
- All of the action alternatives would reduce the number of housing units and developed commercial space along the US 93 Ninepipe/Ronan project corridor
- The proposed project would affect and draw upon the local labor market during project construction

- Construction might have a temporary adverse impact on local businesses
- Post-construction improvements to traffic conditions could make it easier for potential customers to access businesses located within the project area and this could improve the local economy.

The proposed US 93 Ninepipe/Ronan improvement project is located in Lake County, Montana. Improvements would occur within the roadway segment from Dublin Gulch Road/Red Horn Road to Baptiste Road/Spring Creek Road. This segment passes through the City of Ronan, which has a population of 1,812 and is the third largest city in Lake County (U.S. Census Bureau 2002). The proposed project is situated within Lake County census tracts 9405 and 9406, as delineated by the 2000 Census, and direct impacts from the proposed project, such as property acquisition and travel delays, would occur within these two census tracts. Smaller census blocks were not used because direct effects would extend to the broader census tracts. Indirect economic effects, such as increased demand for construction material and job creation, would occur throughout a much wider area, probably the entire State of Montana. This economic analysis assesses, as appropriate, project impacts to the project area, the City of Ronan, Lake County, or Montana.

4.5.2 Regulations and Standards

The following analysis is consistent with the requirements of the National Environmental Policy Act (NEPA); *FHWA Technical Advisory T6640.8A: Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (FHWA 1987); as well as generally accepted professional standards for economic analyses.

4.5.3 Employment and Personal Earnings in the Area Economy

Employment

Unemployment in the area directly affected by the proposed project (Lake County census tracts 9405 and 9406) was 5.4 percent in 2000, which was higher than the 4.8 percent unemployment rate in Lake County or the 4.1 percent rate in the State of Montana (Table 4.5-1). The unemployment rate in the City of Ronan was even higher, at 6.0 percent. Unemployment fell in each of these areas in the period from 1990 to 2000.

Table 4.5-1. Regional and local unemployment rates (percent).

Year	State of Montana	Lake County	Project Area	City of Ronan
2000	4.1	4.8	5.4	6.0
1990	4.4	5.3	N/A	6.9

Source: U.S. Census Bureau 1990, 2002.
Note: The census tracts used to approximate the project area changed in configuration from the 1990 to 2000 Census.

As shown in Table 4.5-2, the service sector (Management, Service, and Sales) in the project area, as well as Lake County and the State of Montana, employs a large percentage of the total workforce, indicating that the service sector is a fully developed segment of the economy. Table 4.5-3 shows regional and local employment by industry. The important information from Table 4.5-3 is that there are 991 construction workers in Lake County (U.S. Census Bureau 2002) who could serve as the primary source of labor for the proposed project if any of the action alternatives were selected.

Table 4.5-2. Regional and local employment by occupation.

	State of Montana	Lake County	Project Area	City of Ronan
Management, professional, and related occupations	140,956	3,474	1,090	156
Service occupations	73,316	1,748	496	149
Sales and office occupations	108,792	2,523	641	170
Farming, fishing, and forestry occupations	9,246	459	130	20
Construction, extraction, and maintenance occupations	45,770	1,305	437	89
Production, transportation, and material moving occupations	47,897	1,560	601	123

Source: U.S. Census, 2002

Table 4.5-3. Regional and local employment by industry.

Industry	State of Montana	Lake County	Project Area	City of Ronan
Agriculture, forestry, fishing and hunting, and mining	33,691	1,071	352	26
Construction	31,724	991	277	52
Manufacturing	25,414	1,259	499	105
Wholesale trade	12,937	152	38	7
Retail trade	54,468	1,312	386	125
Transportation and warehousing, and utilities	23,109	492	144	8
Information	9,283	145	66	24
Finance, insurance, real estate, and rental and leasing	23,351	481	90	26
Professional, scientific, management, administrative, and waste management services	27,654	576	109	32
Educational, health and social services	92,445	2,373	890	161
Arts, entertainment, recreation, accommodation and food services	44,135	911	202	64
Other services (except public administration)	22,471	534	127	33
Public administration	25,295	772	215	44

Source: U.S. Census Bureau, 2002

Economy

Tables 4.5-4 and 4.5-5 illustrate trends in selected economic indicators for Lake County and the State of Montana for the period 1969 to 2000. The year 1969 is used as the index year, and has been assigned a value of 100 as a means of comparing subsequent years. The values in the table have been adjusted for inflation. Table 4.5-4 shows that, compared with the period of 1980 to 1990, population, employment, and total earnings for Lake County grew rapidly between 1990 and 2000, but the growth in per capita income grew at a slower rate during the last decade.

Table 4.5-4. Index of selected economic indicators: Lake County, Montana, 1969 to 2000.

Year	Population	Total Personal Income	Per Capita Income	Employment	Total Industry Earnings
1969	100	100	100	100	100
1980	133.1	180.7	135.3	142.1	143.6
1990	146.7	244.0	166.3	194.5	186.3
2000	185.7	330.0	177.7	288.9	287.8

Source: Smith 2001a.

Table 4.5-5. Index of selected economic indicators: State of Montana, 1969 to 2000.

Year	Population	Total Personal Income	Per Capita Income	Employment	Total Industry Earnings
1969	100	100	100	100	100
1980	113.7	153.2	134.8	132.2	136.5
1990	115.3	170.1	147.5	146.5	138.8
1998	128.6	215.7	167.7	182.1	176.1
2000	130.1	221.9	170.5	188.8	185.2

Source: Smith 2001b.

Comparing the economic indicators for Lake County (Table 4.5-4) with those for the State of Montana (Table 4.5-5) shows that the Lake County economy grew at a faster rate than that of the state as a whole.

Economic Base

Basic industries (agriculture, manufacturing, travel and tourism, federal government, and commuters to jobs outside the area) are those that sell their products outside the region or are otherwise responsible for bringing new funds into a local economy. Basic industries use outside funds to pay their workers whose incomes are spent and re-spent at the local level. These industries provide an economic base upon which the rest of the economy develops. Manufacturing is the largest basic industry in Lake County, accounting for 62.8 percent of the income generated by basic industries in 2000, up from 48.3 percent in 1990. This growth in manufacturing was primarily due to Jore Corporation, a manufacturer of electric tools, which expanded substantially in the late 1990s. More recently, the firm experienced severe financial difficulties, and filed for Chapter 11 bankruptcy protection in 2001. In April 2002, Jore Corporation's assets were purchased by Western Mortgage and Realty. Even so, with 160 employees as of December 2001, it was the fourth largest employer in Lake County. The other major component of manufacturing is wood products. Plum Creek Manufacturing, a lumber products manufacturer, employs 180 workers. Other major private employers include health care companies St. Luke Health Care Network with 300 employees, and Home Care Givers, Inc. with 190 employees. The federal government is the second largest component of Lake County's economic base. Employers include the USDA Forest Service, BIA, and other agencies. Commuters who reside in Lake County but travel to Missoula or Flathead County constitute a substantial source of income in Lake County. Lake County commuters earned about $18 million in 2000, about 4 percent of total personal income. By comparison, commuters accounted for a very small share of statewide personal income (CBIR 2002).

Secondary industries (construction, wholesale and retail trade, financial, insurance, and real estate, as well as state and local government) are those that do not bring new funds into the local economy, but rather provide goods or services to the local population. Overall, secondary industries comprise a larger percentage of the economy in Lake County than basic industries. State and local government was the largest industry in terms of employment, with 2,358 workers with an average wage of $24,731. The service sector (such as eating and drinking establishments and personal services) was the second largest component of the Lake County economy. In 2001, there were 279 service establishments employing a total of 1,725 workers. The average salary for a service sector worker was $19,302 in 2001, close to the $22,742 overall average for Lake County. Retail trade (such as hardware stores and grocery stores) was the third largest industry, with 205 establishments employing 1,591 workers. The average retail salary was $15,169, well below the county average.

Employment data for the City of Ronan are based on U.S. Census data compiled for its zip code (59864). Census data uses slightly different industry definitions, and do not include government workers, making an exact comparison difficult. The three largest sectors of the Ronan area economy are health care (575 workers), manufacturing (565 workers, including those at Jore Corporation), and retail trade (378 workers) (Census Bureau 2002).

Firms likely to be indirectly affected by the highway reconstruction include retail trade, as well as accommodations and food services. Taken together these industries employ 531 workers. Many are small businesses; 21 of the 51 establishments had less than five workers (U.S. Census Bureau 2002).

Personal Income

Personal income is an important economic indicator for the local economy, because it plays a major role in determining local retail sales. Sources of personal income include salaries, property-related income such as rent, and transfer payments such as Social Security, welfare, and Medicare payments (CBIR 2003).

Personal income in Lake County increased 31.7 percent between 1990 and 2000, slightly greater than the statewide average of 28.7 percent. In Lake County, the largest component of this growth was labor income, indicating that participation in the labor force was the major contributor to income growth in the county. This differs from the state as a whole, where transfer payment growth ranked first by a small margin. Nevertheless, transfer payments make up a larger percentage of personal income in Lake County than in the state as a whole; 21.3 percent of personal income in Lake County is a result of transfer payments, compared to 16.1 percent for the State of Montana (U.S. Bureau of Economic Analysis 2003).

Per Capita Income

Per capita income is a major determinant of the goods and services purchased by a typical person. Per capita income does not include non-monetary benefits. Lake County per capita income was $17,809 during 2000, approximately 20 percent below the statewide figure of $22,518 (both figures are in 2000 dollars). As with most areas in Montana, average incomes in Lake County are also below the U.S. average (U.S. Bureau of Economic Analysis 2003).

Comparable figures for per capita income in Ronan are not available, although the U.S. Census provides estimates of per capita income using a slightly more restrictive definition of income. According to the Census Bureau, per capita income in Ronan during 1999 was approximately $11,768, about 23 percent below the Lake County figure of $15,173, and 34 percent less than the statewide average of $17,151 (U.S. Census Bureau 2002).

Poverty

Poverty level information was obtained from the 2000 Census. In 2000, the percentage of the population living below the poverty level in census tracts 9405 and 9406 (which include the US 93 Ninepipe/Ronan project corridor) was 24.4 percent. This figure is substantially higher than the poverty level for Lake County (18.7 percent) or the State of Montana (14.6 percent) (see Table 4.5-6). The poverty level for the City of Ronan was similar to that of the affected area.

Table 4.5-6. Estimated percent of population below the poverty level (based on the 2000 census).

	Percent of Total		Percent of Total	
Poverty Level	Montana	Lake County	Project Area	City of Ronan
Above	85.4	81.3	75.6	75.2
Below	14.6	18.7	24.4	24.8
Total	100.0	100.0	100.0	100.0

Source: U.S. Census Bureau 2002.

4.5.4 Flathead Indian Reservation

The majority of the following information regarding the Flathead Indian Reservation was extracted from the US 93 Evaro to Polson FEIS. Where new information is available, the new data were used to supplement this section. The CSKT own and utilize a great deal of timber, range, irrigation water, and recreational resources on the Flathead Indian Reservation, which contributes greatly to the local, state, and regional economies. Tribal members own and operate over 130 local businesses (primarily in construction, retail trade and services sectors). Native American businesses represented 14 percent of retail businesses and 7 percent of service businesses in Lake County in 1992. The Tribal government also operates businesses, schools and the Flathead Indian Reservation's electric utility. Economic growth for the Flathead Indian Reservation is expected to be concentrated in the corridor of US 93 from Evaro northward to the southern end of Flathead Lake (Flathead Reservation Comprehensive Resources Plan 1994). Between 1990 and 2000, the number of Native American-owned businesses increased 12 times faster than the business formation rate for all U.S. firms, while receipts increased 4.5 times faster than receipts for all U.S. firms (CBIR 2002). Between 1990 and 2000, Native American buying power in Montana increased more rapidly than the buying power for the population as a whole. This trend is expected to continue between 2000 and 2007 (CBIR 2002).

The Flathead Reservation Comprehensive Resource Plan (1994) identifies several factors that are expected to contribute to continued expansion of the economy of the Flathead Indian Reservation:

- The Flathead Indian Reservation is located between Missoula and Kalispell, both of which are large, growing population and economic centers
- Economic activity in Montana is shifting to western Montana
- Expansion is planned for US 93, which links Missoula and Flathead counties.

4.5.5 Highway-Oriented Businesses and Non-highway-Oriented Businesses

The following information regarding highway-oriented and non-highway-oriented businesses was extracted in part from the US 93 Evaro to Polson FEIS and updated with data from the *Economic Assessment for the U.S. Highways 93 Supplemental Environmental Impact Statement* prepared by Flathead Valley Community College Center for Business Information and Research (CBIR 2002).

FHWA identifies highway-oriented and non-highway-oriented categories of retail businesses for which highway development is related to economic conditions. Traffic-serving retail businesses, such as gasoline service stations/convenience stores, lodging and eating establishments and tourism specialty stores, are considered to be primarily highway-oriented. Gasoline service stations may have automotive repair facilities and convenience stores. Lodging includes hotels, motels, campgrounds, resorts, and bed-and-breakfasts. Eating establishments include restaurants, cafes and drive-ins. Generally, restaurants also sell alcoholic beverages. Tourism specialty stores include souvenirs and gifts, arts and crafts and antiques. Some types of non-highway-oriented businesses, such as automotive repair/parts/dealers, grocery, sporting goods, recreation and entertainment are considered to have traffic-serving commercial activity, but purchases not related to travel and traffic from residents of the local area are the primary source of their trade. Current information regarding employment by industry is presented in Table 4.5-3.

The project area is generally rural, with the City of Ronan serving as the local market center. Ronan has a number of service activities, including grocery stores, service centers, restaurants, and auto dealers. Ronan's location between Missoula and Kalispell makes it a prominent regional trade and service center. The City of Missoula, located 55 miles to the south, has a population of 57,053 (U.S. Census Bureau 2002). As the largest population center in western Montana, Missoula serves as a service center for the project area. The economy of Ronan is dependent on trade and services, with over 50 percent of its employment base directly tied to these industries. Several sectors of the economy were identified as being heavily dependent on outside sales, such as food and beverage stores, gasoline service stations, and eating and drinking establishments. Many residents of the project area commute to work outside the project area.

Businesses located along the rural sections of the project area are either highway-oriented, tourism/service specialty businesses or non-highway-oriented manufacturing businesses. Businesses along the corridor include:

- 44 Store/Bar/Café
- Wadsworth Manufacturing
- Ruff and Dab's Antiques and Second Hand Items
- Mini-Storage adjacent to Ruff and Dab's
- Logcrafters Homes
- Hunt's Timbers
- All West Drilling Inc.
- Ninepipes Lodge
- Ninepipes Museum
- Glacier View Auto Sales
- Country Side Café and Truck Stop
- Long's Toy Storage Country Scrapbook
- Bev's Bloomers
- Jore Manufacturing
- American Youth Hostel
- Western Ag Sales and Service
- Browning Ferris Industries
- Valley Mini-Storage.

4.5.6 Economic Characteristics

Ronan

The Ninepipe Economic Assessment (CBIR 2002) found that, given Ronan's small population and modest growth, its relative geographic position between two rapidly expanding commerce areas, modest growth in per capita incomes, and a largely transportation-dependant economy, highway improvements or alterations would be a paramount issue for the local economy. Economic activity in Ronan is concentrated along US 93 and Main Street. US 93 is the main route between the regional population centers of Missoula and Kalispell/Whitefish/Columbia Falls, and Main Street was the original business district prior to development of US 93. According to the results of a 1993 survey of Ronan businesses, summarized in the Ninepipe Economic Assessment, 25 percent of retail sales were generated by travelers (20 percent) and local tourists (5 percent). The 1993 survey found that drive-through traveler expenditures are important to the local economy and occur mainly at retail businesses. Additional information about the economic characteristics of Ronan is presented in *Section 4.5.3 Employment and Personal Earnings in the Area Economy*.

Some of the other findings of the Ronan business survey include:

- Eighty-six percent of businesses located on US 93 believe they have a competitive advantage because of their location, and 81 percent identify major competitors as other businesses on the highway in Ronan. Polson and Missoula businesses also are important competitors.
- Businesses on US 93 have higher sales and more employees than businesses located in the central business district (CBD) on Main Street.
- Ronan's highway traveler and tourism-oriented businesses are busier in the summer months, the period when those businesses indicate they must achieve the most sales. Seasonality of trade is reflected in higher employment in retail trade and services in the summer months.
- Businesses in the CBD are less oriented to serving travelers and tourists and more oriented to the area's local and regional populations. Only 36 percent of CBD businesses believe they have a competitive advantage because of their location. Businesses in the CBD most frequently identified Polson and Missoula as the locations of major competitors.
- During summer months, traffic congestion interferes with customer access to businesses on US 93; 72 percent cited summer highway congestion as "frequently" or "occasionally" restricting access.

The Ninepipe Economic Assessment confirmed these results and also found that the majority (67 percent) of business patrons were from outside Ronan. Most (68 percent) planned to make only one stop in Ronan, and travelers stopped not for convenience but out of necessity (64 percent). Of the out-of-town shoppers, a great many were going to Kalispell, Polson, or Missoula (44 percent) and coming from Kalispell, Polson, or Missoula (59 percent).

When the Ninepipe Economic Assessment survey was conducted in August 2002, sales trends were favorable for businesses in Ronan. Nearly three-quarters of the businesses sampled reported increasing gross sales over the previous three years.

4.5.7 Tourism

Tourism has been and continues to be a major part of the local economy along US 93. Retail trade in Ronan provided 125 jobs (17.7 percent) in the city out of a total employment of 703 (see Table 4.5-3). In comparison, employment in retail trade in the larger project area was only 11.4 percent (386 positions out of a total employment of 3,395) and 11.9 percent (1,312 positions out of a total employment of 11,069) in Lake County. In 1990, the *Lake County Overall Economic Development Plan: 1990 Update* found that tourism, with its emphasis on sales and employment in retail trade and services, was one of Lake County's major industries. The scenic attractions of the region make it a destination for the travel and tourism industry. Major tourist attractions in the area include Flathead Lake, Glacier National Park, and Big Mountain Ski Resort. The highway is also important for tourism travel between Glacier and Yellowstone National Parks.

4.6 Pedestrians and Bicyclists

4.6.1 Analysis Methods and Assumptions

The Florida Department of Transportation (FDOT) has developed planning level models to measure quality of service for pedestrians and bicyclists. While the MDT does not use the FDOT methods as a standard, the FDOT method can be a tool for evaluation of potential impacts on bicyclists and pedestrians for the proposed project. The purpose of the models is to assess point and corridor-wide multi-modal quality of service. The models are used with transit and vehicle service models. For the US 93 Ninepipe/Ronan improvement project the models were used to measure point quality of service for the existing condition and the proposed action alternatives.

These models are quality of service models that are intended to measure the quality of the environment and the perception of safety and comfort with respect to motor vehicles. The models are not intended to measure capacity.

In an effort to be more sensitive and relevant to the needs of pedestrians and bicyclists, the FDOT models look at the quality of service from the pedestrian and bicyclist point of view.

4.6.2 Regulations and Standards

FHWA regulations covering federally-aided projects (23 CFR 652) include the following policy on accommodation of bicyclists and pedestrians: “The safe accommodation of pedestrians and bicyclists should be given full consideration during the development and construction of federal-aid highway projects. The special needs of the elderly and the handicapped shall be considered in all federal-aid projects that include pedestrian facilities. Where current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort shall be made to minimize the detrimental effects on all highway users who share the facility. On highways without full control of access where a bridge deck is being replaced or rehabilitated, and where bicyclists are permitted to operate at each end, the bridge shall be reconstructed so that bicyclists can be safely accommodated when it can be done at a reasonable cost. Consultation with local groups of organized bicyclists is to be encouraged in the development of bicycle projects.”

NEPA requires analysis of project impacts on bicycle and pedestrian traffic. Also, the Americans with Disabilities Act (ADA), Public Law 336-101 enacted July 26, 1990, ensures equal opportunity for persons with disabilities in regard to transportation accommodations, among other areas.

The Montana Road Design Manual addresses pedestrian facilities (sections 11.2.7 and 11.2.8) and bicycle facilities (section 18.2), utilizing AASHTO standards.

4.6.3 Pedestrian and Bicyclist Activities and Facilities

Most existing pedestrian activity along the US 93 corridor is in or near the cities. Only limited numbers of pedestrians travel along US 93 due to the distance between communities. Within the US 93 Ninepipe/Ronan project corridor, crossing of the highway by pedestrians in the rural portion is minimal. There is a low volume of bicycle travel in the US 93 corridor by school-age users (under 16) and that use is concentrated around communities in the US 93 corridor. This is also true for the US 93 Ninepipe/Ronan improvement project area. Adult bicycle use is growing, with the area becoming known as a high quality bicycle touring area. Highway shoulders range from 0.6 meters (2 feet) to 1.2 meters (4 feet) south of and through Ronan and can cause traffic backups from motorists hesitant to pass bicyclists.

There are no existing separate facilities for pedestrians or bicyclists in the rural portion of the project corridor. School children are picked up and dropped off at various locations, but there are no pullouts or widened areas for school buses. It is school policy that children should enter and leave the buses on the same side of the roadway as they live, but some continue to cross US 93 to reach their destination. Crossings by pedestrians and bicyclists occur in the Post Creek area, and no particular problems have been reported (FHWA and MDT 1996).

In the urban portion there are intermittent sidewalks on the east side of US 93 from Eisenhower Street north to Round Butte Road. There are no sidewalks on the west side of US 93 south of Eisenhower Street or north of Round Butte Road. On First Avenue SW there are intermittent sidewalks on the west side from Dayton Street to Round Butte Road and on the east side from the vicinity of Buchanan Street to Round Butte Road. There are no designated bicycle paths. Pedestrians and bicyclists use the sidewalks where available, and existing open spaces between US 93 and adjacent businesses. There are existing traffic signals at Round Butte Road/Terrace Lake Road and at Eisenhower Street. The signal at Eisenhower Street was constructed in 2002. There are pedestrian crosswalks at the signals and a marked crosswalk at Adams Street. Many pedestrians use these facilities, but others cross US 93 wherever it is convenient for them.

4.6.4 Pedestrian Quality of Service

A pedestrian quality of service model was developed using statistical methods to find the relationship between measurable environmental features and pedestrian perception of safety and comfort. The model calculates a score ranging from 0.5 to 6.5 that corresponds to a letter value (A “best case scenario” through F “worst case scenario”) representing the pedestrian quality of service.

The pedestrian quality of service model is based on five variables:

- Existence of a sidewalk
- Lateral separation of pedestrians from motorized vehicles
- Motorized vehicle volumes

- Motorized vehicle speed
- Presence of on-street parking.

Pedestrian Model Interpretation

Under existing conditions the quality of service rating is F for both the rural and urban portions of the project corridor. The lack of separated pedestrian facilities in both the rural and urban portion of the project corridor is the limiting factor that constrains the quality of service.

4.6.5 Bicycle Quality of Service

The bicycle quality of service model is based on five variables:

- Average effective width of the outside through-lane
- Motorized vehicle volumes
- Motorized vehicle speed
- Heavy truck volumes
- Pavement condition.

The average effective width is the relationship between the outside travel lane and the presence of shoulders, on-street parking, and bike lanes. Pavement condition is based on a scale of 1 to 5 from the FHWA pavement rating criteria. The higher the value, the better the pavement. For existing conditions a rating of 3.5 was used to represent an average condition of maintained pavement. Similar to the pedestrian quality of service model, the bicycle quality of service model calculates a numerical score that corresponds to a letter value (A “best case scenario” through F “worst case scenario”).

Bicycle Model Interpretation

Under existing conditions the quality of service rating is F for both the rural and urban portions of the project corridor. This is attributed to numerous factors including high traffic volumes, narrow shoulder widths, moderate pavement conditions, and high travel speeds in the rural portion of the project.

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4.7 Air Quality

4.7.1 Analysis Methods and Assumptions

Potential short-term impacts due to construction activities are assumed to be directly related to the total area of disturbance. To analyze these impacts, an emission factor is applied to the area of construction disturbance (assumed to be the total area within the right-of-way) and compared between alternatives. Most major road construction projects have the potential for generating enough particulate matter (dust) to cause substantial short-term impacts to air quality; however, through the implementation of control measures these impacts are routinely mitigated.

Long-term impacts to air quality were estimated for the US 93 Evaro to Polson FEIS using United States Environmental Protection Agency (U.S. EPA) models MOBILE5A, PART5, and CAL3QH. The analysis for the US 93 Evaro to Polson FEIS determined that carbon monoxide and particulate matter were the two pollutants most likely to exceed air quality standards on a long-term basis, as is typically the case for transportation related projects.

This SEIS includes an updated particulate matter regional emissions analysis, as well as a particulate matter hotspot analysis (Appendix H). It also includes a mobile source air toxics analysis, reflecting a new requirement since the US 93 Evaro to Polson FEIS was completed. It does not include any additional carbon monoxide analysis, since there are no carbon monoxide nonattainment or maintenance areas in the project area, and Montana's existing carbon monoxide areas are all attaining the standard by a wide margin.

4.7.2 Regulations and Standards

The U.S. EPA is primarily responsible for ensuring compliance with the National Ambient Air Quality Standards (NAAQS) on Tribal lands. These regulations (40 CFR 50) govern both the concentrations of pollutants in the outdoor air and contaminant emissions from air pollution sources. The local Tribal Air Quality Program supports the U.S. EPA in these efforts. Because the proposed action is entirely within the boundaries of the Flathead Indian Reservation, the Montana Ambient Air Quality Standards (MAAQS) are not applicable.

The Clean Air Act, as amended in 1990, requires U.S. EPA to set NAAQS for priority pollutants considered harmful to public health and the environment. Carbon monoxide, ozone, sulfur dioxide, nitrogen dioxide, particulate matter, and lead are the priority pollutants regulated under the NAAQS. Two types of particulate matter are monitored and regulated by the U.S. EPA: total suspended particulates, having a diameter of less than 10 microns (abbreviated as PM_{10}), and fine particulate matter, having a diameter of less than 2.5 microns (abbreviated as $PM_{2.5}$). The 1990 Clean Air Act establishes two types of national air quality standards. *Primary* standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. *Secondary* standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. The current NAAQS are shown in Table 4.7-1.

Table 4.7-1. National ambient air quality standards.

Criteria Pollutants	NAAQS (National Ambient Air Quality Standards)	
	Primary	Secondary
Nitrogen dioxide (ppm)		
Annual arithmetic mean	0.053 [a]	0.053 [a]
Sulfur dioxide (ppm)		
Annual arithmetic mean	0.03 [a]	–
24-hour average	0.14 [b]	–
3-hour average	–	0.50 [b]
Carbon monoxide (ppm)		
8-hour average	9 [b]	–
1-hour average	35 [b]	–
Ozone (ppm)		
8-hour average	0.08 [b]	0.08 [b]
Lead ($\mu g/m^3$)		
Calendar quarterly average	1.5 [a]	1.5 [a]
Particulate matter ($\mu g/m^3$)		
Particulate matter (PM_{10})		
24-hour average	150 [b]	150 [b]
Particulate matter ($PM_{2.5}$)		
Annual arithmetic average	15	15
24-hour average	35	35

[a] Never to be exceeded.
[b] Not to be exceeded more than once per year.
ppm = parts per million.
$\mu g/m^3$ = micrograms per cubic meter.
Source: U.S. EPA 2000.

Other key elements of the 1990 Clean Air Act amendments include defining *nonattainment* areas, controlling hazardous pollutants at the source, reducing acid rain, requiring air quality permits and annual reporting for industrial polluters, instituting automobile tailpipe emission standards and oxygenated fuels, and phasing out ozone-depleting chlorofluorocarbons. Nonattainment is the term applied to areas where concentrations of pollutants exceed public health and environmental safety standards. Clean Air Act transportation conformity requirements apply in nonattainment areas, as discussed in Part 5 of this document.

4.7.3 Air Pollution Sources

Five emission source categories of priority air pollutants in the project area were identified in the US 93 Evaro to Polson FEIS. These include automobile exhaust, vehicular traffic on roadways, residential heating (typically wood burning), agricultural activities, and road construction. These sources are still active today and industrial sources may be an additional source of emissions (Wahl 2003). Fuel combustion by vehicles and space heating releases hydrocarbons, carbon monoxide, nitrogen dioxide, sulfur oxides, PM_{10}, and $PM_{2.5}$. Vehicular traffic also generates fugitive particulate emissions by causing small particles of soil and winter sanding material on the roadway to become suspended in the air.

4.7.4 Local Air Quality

The following discussion, with the exception of some updated material, is excerpted from the US 93 Evaro to Polson FEIS.

The Flathead Indian Reservation has been designated a Class I area as defined in the 1990 Clean Air Act. This designation ensures that the pristine air quality in the area will be maintained. All proposed actions would take place in attainment areas, with the notable exception of areas within the City of Ronan. Ronan is a nonattainment area for PM_{10} with the boundaries of the nonattainment area coinciding with Ronan's municipal boundaries. The U.S. EPA and the CSKT monitor PM_{10} levels on a regular basis, and the last recorded exceedance of the NAAQS was in November 1999. The five most recent years of PM_{10} air quality data for Ronan are summarized in Appendix H.

The highest concentrations of PM_{10} in the project corridor can be expected in winter during periods of air stagnation and for a short period of time in early spring before sanding material accumulated on roadways over the winter is removed. Similarly, the highest PM_{10} concentrations can be expected in areas where large volumes of sanding material are used and where many unpaved roads intersect US 93.

The US 93 Evaro to Polson FEIS describes various PM_{10} control strategies focusing on application of clean sand and/or chemical de-icer and periodic street sweeping and cleaning in urban areas noting that these are current MDT practices.

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4.8 Noise

Traffic noise was analyzed according to U.S. Code of Federal Regulations Part 772 (23 CFR 772) – *Procedures for Abatement of Highway Traffic Noise and Construction Noise*, and MDT's *Traffic Noise Analysis and Abatement: Policy and Procedure Manual* (June 2001). The analysis specifically focuses on potential noise impacts at noise-sensitive receptors due to vehicles traveling on US 93 within the project limits.

4.8.1 Analysis Methods and Assumptions

Noise sensitive receptors were identified within approximately 150 meters (492 feet) of the existing US 93 centerline using U.S. Geological Survey aerial photos, site observations, and plan drawings provided by Skillings-Connolly, Inc. The approximate locations of the noise-sensitive receptors are shown on Figures 4.8-1 through 4.8-3. Traffic noise levels were evaluated for the No-Action Alternative (i.e., not changing the existing highway) and for the proposed action alternatives in the rural and urban sections.

4.8.2 Noise Level Terminology

Noise levels are quantified using units of decibels (dB). Decibels are logarithmic values, and cannot be combined using normal algebraic addition. For example, the combined noise level of two, 50-dB-noise sources would be 53 dB, not 100 dB.

Humans typically have reduced hearing sensitivity at low frequencies compared with their response at high frequencies, and a modified decibel scale, A-weighted decibels (dBA), is used to approximate the frequency response of normal human hearing. By utilizing A-weighted noise levels in a study, a person's response to noise can be assessed.

Noise levels decrease with increasing distance between the source and receptor. Traffic noise levels typically decrease between approximately 3 and 4.5 dBA with each doubling of the distance between a highway and a receptor, with the specific decrease depending on the characteristics of the noise source and the conditions along the path that the noise travels. For example, the reduction in noise levels may be greater if a solid barrier, such as a man-made wall, or natural topography, is located between the source and receptor.

The ambient noise at a receptor location in a given environment is the all-encompassing sound associated with that environment, and is typically due to the combination of noise sources from many directions, near and far, including the noise source of interest. The background noise at a given location is due to any sources that are not associated with the noise source of interest.

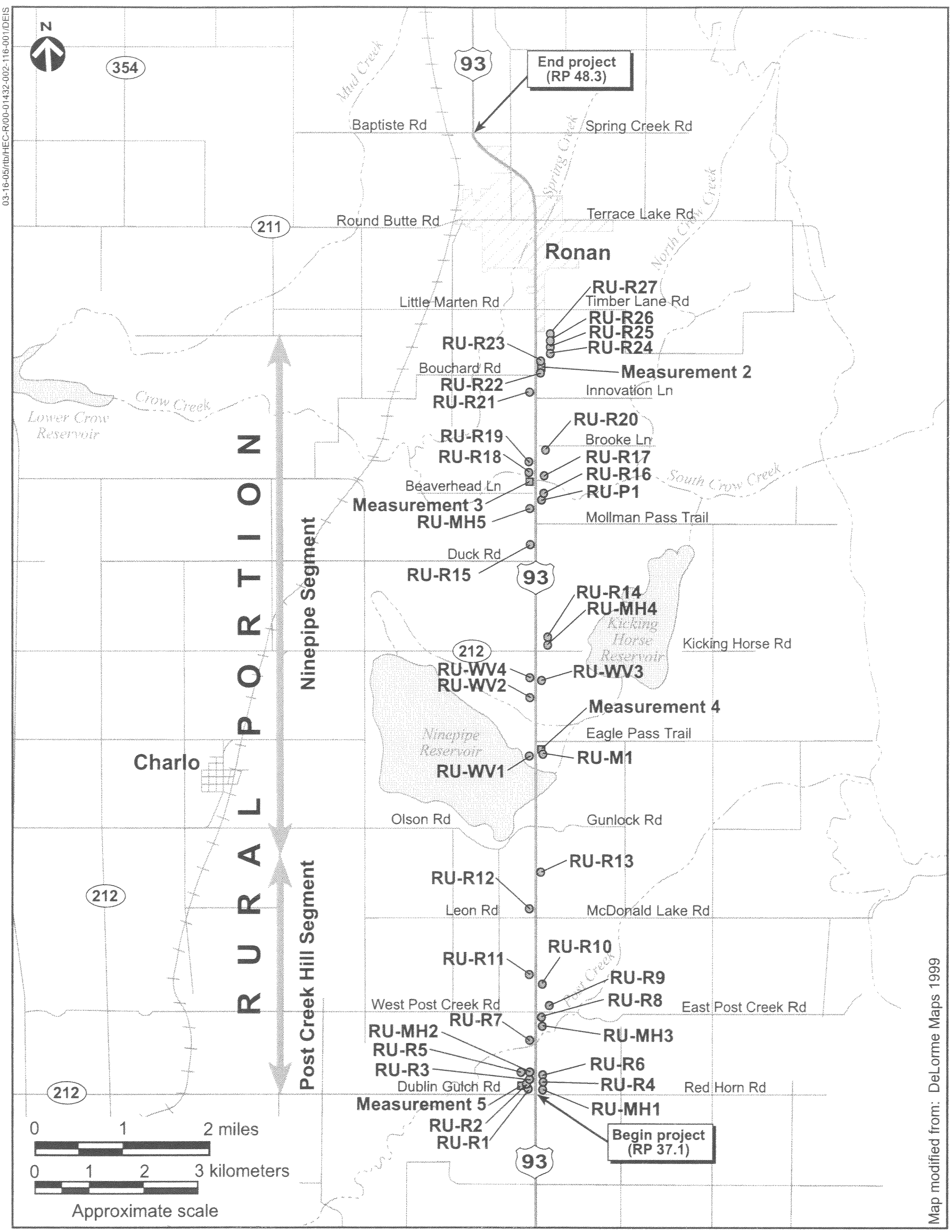

Figure 4.8-1. **Noise measurement and receptor locations in the rural portion of the US 93 Ninepipe/ Ronan improvement project corridor.**

03-31-05/rtb/HEC-R/00-01432-002-116-001/SEIS

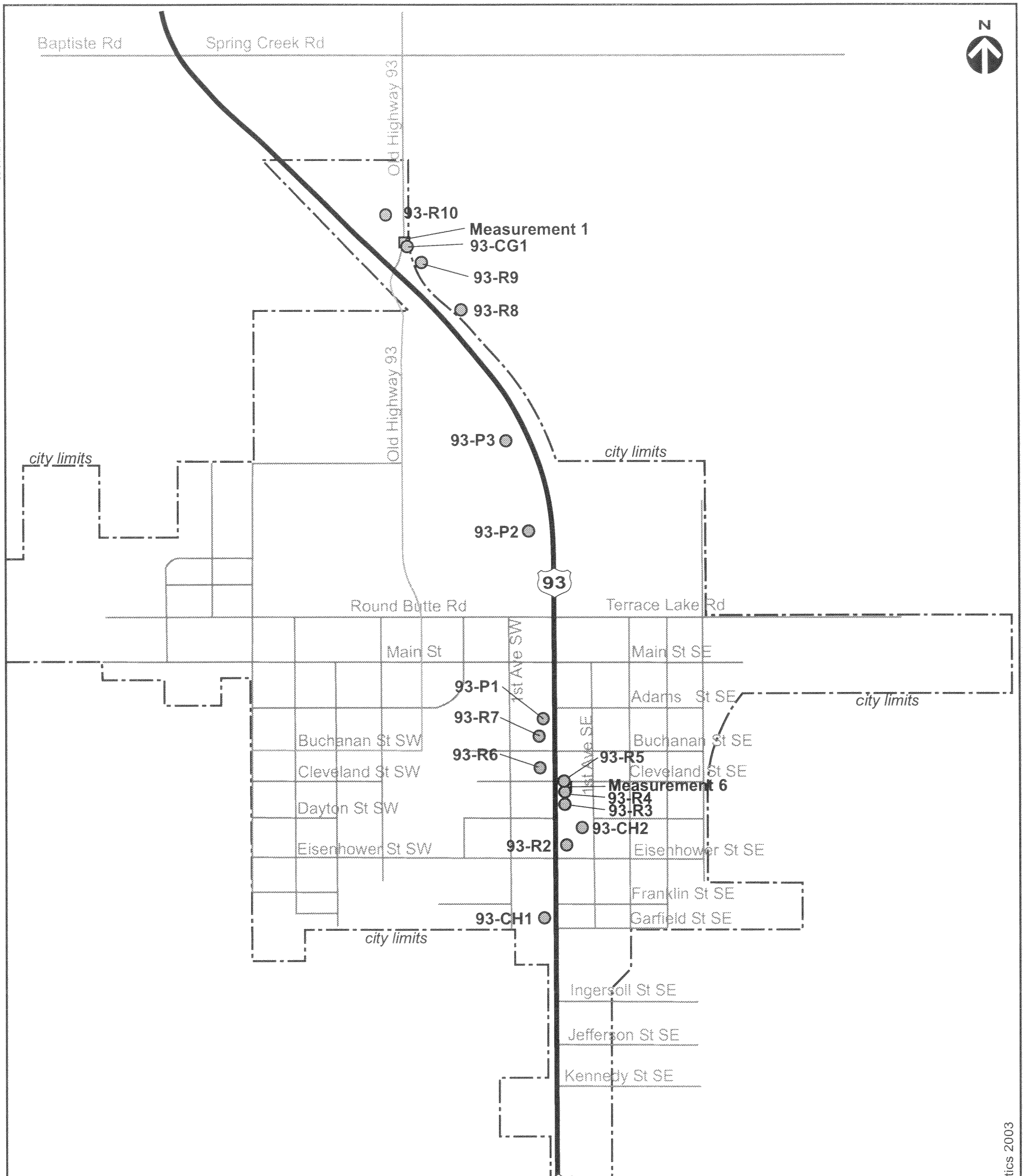

Figure 4.8-2. Noise measurement and receptor locations in Ronan.

03-16-05/rtb/HEC-R/00-01432-002-116-001/SEIS

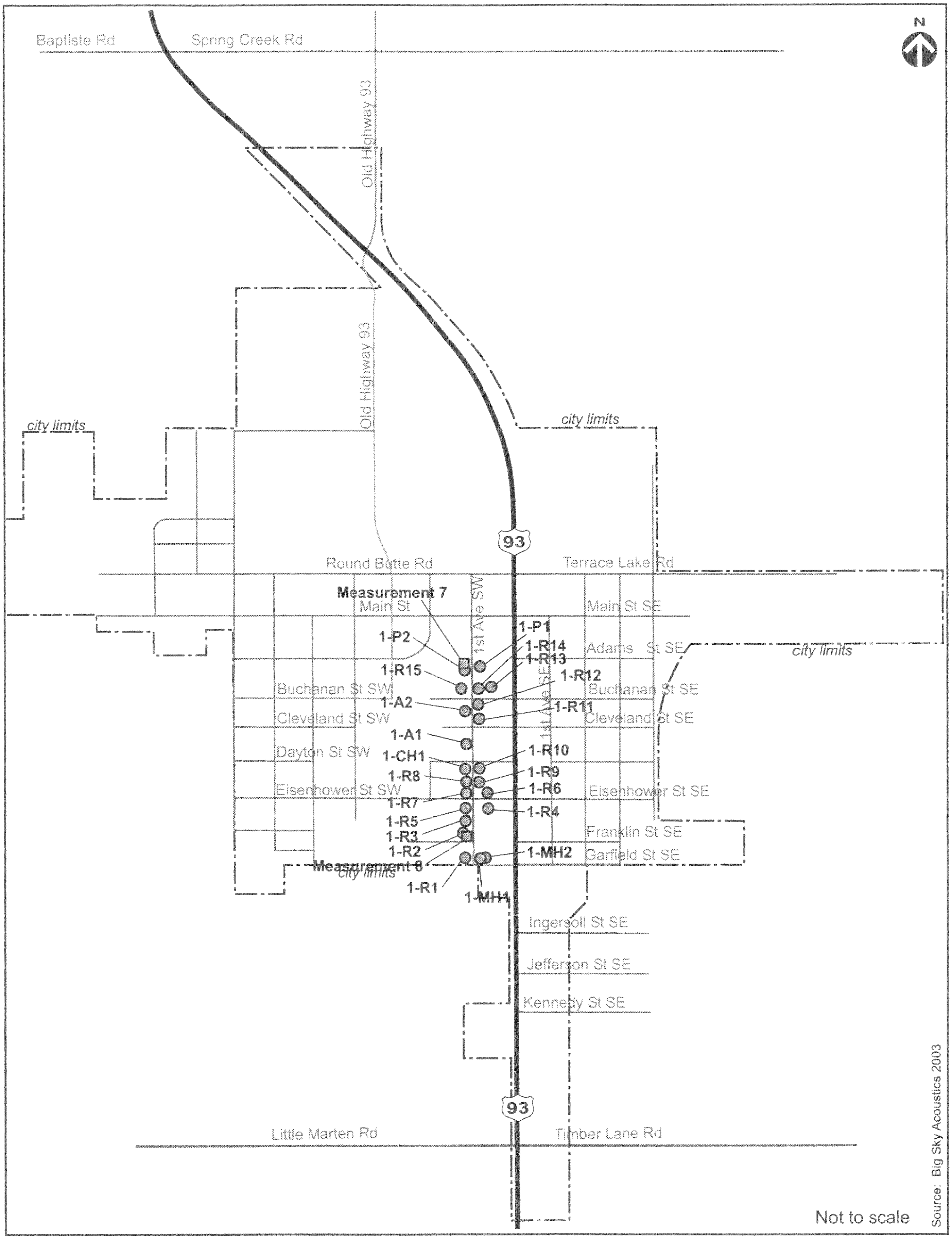

Figure 4.8-3. Noise measurement and receptor locations along 1st Avenue SW in Ronan.

For environmental noise studies, ambient noise levels and noise impact criteria are typically based on A-weighted equivalent noise levels, L_{eq}, during a certain time period. The equivalent noise level during a one-hour period is represented as L_{eq}(h). The equivalent noise level is defined as the steady state noise level that has the same acoustical energy as the actual, time-varying noise signal during the same time period. The L_{eq}(h) metric is useful for traffic noise studies because it uses a single number to describe the constantly fluctuating ambient noise levels at a receptor location during one hour of time.

4.8.3 Regulations and Standards

The Code of Federal Regulations Part 772 (23 CFR 772) *Procedures for Abatement of Highway Traffic Noise and Construction Noise*, outlines the procedures to determine if traffic noise impacts would occur for a project and when traffic noise abatement measures would be considered. The FHWA and MDT identify traffic noise impacts according to Noise Abatement Criteria (NAC) for various land uses and zoning. Table 4.8-1 summarizes the NAC used in the consideration of traffic noise impacts.

Table 4.8-1. Noise Abatement Criteria (NAC).

Land Use Category	L_{eq}(h)	Description of Activity Category
A	57 dBA (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 dBA (exterior)	Residences, motels, hotels, schools, churches, libraries, picnic areas, recreation areas, playgrounds, active sports areas, parks, and hospitals.
C	72 dBA (exterior)	Developed lands, properties, or activities not included in Categories A or B.
D	---------	Undeveloped lands.
E	52 dBA (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

23 CFR 772 and MDT's Traffic Noise Policy, *Traffic Noise Analysis and Abatement: Policy and Procedure Manual* (June 2001) state that traffic noise impacts occur when the predicted L_{eq}(h) noise level at a receptor location in a project's design year approaches or exceeds the NAC values listed in Table 4.8-1, or when the predicted traffic noise levels in the design year substantially exceed the existing ambient noise levels at a receptor. In determining and abating traffic noise impacts, 23 CFR 772, Section 772.11–*Noise Abatement*, gives primary consideration to receptor locations that represent exterior areas where frequent human use occurs and a lowered noise level would be of benefit. MDT defines "approach" as 1 dBA, and "substantially exceed" as 13 dBA. The policy does not account for changes in property values in its assessment of reasonable and feasible abatement measures.

For Category B land uses with areas of frequent exterior use, such as single-family residences, mobile homes, apartments, churches, motels, parks, wildlife viewing areas, campgrounds, and picnic areas within the project limits, the NAC is 67 dBA, and therefore, the traffic noise impact criteria is 66 dBA or greater in the design year of a project, or at levels that are 13 dBA or greater than the present year noise levels (Table 4.8-1). The MDT Traffic Noise Policy only applies to Land Use Categories A and B, as defined in 23 CFR 772 (MDT 2001). When traffic noise impacts are identified at a receptor location, MDT requires that reasonable and feasible noise abatement measures be considered to reduce the traffic noise levels at the receptor.

Category E applies when the receptor does not have frequent exterior areas of use on applicable Category B properties (Table 4.8.1). The impact criteria for Category E land uses, such as churches, is 51 dBA or greater in the design year inside the building, or at levels that are 13 dBA or greater than the present year noise levels.

4.8.4 Land Use and Zoning

The primary land use in the rural portion is agricultural and pastureland with scattered single-family residences, commercial properties, mobile homes, a motel and museum, four wildlife viewing areas, and a scenic pullout/picnic area adjacent to US 93. The urban portion is mixed-use with residential and commercial properties, including single-family residences, apartments, mobile homes, church, parks, and a recreational vehicle (RV) campground. The proposed project lies completely within the Flathead Indian Reservation, governed by the CSKT.

4.8.5 Terrain

The project area lies within the Mission Valley, bordered by the Salish Mountains to the west and the Mission Mountains to the east. The Mission Valley is relatively flat with some rolling hills. Kettle ponds and two large reservoirs are features unique to the rural portion of the US 93 Ninepipe/Ronan project area.

4.8.6 Existing Sound Environment

Noise level measurements were conducted to determine the approximate existing ambient noise levels at representative locations near receptors located within 150 meters (492 feet) of the existing US 93 centerline. The measurement results were also used to verify that the computer model used to predict the traffic noise levels was reasonably accurate. Eight, 30-minute measurements were completed on December 8, 2003, and the L_{eq}(h) at each location was estimated based on the 30-minute measurements. The results of the measurements are listed in Table 4.8-2.

Table 4.8-2. Measured ambient noise levels in the US 93 Ninepipe/Ronan improvement project corridor (December 8, 2003).

Measure Location	Approximate Reference Post	Time	Description	Approximate Distance and Direction from Existing Centerline (meters/feet)	Measured $L_{eq}(h)$ (dBA)	Noise Sources During Measurements
1	47.8	9:38 to 10:08 a.m.	North of Ronan at an RV Campground, north of Old Hwy. 93 and east of US 93.	33.4 m/110 ft, east	68	Traffic on US 93 was the dominant noise source. Other noise sources included cars on Old Hwy. 93 and a dog barking.
2	45.4	10:52 to 11:22 a.m.	Just north of Bouchard Road, east of US 93.	67.6 m/222 ft, east	59	Traffic on US 93 was the dominant noise source. Other noise sources included cars on a dirt road, cars at a residence, dog barking in the distance, and a small airplane in the distance.
3	44.2	11:52 a.m. to 12:22 p.m.	Residence on west side of US 93, across from greenhouses, and north of Beaverhead Lane.	43.6 m/143 ft, west	64	Traffic on US 93 was the dominant noise source.
4	41.0	12:56 to 1:26 p.m.	Ninepipes Lodge/Motel (north end of building), east of US 93.	37.1 m/122 ft, east	67	Traffic on US 93 was the dominant noise source. Other noise sources included cars in the parking lot and a jet airplane in the distance.
5	37.2	2:22 to 2:52 p.m.	Residence north of Red Horn Road, west of US 93.	76.9 m/252 ft, west	59	Traffic on US 93 was the dominant noise source. Other noise sources included saws and a dust collector fan from the mill to the north, dogs barking in the distance, car in the driveway.
6	46.8	3:33 to 4:03 p.m.	Ronan – US 93 at a residence between Dayton Street and Cleveland Street, across from Mission Food Mart.	21.7 m/71 ft, east	66	Traffic on US 93 was the dominant noise source. Other noise sources included side street traffic.
7	46.9	4:33 to 5:03 p.m.	Ronan – 1st Avenue SW at the city park north of Buchanan Street, and west of Visitor's Center on US 93.	18 m/59 ft, west of 1st Avenue SW 132 m/433 ft, west of US 93	56	Traffic on US 93 and the clock tower bells were the dominant noise sources. Included hammering at a construction site (1st & Dayton), traffic on 1st Avenue SW and Buchanan, cars in the parking lot, distant traffic on Main Street, and children playing in the distance.
8	46.6	5:11 to 5:31 p.m.	Ronan – 1st Avenue SW at residence on NW corner of Franklin Street intersection, behind Ace Hardware.	15 m/49 ft, west of 1st Avenue SW 130 m/426 ft, west of US 93	53	Traffic on US 93 was the dominant noise source. Other noise sources included traffic on 1st Avenue SW, on Franklin, and in alley next to Ace Hardware, and sirens in the distance.

During each measurement period, it appeared that traffic noise on US 93 was the dominant noise source, including at the two First Avenue SW measurement locations in Ronan (Table 4.8-2). Although other sources were audible during the measurements, they were either brief or typically quieter than the dominant noise source, and therefore, did not appear to substantially affect the measured noise levels (Appendix B). Based on field observations, it appeared that US 93 traffic was typically traveling within 5 mi/h (8 km/h) of the existing posted speed limits and traffic on First Avenue SW appeared to be traveling at 20 mi/h (30 km/h) or less. The posted speed limits on US 93 are 65 mi/h (110 km/h) along the rural portions, and vary from 25 mi/h (40 km/h) to 35 mi/h (60 km/h) for traffic in Ronan, with transition areas between Ronan and the rural portions of the highway.

4.9 Water Quality

4.9.1 Analysis Methods and Assumptions

The evaluation of water quality conditions in the US 93 Ninepipe/Ronan project area was based on a literature review and coordination with local agency representatives. This investigation included, but was not limited to:

- Review of surface water quality and groundwater reports from the CSKT (2000a, 2000b)
- Review of the US 93 Evaro to Polson FEIS
- Information from the *Biological Resources Report: US 93 Ninepipe/Ronan Improvement Project* (Herrera 2005a) and *Preliminary Irrigation Report* (Skillings-Connolly 2004b) prepared for this SEIS
- Review of local, state, Tribal, and federal regulations and information applicable to the proposed project.

4.9.2 Regulations and Standards

Activities that have the potential to impact any surface water or wetland of the Flathead Indian Reservation (including road construction or maintenance and water withdrawal for dust abatement) require an approval permit under the Tribal Aquatic Lands Conservation Ordinance 87A (ALCO, Tribal Ordinance 87A) administered by the Shoreline Protection Office.

Section 401 of the Clean Water Act requires that any application for a Federal permit to discharge into surface waters must be certified to ensure that the discharge will not violate water quality standards. The Tribal Water Quality Program is the certifying authority for applications to discharge to surface waters and wetlands of the Flathead Indian Reservation. Applicable water quality standards are described in the *CSKT Water Quality Standards and Antidegradation Policy* (CSKT 2001b). Compliance would also be required under Tribal Water Quality Management Ordinance 89B. Surface waters are further protected through Section 404 of the Clean Water Act, which regulates waters of the U.S.

Discharges of stormwater from construction projects that result in a total land disturbance equal to or greater than 1 acre require an approved National Pollution Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Large and Small Construction Activities. The U.S. Environmental Protection Agency Region 8 is the NPDES permitting authority for Indian Country in Montana. A Stormwater Pollution Prevention Plan (SWPPP) must be prepared as a condition of an NPDES permit. A SWPPP prepared for a construction activity on the Flathead Indian Reservation must be reviewed and approved by the CSKT Water Quality Program prior to initiating construction activities. The operator must also demonstrate to the Tribal Water Quality Program that stabilization has been met prior to terminating the permit.

Criteria for management of stormwater runoff quality were developed by the Design Management Stormwater Committee for portions of US 93 within the US 93 Evaro to Polson corridor. These criteria are not part of this document, but a copy of *Stormwater Criteria for Highway Runoff: US 93 Evaro to Polson* report can be requested from MDT (DMSC 2003). Those criteria include water quality treatment of highway runoff that discharges to sensitive water bodies. A goal of those criteria is that water quality treatment measures must be designed to remove 80 percent of suspended solids from stormwater. Stormwater quality treatment criteria have not yet been developed for the US 93 Ninepipe/Ronan improvement project, but would likely be similar.

4.9.3 Surface Water Resources

The US 93 Ninepipe/Ronan improvement project area is located in the Mission Valley within the Mission Creek and Crow Creek watersheds, both of which originate in the Mission Mountains Tribal Wilderness and drain west to the Flathead River downstream of Flathead Lake. There are many surface water bodies in the project area, including streams, reservoirs, kettle ponds, and wetlands (see *Section 4.10 Wetlands* for additional information on wetlands). The primary water bodies that cross or are located within the project corridor are described in this section, and displayed in Figure 4.9-1. Table 4.9-1 presents the location of water bodies that occur in the project corridor, along with the highway crossing type (if applicable), water quality classification according to the *CSKT Water Quality Standards and Antidegradation Policy* (CSKT 2001b), and the drainage basin and project segment in which the water bodies are located.

Streams, Reservoirs, and Kettle Ponds

Mission Creek Watershed

In the Mission Creek watershed, Post Creek and four tributaries (Ashley Creek and three unnamed tributaries) are located within the Post Creek Hill segment of the project corridor. These systems are summarized in this section. For additional information on project area streams, refer to *Section 4.11 Floodplains and Streams* and *Section 4.12 Fish and Wildlife*. Land uses in the watershed are primarily forest and irrigated agriculture; however, residential development is occurring in Saint Ignatius and along Mission and Post Creeks (CSKT 2000a).

A perennial tributary to Post Creek (**Unnamed Tributary to Post Creek 1**) originates on the Mission Valley floor approximately 3.2 kilometers (2 miles) upstream of its confluence with Post Creek. This tributary drains approximately 6.5 square kilometers (2.5 square miles). The stream channel is degraded within the project area, with a high degree of siltation and evidence of storm runoff containing petroleum products from US 93.

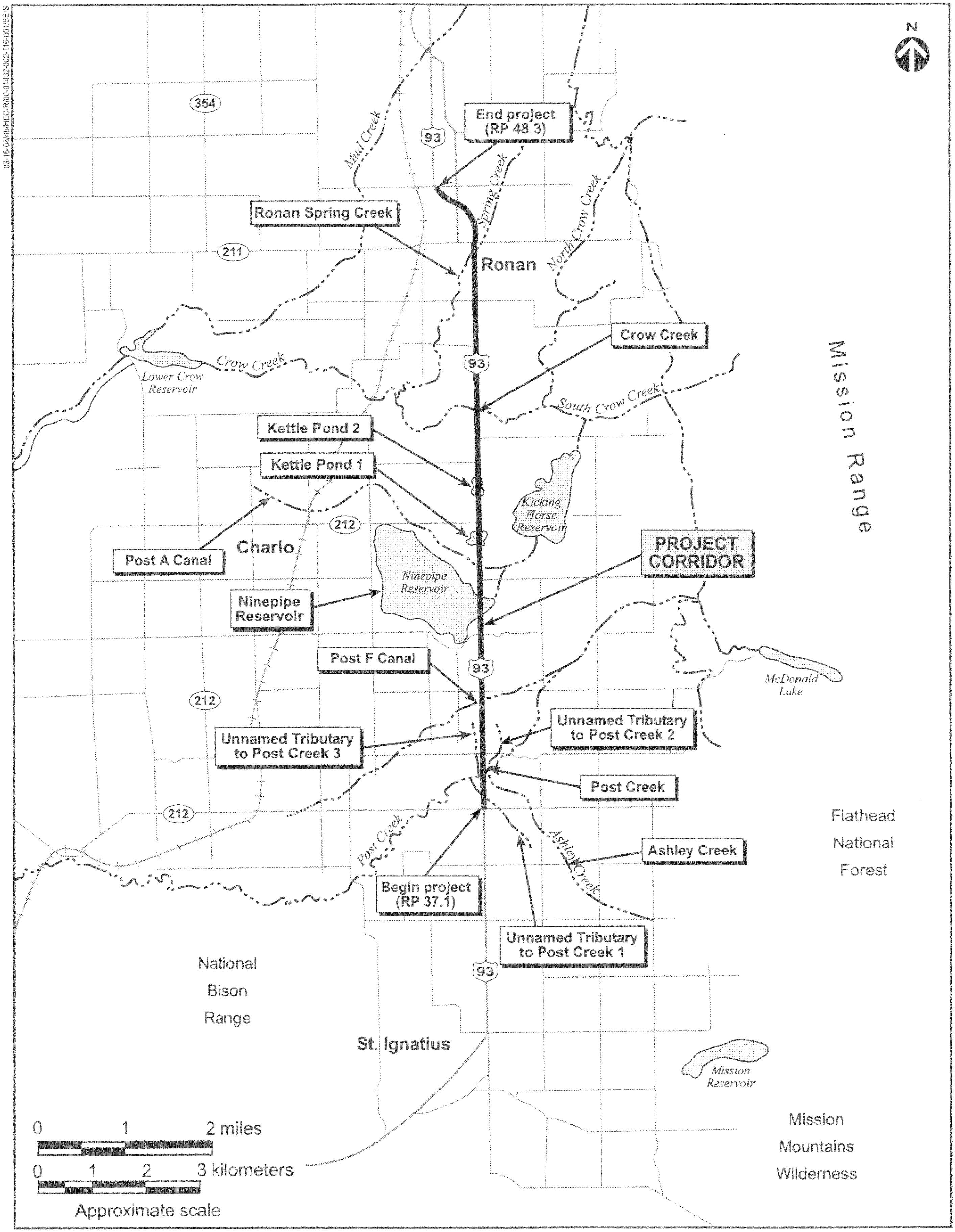

Figure 4.9-1. Surface water resources in the US 93 Ninepipe/Ronan improvement project corridor.

Table 4.9-1. Surface water bodies located in the US 93 Ninepipe/Ronan improvement project corridor.

Waterbody	Location	Watershed	Water Quality Classification [a]	Crossing Type
Post Creek Hill Segment				
Unnamed Tributary to Post Creek 1	US 93/Red Horn Road, RP 37.2	Mission Creek	B-1	Culvert
Ashley Creek	US 93, RP 37.4to 37.8	Mission Creek	B-1	None - Adjacent
Post Creek	US 93, RP 37.8	Mission Creek	B-1	Bridge
Unnamed Tributary to Post Creek 2	US 93, West Post Creek Road, RP 37.8 to 38.1	Mission Creek	B-1	None - Adjacent
Unnamed Tributary to Post Creek 3	US 93, East Post Creek Road, RP 37.8 to 38.1	Mission Creek	B-1	None - Adjacent
Ninepipe Segment				
Ninepipe Reservoir	US 93, RP 40.5 to 40.8	Mission Creek	--	Bridge
Kettle Pond 1[b]	US 93, RP 41.7	Mission Creek	--	None
Kettle Pond 2[b]	US 93, RP 42.5	Crow Creek	--	None
Crow Creek	US 93, RP 44.2	Crow Creek	B-1	Culvert
Ronan				
Ronan Spring Creek	US 93, Main Street, RP 47.0	Crow Creek	B-1	Culvert

[a] CSKT 2001b.
[b] These surface waters were identified as nonjurisdictional under the USACE regulations. USACE jurisdictional status was determined by project biologists and has not been confirmed by the USACE. Surface waters within the project corridor are also regulated by the CSKT per Aquatic Lands Conservation Ordinance 87A.
RP: Reference post.

Ashley Creek, a perennial tributary to Post Creek, originates in the Mission Mountains and flows through the valley and wetland areas before entering Post Creek. Ashley Creek is diverted from its natural channel into a ditch that flows north along the east side of US 93 before its confluence with Post Creek. The channel is highly degraded in this area.

The main stem of **Post Creek** originates as a high elevation stream in the Mission Mountains. An in-channel irrigation storage facility is located near the headwaters called McDonald Lake. This irrigation facility supplies the off-channel Ninepipe and Kicking Horse Reservoirs within the project area.

A tributary to Post Creek (**Unnamed Tributary to Post Creek 2**) originates from springs on the Mission Valley floor. This stream flows along the east side of US 93 before leaving the project corridor and discharging to Post Creek upstream of the Post Creek bridge on US 93.

Another Post Creek tributary (**Unnamed Tributary to Post Creek 3**) has been diverted from its natural channel and into a ditch on the west side of US 93. The stream discharges into Post Creek downstream of the Post Creek bridge on US 93.

Ninepipe Reservoir is an off-channel irrigation water storage facility supplied by Post Creek. This reservoir is located in the Ninepipe segment of the project corridor. Inflow to Ninepipe

Reservoir is conveyed westward under US 93 through a timber bridge crossing. Additional information on this system is provided in *Section 4.12 Fish and Wildlife*.

Two kettle ponds, **Kettle Ponds 1 and 2**, are located in the Ninepipe segment of the project corridor. US 93 crosses these ponds on earthen berms. Kettle ponds are depressions left in a mass of *Glacial Drift*, formed by the melting of an isolated block of glacial ice. Kettle ponds are typically shallow depressions that are larger than pothole wetlands. Kettle ponds have wetland characteristics described by the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) including wetland vegetation, hydrology, and hydric soils. Additional information on these systems is provided in *Section 4.10 Wetlands*.

Crow Creek Watershed

Crow Creek and Ronan Spring Creek, located in the Crow Creek watershed, cross the project corridor in the Ninepipe segment and urban portion of the proposed project, respectively. Land uses in the Crow Creek watershed are primarily forest and irrigated agriculture; however two of the larger communities in the Flathead Indian Reservation, Ronan and Polson, are located here (CSKT 2000a).

Crow Creek originates in three forks, South, Middle, and North Crow creeks, in the Mission Mountains and drains the northern half of the Mission Valley (approximately 127.7 square kilometers [49.3 square miles]). The main stem of Crow Creek flows in a low gradient, highly sinuous channel in the project corridor.

Ronan Spring Creek, a spring-fed tributary to Crow Creek, originates on the Mission Valley floor and enters the project corridor in the City of Ronan. Ronan Spring Creek drains 14.2 square kilometers (5.5 square miles). The stream is channelized through the project corridor and field observations indicate that the culverts are causing scour and sediment deposition problems.

Irrigation System Features

Irrigation systems in the US 93 Ninepipe/Ronan project corridor are described in the *Preliminary Irrigation Report* (Skillings-Connolly 2004b). The system of irrigation canals and ditches within this project area originated in the early 20th century as a result of the Flathead Irrigation Project which was intended to create a community irrigation system for the main purpose of irrigating Tribal lands. The irrigation facilities created by the Flathead Irrigation Project are regulated by the Flathead Agency Irrigation Division (FAID) headquartered in Saint Ignatius, Montana. Five primary irrigation canal systems are present in the project corridor: Post A Canal, Post F Canal, Post G Canal, Ronan A Canal, and Ronan D Canal. These systems are located adjacent to and cross US 93 at the locations listed in Table 4.9-2.

Based on the recent Talent Decision (2001), the U.S. Army Corps of Engineers (USACE) considers irrigation ditches as jurisdictional “waters of the United States” under Section 404 of the Clean Water Act if they have a downstream surface connection to other waters of the United

States and/or jurisdictional wetlands. Through a preliminary jurisdictional determination, project biologists have determined that the five primary irrigation canal systems mentioned previously have downstream surface connections to other waters of the United States and would therefore be regulated by the USACE as waters of the United States. Based on the preliminary jurisdictional determination by project biologists, the other irrigation features identified in Table 4.9-2 represent lateral canals (canals that divert flows from the primary canal to the irrigator's property) that would not be considered waters of the United States by the USACE. Coordination with USACE regarding the jurisdictional status of water resources in the project corridor is ongoing. Final determinations will be provided in the Final SEIS for this proposed project.

Table 4.9-2. Irrigation canals located in the US 93 Ninepipe/Ronan improvement project corridor.

System	Approximate Location (RP)	Relation to US 93	Description
Post F Canal	38.6	Crossing	13-meter (43-foot) long, 1,800-x 1,200-mm (70- x 47-inch) concrete box culvert
17 G-4 Canal [a]	39.0	Crossing	27-meter (89-foot) long, 914-mm (36-inch) diameter CMP culvert
14G Canal [a]	39.5	Adjacent	Ditch east of highway
Ditch [a]	39.5	Adjacent	Ditch east of highway
Canal [a]	39.5	Crossing	13-meter (43-foot) long, 375-mm (15-inch) diameter CMP culvert
14G Canal [a]	39.6 – 39.8	Adjacent	Ditch east of highway
Siphon [a]	39.8	Crossing	30-meter (38-foot) long, 600-mm (24-inch) diameter CMP culvert
Post G Canal	39.9	Crossing	15-meter (49-foot) long, 1,800- x 1,200-mm (70- x 47-inch) box culvert
Siphon [a]	40.2	Crossing	47-meter (154-foot) long, 450-mm (18-inch) diameter culvert
Post A Canal	41.5	Crossing	37-meter (121-foot) long, 1,854- x 1,143-mm (73- x 45-inch) RCP arch culvert
Ronan A Canal	44.2 – 45.1	Adjacent	Ditch west of highway
Siphon	45.1	Crossing	38-meter (125-foot) long, 750-mm (30-inch) diameter CMP culvert
13A Canal [a]	45.8 – 46.3	Adjacent	Ditch west of highway
Ronan A Canal	46.3	Crossing	600-meter (1,969-foot) long, 600-mm (24-inch) diameter CMP culvert
Ronan D Canal Siphon	48.1	Crossing	78-meter (256-foot) long, 1,350-mm (53-inch) diameter RCP culvert

Source: Preliminary Irrigation Report (Skillings-Connolly 2004b).
CMP: Corrugated metal pipe.
RCP: Reinforced concrete pipe.
RP: Reference post.
[a] These canals and ditches were identified as nonjurisdictional under the USACE regulations. USACE jurisdictional status was determined by project biologists and has not been confirmed by the USACE. Surface waters within the project corridor are also regulated by the CSKT per Aquatic Lands Conservation Ordinance 87A.

Water Quality

Water quality conditions were evaluated in general for all surface water systems in the Flathead Indian Reservation in the *Nonpoint Source Assessment for Streams, Rivers, Lakes, and Wetlands* (CSKT 2000a), and for the Mission Creek watershed in *Assessment of Water Quality Conditions; Mission Creek Watershed* (CSKT 2000b). All surface waters in the project corridor have been classified 'B-1', as defined by the *CSKT Water Quality Standards and Antidegradation Policy* (CSKT 2001b). This classification identifies the designated uses of the surface waters and water quality standards to be maintained. CSKT Surface Water Quality Standards recognize that the natural water quality of wetlands may differ from that of associated streams and requires that the existing water quality of unimpaired wetlands be protected and wetland functions and values be protected. Waters classified B-1 must be maintained suitable for drinking and culinary and food processing purposes after conventional treatment; bathing, swimming and recreation; wildlife (birds, mammals, amphibians and reptiles); the growth and propagation of salmonid fishes and associated aquatic life; and agricultural and industrial water supply purposes.

Mission Creek Watershed

Monitoring of nutrients, solids, and bacteria was conducted in Post Creek and throughout the Mission Creek watershed by CSKT personnel in 1999 (CSKT 2000b). Samples were collected in Post Creek during the 1999 monitoring effort at two locations: approximately 3.2 kilometers (2 miles) upstream of US 93 (Post Creek above Post F Canal), and near the confluence with Mission Creek (Post Creek near mouth). Additional water quality data were compiled by CSKT (2000a) from stations throughout the Mission Creek watershed, including one station in Post Creek (Post Creek below Post F Canal). These monitoring data are displayed in Table 4.9-3.

No statistically significant increases in nitrate and nitrite nitrogen, total phosphorus, or total dissolved solids were found between the 'Post Creek above Post F Canal' monitoring site and a reference site; however, an increase in total suspended solids concentrations was found. Land use that is predominantly irrigated agriculture below the 'Post Creek above Post F Canal' monitoring station corresponds with decreased water quality in a downstream direction (CSKT 2000b). The project corridor is upstream of the three irrigation return flow sites identified as contributing a large portion of the water quality contaminant load in the watershed. Other nonpoint source pollution in the form of stormwater runoff from various sources, including US 93, influences the water quality in Post Creek (CSKT 2000a).

In general, within the Mission Creek watershed, nutrient concentrations increase in a downstream direction. Water temperature also increases substantially in a downstream direction. Suspended solids concentrations do not show a clear difference between upstream and downstream sites, although coring samples show an increase of particles greater than 6 millimeters (0.2 inches) in size in a downstream direction. Limited bacterial sampling results indicate a very detectable increase in *E. coli* concentration in a downstream direction and in the tributary network (CSKT 2000b).

Table 4.9-3. Median concentrations of pollutants in Post Creek and Crow Creek in milligrams per liter (*E. coli* concentrations in colonies per 100 milliliters, turbidity in nephelometric turbidity units).

Monitoring Station	Nitrate and Nitrite Nitrogen	Total Kjeldahl Nitrogen	Dissolved Ammonia	Soluble Nitrogen	Total Nitrogen	Ortho-phosphate	Soluble Reactive Phosphorus	Total Phosphorus	Total Dissolved Solids	Total Suspended Solids	Turbidity	*E. coli*
Mission Creek Watershed												
Post Creek above Pablo Feeder Canal	0.07	0.25	0.10	–	–	0.01	–	0.01	76	2	–	<100
Post Creek at Post F Canal [a]	0.07	0.25	0.10	–	–	0.01	–	0.01	91	4.0	–	500
Post Creek below Post F Canal [b]	–	–	–	0.123	0.315	--	0.010	0.010	–	–	2.3	–
Post Creek near mouth [a]	0.17	0.25	0.10	–	–	0.01	–	0.03	158	6	–	400
Crow Creek Watershed												
Middle Crow Creek above Ronan water supply [b]	–	–	–	0.114	0.260	–	0.010	0.020	–	–	0.56	–
Lower Crow Creek below reservoir [b]	–	–	–	0.290	0.610	–	0.020	0.081	–	–	7.0	–

Source: [a] CSKT 2000b.
[b] CSKT 2000a.

The beneficial uses of Post Creek downstream of the Post F Canal are impaired due to habitat alteration, siltation, elevated water temperatures, and nutrients. Water quality in Post Creek is also threatened by stormwater runoff.

Crow Creek Watershed

Water quality data were compiled by CSKT (2000a) from stations in the Crow Creek watershed, including three stations on Crow Creek. The 'Middle Crow Creek above Ronan water supply' station is located just downstream of US 93. Monitoring data for nutrients and turbidity at this station and a station further downstream are displayed in Table 4.9-3.

Nutrient levels, water temperature, and dissolved and suspended solids concentrations all show substantial increases in a downstream direction. Irrigation return flows that occur lower in the watershed have been blamed for degraded water quality lower in the system with extremely high nutrient concentrations and sediment levels at coulees delivering irrigation return flows. Maximum temperatures measured at a sampling location approximately 1.6 kilometer (1 mile) above the project corridor exceed 60 degrees F (15.6 degrees C). There have been a number of documented instances where stormwater runoff from the City of Ronan has introduced sediment and petroleum hydrocarbons into Ronan Spring Creek (CSKT 2000a).

The beneficial uses of streams in the Crow Creek watershed, including Crow Creek and Ronan Spring Creek, are impaired due to habitat alteration, siltation, elevated water temperatures, and increased nutrients in tributary runoff. Water quality in Ronan Spring Creek is threatened by stormwater runoff. Probable sources of impairment of beneficial uses identified for the Crow Creek watershed include irrigated agriculture and irrigation return flows, rangeland uses, pastures, floodplain disturbance, and commercial and residential development (CSKT 2000a).

Ground Water Resources

Ground water aquifers in the Mission Valley include low permeability, fractured bedrock aquifers on the valley margins and unconsolidated to partly consolidated aquifers on the valley floor (valley-fill aquifers). Aquifers within the project corridor include the following (CSKT 2000a):

- The Mission Valley - Ashley Creek aquifer, comprised of Pleistocene glacial deposits, occurs in the Post Creek Hill segment of the project. This aquifer is fully confined along Post Creek (in the project area) and consists of well-sorted gravel.
- The Mission Valley - Charlo aquifer, comprised of tertiary and undifferentiated Pleistocene deposits, is located to the north of the Ashley Creek aquifer in the Post Creek Hill and Ninepipe segments of the project corridor. This aquifer is fully confined and consists of thin, laterally continuous gravel.

- The Mission Valley - Spring Creek aquifer, comprised of Pleistocene glacial deposits, occurs in a very small portion of the Ronan segment of the proposed project north of the Charlo aquifer. The south portion of this aquifer (in the project area) is fully confined and consists of well sorted sand and gravel.
- The Mission Valley - Mud Creek aquifer, comprised of Pleistocene glacial deposits, occurs in the Ronan segment of the proposed project, north of the Charlo aquifer. This aquifer is fully confined and consists of moderate to well-sorted gravel capable of high water yield.

Valley-fill aquifers are recharged from infiltration in streams and wetlands, subsurface flow from bedrock at the valley margins, and direct infiltration from the land surface. Infiltration from irrigation canals and on-farm water uses are also substantial sources of aquifer recharge. Aquifer discharge occurs in streams and wetlands, and through evapotranspiration and well withdrawals (CSKT 2000a).

Shallow groundwater is used as a primary source of domestic water throughout the rural portion of the project corridor, and as a backup source in the City of Ronan (Makepeace 2003a personal communication). Existing highway ditches intercept shallow aquifers at numerous sites in the Post Creek and Ninepipe Areas. Narrow wetland strips, most with abundant growth of cattails, have developed along these ditches. There are no designated sole-source aquifers in the project area.

In summary, the deeper confined aquifers are not linked to any near-surface water quality issues, but the shallow aquifers are vulnerable to contamination from infiltrated runoff.

4.10 Wetlands

4.10.1 Analysis Methods and Assumptions

The US 93 Evaro to Polson FEIS (FHWA and MDT 1996) included wetland boundary locations along US 93, including the US 93 Ninepipe/Ronan project corridor that is the subject of this analysis. Boundary determinations for the 1996 analysis were based on the methods described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). The objective of the current analysis was to re-evaluate wetland boundaries and update the wetland mapping from the US 93 Evaro to Polson FEIS for the US 93 Ninepipe/Ronan project corridor.

In general, project biologists considered the 1996 wetland delineation to be correct. The re-evaluation primarily focused on using updated information to more accurately represent the true location of wetland boundaries relative to potential impacts from proposed US 93 reconstruction.

Wetland Delineations

While re-evaluating wetland boundaries, project biologists used spatial data that has become available since the wetland assessment for the US 93 Evaro to Polson FEIS was completed. The US 93 Evaro to Polson FEIS wetland boundaries were included as a visible layer on base maps generated from recent aerial photographs. New wetland boundaries were placed on these maps to better fit boundaries apparent from the aerial photographs. A topographic map layer with contour lines, in addition to other available data layers, helped project biologists interpret photos and adjust boundaries. These maps were then printed and taken to the field where biologists then adjusted wetland boundaries shown on maps to reflect actual conditions on the ground.

Project biologists used a base map that portrays the anticipated limits of disturbance for the proposed project alternatives to determine which wetlands would be directly affected by the proposed project. All wetlands located within proposed right-of-way boundaries or overlapping the proposed right-of-way boundaries on the base maps, were included. Wetland areas were re-evaluated only to the extent of the topography layer depicted on the base maps. The following data layers were referenced in order of importance to re-evaluate wetland boundaries: contour layer (electronic); 2001 infrared photos (hard copy); 1998 high water photographs (hard copy) and 1998 aerial photo layer (electronic). These wetland boundaries were then ground-truthed by visual observation of hydrophytic vegetation and hydrologic indicators.

National Wetland Inventory maps were used to identify locations of wetlands outside of the project corridor for the US 93 Ninepipe project. National Wetland Inventory maps and digitized wetland information includes the characteristics, extent, and status of the nation’s wetlands (USFWS 1992a, 1992b). These maps were used to determine hydrologic and wildlife connections between wetlands within the project corridor that would be directly disturbed or filled for construction and those outside the corridor that would be influenced by the presence of the roadway.

For the purpose of referencing individual wetlands, each wetland within the project corridor was assigned a wetland identifier code composed of a combination of letters and numbers. The first letter of the identifier: H, I, or J, reflects the naming convention used in the US 93 Evaro to Polson FEIS for different portions of the highway within the US 93 Ninepipe/Ronan project corridor. Wetlands beginning with H are in the south portion of the project corridor between Dublin Gulch Road/Red Horn Road and MT 212. Wetlands beginning with I are in the middle of the project area between MT 212 and the south end of Ronan, and wetlands beginning with J are in the north portion of the project corridor between the south end of Ronan and Baptiste Road/Spring Creek Road. Wetlands occurring close together with similar features were grouped and given the same letter and number identifier. Individual wetlands within a grouping were then given a unique letter following the number (e.g., H25A or H25B). Examples of similar features that resulted in the grouping of wetlands under one wetland identifier code include the same Cowardin wetland classification, hydrologic connections, similar hydrology (perennial water versus intermittent water), or similar vegetative structure (trees, shrubs, or herbaceous species dominating).

Wetland Classification

Each wetland in the project corridor was classified using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979), a descriptive classification with 28 subclasses, based on physical wetland attributes (i.e., vegetation, soils, and water regime).

According to Cowardin et al. (1979), all wetlands in the project corridor are palustrine wetlands. Palustrine wetlands are wetland systems that are vegetated-dominated by trees, shrubs, herbaceous plants, mosses or lichens. Two deepwater systems are also present in the project corridor – riverine (project area streams) and lacustrine systems (Ninepipe Reservoir). Riverine and lacustrine systems are not typically classified as wetlands as defined by the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) but these "waters of the United States" are regulated under Section 404 of the Clean Water Act.

Hansen Wetland Vegetation Description

Wetland vegetation at each wetland in the US 93 Ninepipe/Ronan project corridor was described according to *Classification and Management of Montana's Riparian and Wetland Sites* (Hansen et al. 1995). Hansen et al. (1995) describes vegetation units using habitat types or community types. The term "habitat type" refers to an area of land that supports or has the potential to support the same climax vegetation type or association. The term "community type" refers to an area of land that supports seral or disclimax plant communities. Seral plant communities have not attained a steady state and successively occupy and replace other communities over time. A disclimax plant community is a community that does not achieve a stable climax state due to recurring disturbances such as grazing or fire. Wetlands in the project corridor can be divided into eight habitat types or community types.

Wetland Functional Assessment

Functions and values of wetlands within the US 93 Ninepipe/Ronan project corridor were assessed using the *Montana Wetland Assessment Method* (MDT 1999). This method was developed to evaluate functions and values of wetlands within an assessment area and to provide a means for assigning an overall rating to a wetland. The method was established primarily to address highway and other linear projects. Montana wetland category hierarchy ranges from category I wetlands, which exhibit outstanding features (e.g., large wetlands that provide habitat for threatened or endangered species or large volumes of flood attenuation) to category IV wetlands, which exhibit minimal attributes (e.g., isolated wetlands dominated by one plant species).

4.10.2 Regulations and Standards

All waters of the United States, including wetlands, are regulated by the United States Army Corps of Engineers (USACE) under the Clean Water Act. See the section titled *Jurisdictional and Non-Jurisdictional Wetlands* for information on USACE regulations. Wetlands on the Flathead Indian Reservation are also regulated by the CSKT under the Aquatic Lands Conservation Ordinance (ALCO) 87A. Wetlands are further protected under Executive Order 11990, which requires federal agencies to minimize the loss or degradation of wetlands and enhance their natural value. The policy of the U.S. Department of Transportation, as stated in Order DOT 5660.1A, is that transportation projects should be planned, constructed, and operated to ensure the protection, preservation, and enhancement of the nation's wetlands to the fullest extent practicable.

4.10.3 Wetland Resources

This section provides general descriptions of the wetlands identified in the US 93 Ninepipe/Ronan improvement project corridor. Major streams and wetland features such as Ninepipe Reservoir and Kettle Pond 1 and Kettle Pond 2 are shown in Figure 4.10-1. Individual wetlands are shown on the figures in Appendix E.

Wetlands in the project corridor were grouped into five types for the purposes of describing them. The five wetland types, which are described in the following paragraphs, include riparian zone wetlands, pothole wetlands, Ninepipe Reservoir wetlands, irrigation feature wetlands, and roadside ditch wetlands. Table 4.10-1 shows approximate wetland acreage of each wetland type within the US 93 Ninepipe/Ronan improvement project corridor.

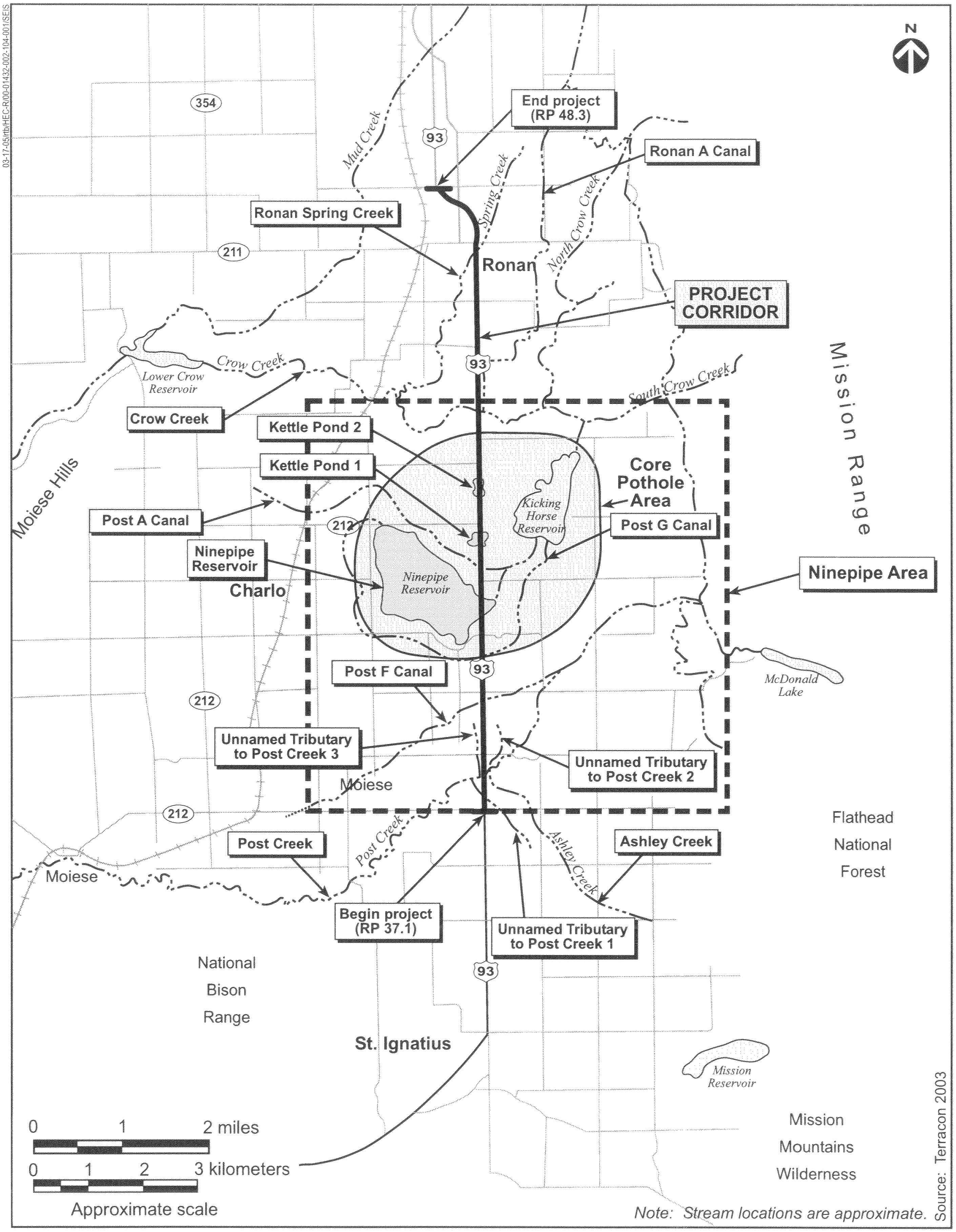

Figure 4.10-1. **Major streams, wetland features, canals, and fisheries resources in the US 93 Ninepipe/Ronan improvement project corridor.**

Table 4.10-1. Approximate wetland area by wetland type and total wetland area in the US 93 Ninepipe/Ronan improvement project corridor.

Wetland Type	Wetland Area	
	Hectares	Acres
Riparian wetlands	18.7	46.3
Pothole wetlands	29.5	72.9
Ninepipe Reservoir	16.1	39.7
Irrigation feature wetlands	4.5	11.2
Roadside ditch wetlands	2.8	6.9
Total Wetland Area	71.6	177

A total of 146 wetlands were identified within the US 93 Ninepipe/Ronan improvement project corridor. Table 4.10-2 summarizes wetland characteristics, including wetland identifier number, location (by MDT reference post), wetland type, classifications (by Cowardin class, Hansen habitat/community type, and Montana wetland category), and size.

Jurisdictional and Non-Jurisdictional Wetlands

Wetlands in the project area were determined to be jurisdictional or non-jurisdictional as regulated by the USACE by the project biologist, but final jurisdictional determinations have not been verified by the USACE. MDT would not be responsible for mitigating impacts on non-jurisdictional wetlands for the purposes of securing a Section 404 permit. However, regardless of jurisdiction, Executive Order 11990 requires MDT to account for all wetland losses. Therefore, MDT would ultimately seek to replace all wetlands affected by the proposed project.

Jurisdictional wetlands include those wetlands that meet the definition of a wetland as defined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and do not fall under any of the criteria for non-jurisdictional wetlands. Non-jurisdictional wetlands in the US 93 Ninepipe/Ronan project corridor consist of isolated wetlands, which are generally pothole wetlands. The following guidelines were used in this assessment to determine if a wetland was isolated and non-jurisdictional:

- No apparent surface or wetland connection with any water of the U.S. and not directly adjacent to any water of the U.S.
- No actual link between the water body and interstate or foreign commerce based on the factors mentioned previously
- Individually and/or in the aggregate, the use, degradation or destruction of the isolated water would have no substantial effect on interstate or foreign commerce, i.e., the wetland does not have a “significant nexus” to navigable waters.

Jurisdictional and non-jurisdictional wetlands in the US 93 project area are identified in Table 4.10-2 and are described in greater detail in the *Biological Resources Report: US 93 Ninepipe/Ronan Improvement Project* (Herrera 2005a).

Riparian Zone Wetlands

Riparian zone wetlands are located in the floodplains of streams, outside of the stream channel. These systems are highly variable in the corridor and may be emergent, scrub-shrub, or forested communities. According to Hansen et al. (1995), riparian zone wetlands in the project corridor encompass a range of community/habitat types (Table 4.10-2).

Only one category I wetland was identified in the project corridor. This area includes the large floodplain and stream channel associated with Post Creek (H16A, H16B). This wetland and the Post Creek stream channel provide high levels of general fish and wildlife habitat as well as habitat occupied by bull trout, which is listed as threatened under the Endangered Species Act (ESA). The large riparian wetlands associated with Post Creek are also used as a migratory corridor for the federally listed grizzly bear (Becker 2003a personal communication). This wetland allows for short and long-term water storage; flood attenuation; sediment, nutrient and toxicant removal; sediment and shoreline stabilization; production export and food chain support; and ground water discharge capabilities due to the wetland size, volume of surface water, and high structural diversity. The wetland is located on Tribal mitigation lands, which were developed in accordance with the *Memorandum of Agreement for Riparian and Wetland Mitigation for the Highway 200 Dixon-Ravalli Project* (MDT and CSKT 1997). This area also provides high education and recreation values.

Riparian wetlands associated with Crow Creek (I16A, I16B) and its tributary, Ronan Spring Creek (J2C, J2D), received category II ratings. In general, these systems provide high wildlife and aquatic habitat, but do not support endangered, threatened, or sensitive wildlife or aquatic species. This is generally due to the stream existing in a degraded or altered state or lacking an intact riparian corridor.

The riparian wetlands associated with Ashley Creek (H15A, H15B, and H15C) received a category III functional rating. The stream and wetlands maintain connection with the Post Creek channel and riparian wetland complex, but undersized culverts, diversion structures, and aquatic vegetation have degraded fish habitat and eliminated connectivity within the stream, which has reduced the aquatic habitat value of the stream and wetlands. The riparian wetlands associated with Ashley Creek are an important sediment and nutrient filter of runoff from US 93.

Wetlands associated with the unnamed tributary to Post Creek 1, (H16C, H17A, and portions of H16B) received category III ratings. These wetlands contain channels that have been heavily altered by bank and wetland trampling, channel diversion and excavation, and passage barriers from culverts, dewatering, and impoundment. Prominent wetland functions include water storage, production, and food chain support, ground water recharge, and sediment stabilization. These channel alterations have affected area hydrology and altered the value and function of these wetlands, including instream habitat, which is highly degraded from sediment build-up.

Table 4.10-2. Characteristics of wetlands in the US 93 Ninepipe/Ronan improvement project corridor.

Wetland ID	Reference Post	Wetland Type [a]	Provisional USACE Jurisdictional Status [b]	Cowardin Class [c]	Hansen Community Type [d]	Montana Wetland Category [e]	Size [f] Hectares (acres)
H14A	37.2 to 37.3	Riparian zone (unnamed tributary to Post Creek 1)	Jurisdictional	PEM, PSS, PAB	Unclassified riparian or wetland site	II	0.6 (1.4)
H14B	37.2 to 37.3	Riparian zone (unnamed tributary to Post Creek 1)	Jurisdictional	PEM, PSS, PAB	Unclassified riparian or wetland site	II	0.5 (1.2)
H15A	37.4 to 37.6	Riparian zone (Ashley Creek)	Jurisdictional	PEM	Sedge community type	III	0.5 (1.2)
H15B	37.6	Riparian zone (Ashley Creek)	Jurisdictional	PEM	Sedge community type	III	0.01 (0.03)
H15C	37.6	Riparian zone (Ashley Creek)	Jurisdictional	PEM	Sedge community type	III	0.1 (0.2)
H16A	37.6 to 37.8	Riparian zone (Post Creek)	Jurisdictional	PEM, PSS, PAB, PUB	Quaking aspen/red-osier dogwood habitat type	I	8.4 (20.8)
H16B	37.6 to 38.1	Riparian zone (Post Creek)	Jurisdictional	PEM, PSS, PAB, PUB	Quaking aspen/red-osier dogwood habitat type	I – Post Creek Riparian Floodplain, III – north of the Post Creek Channel, associated with drainage from H16C	4.4 (10.9)
H16C	38.1 to 38.2	Riparian zone (unnamed tributary to Post Creek 2)	Jurisdictional	PEM, PSS, PAB	Quaking aspen/red-osier dogwood habitat type	III	0.8 (1.9)
H17A	37.9 to 38.1	Riparian zone (unnamed tributary to Post Creek 3)	Jurisdictional	PEM	Common cattail habitat type	III	0.2 (0.5)
H17B	38.1 to 38.3	Roadside ditch	Jurisdictional	PEM	Common cattail habitat type	IV	0.2 (0.5)
H17C	38.3 to 38.5	Roadside ditch	Jurisdictional	PEM	Common cattail habitat type	IV	0.1 (0.2)
H17D	38.5	Roadside ditch	Jurisdictional	PEM	Common cattail habitat type	IV	0.04 (0.1)
H17E	38.5	Roadside ditch	Jurisdictional	PEM	Common cattail habitat type	IV	0.01 (0.02)
H17F	38.6	Roadside ditch	Jurisdictional	PEM	Common cattail habitat type	IV	0.1 (0.1)
H18A	38.4	Irrigation feature	Jurisdictional	PEM	Nebraska sedge community type	III	0.03 (0.07)
H18B	38.4 to 38.6	Irrigation feature	Jurisdictional	PEM	Nebraska sedge community type	III	1.6 (3.8)
H19A	38.6	Irrigation feature	Jurisdictional	PEM, PUB	Reed canarygrass habitat type	III	0.1 (0.2)
H19B	38.6 to 39.1	Irrigation feature	Jurisdictional	PEM, PUB	Nebraska sedge community type	III	0.8 (2.0)
H20A	39	Irrigation feature	Jurisdictional	PEM, PUB	Nebraska sedge community type	III	0.2 (0.5)
H21A	39.1 to 39.3	Roadside ditch	Jurisdictional	PEM	Common cattail habitat type	III	0.3 (0.7)

Table 4.10-2 (continued). Characteristics of wetlands in the US 93 Ninepipe/Ronan improvement project corridor.

Wetland ID	Reference Post	Wetland Type [a]	Provisional USACE Jurisdictional Status [b]	Cowardin Class [c]	Hansen Community Type [d]	Montana Wetland Category [e]	Size [f] Hectares (acres)
H21B	39.4 to 39.5	Roadside ditch	Non-jurisdictional	PEM	Common cattail habitat type	III	0.2 (0.5)
H22A	39.4 to 39.6	Roadside ditch	Non-jurisdictional	PEM	Common cattail habitat type	III	0.2 (0.5)
H22B	39.4	Irrigation feature	Non-jurisdictional	PEM	Reed canarygrass habitat type	III	0.1 (0.2)
H22C	39.4	Irrigation feature	Non-jurisdictional	PEM	Reed canarygrass habitat type	III	0.1 (0.2)
H23A	39.5 to 39.7	Roadside ditch	Non-jurisdictional	PEM	Common cattail habitat type	III	0.1 (0.2)
H23B	39.6 to 39.7	Roadside ditch	Non-jurisdictional	PEM	Common cattail habitat type	III	0.1 (0.2)
H23C	39.7	Roadside ditch	Non-jurisdictional	PEM	Common cattail habitat type	III	0.01 (0.02)
H24A	39.7	Irrigation feature	Jurisdictional	PEM	Sedge community type	III	0.1 (0.2)
H24B	39.7	Group 2 pothole wetland	Non-jurisdictional	PEM, PUB	Unclassified riparian or wetland site	II	0.2 (0.5)
H24C	39.8	Group 2 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.04 (0.10)
H24D	39.8	Group 2 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.02 (0.05)
H25A	39.8	Group 2 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	II	0.2 (0.5)
H26A	39.8	Irrigation feature	Jurisdictional	PEM, PSS	Black cottonwood/herbaceous community type	III	0.3 (0.7)
H26B	39.9	Group 3 pothole wetland	Non-jurisdictional	PEM	Reed canarygrass habitat type	III	0.04 (0.1)
H26C	39.9	Group 2 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.1 (0.2)
H27A	39.9 to 40	Group 2 pothole wetland	Non-jurisdictional	PEM, PUB	Common cattail habitat type	II	1.3 (3.2)
H27B	39.9	Group 1 pothole wetland	Jurisdictional	PEM, PUB	Common cattail habitat type	II	0.3 (0.7)
H27C	40	Group 3 pothole wetland	Jurisdictional	PEM, PUB	Common cattail habitat type	II	0.01 (0.02)
H27D	39.9	Group 2 pothole wetland	Jurisdictional	PEM, PUB	Common cattail habitat type	II	0.03 (0.07)
H27E	39.9	Group 3 pothole wetland	Jurisdictional	PEM, PUB	Common cattail habitat type	II	0.1 (0.2)
H27F	39.9	Group 3 pothole wetland	Jurisdictional	PEM, PUB	Common cattail habitat type	II	0.02 (0.05)
H27G	40	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Reed canarygrass habitat type	II	0.6 (1.5)
H27H	40	Group 2 pothole wetland	Non-jurisdictional	PEM, PUB	Reed canarygrass habitat type	II	0.1 (0.2)
H27I	40	Roadside ditch	Non-jurisdictional	PEM	Common cattail habitat type	IV	0.04 (0.10)
H28A	40.1 to 40.2	Group 1 pothole wetland	Non-jurisdictional	PEM, PAB, PUB	Common cattail habitat type	II	1.0 (2.5)
H29A	40.4	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Common cattail habitat type	II	0.9 (2.2)
H30A	40.4 to 41	Ninepipe Reservoir	Jurisdictional	PEM, PUB	Reed canarygrass habitat type	II	8.3 (20.4)

Table 4.10-2 (continued). Characteristics of wetlands in the US 93 Ninepipe/Ronan improvement project corridor.

Wetland ID	Reference Post	Wetland Type [a]	Provisional USACE Jurisdictional Status [b]	Cowardin Class [c]	Hansen Community Type [d]	Montana Wetland Category [e]	Size [f] Hectares (acres)
H30B	40.4 to 40.8	Ninepipe Reservoir	Jurisdictional	PEM, PUB	Reed canarygrass habitat type	II	7.8 (19.3)
H31A	40.8 to 41	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Common cattail habitat type	II	0.5 (1.2)
H31B	41.1	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Reed canarygrass habitat type	II	0.3 (0.7)
H32A	41.1	Group 3 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.004 (0.01)
H32B	41.1	Group 3 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.02 (0.05)
H32C	41.1	Group 3 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.01 (0.02)
H32D	41.2	Group 3 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.004 (0.01)
H33A	41.1	Group 2 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.04 (0.10)
H33B	41.2	Group 1 pothole wetland	Non-jurisdictional	PEM, PSS, PFO	Black cottonwood/herbaceous community type	II	0.8 (2.0)
H33C	41.2	Group 3 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.03 (0.07)
H34A	41.3	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Black cottonwood/herbaceous community type	II	0.3 (0.7)
H34B	41.3	Group 2 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.1 (0.2)
H34C	41.3 to 41.4	Group 1 pothole wetland	Non-jurisdictional	PEM, PSS, PUB	Black cottonwood/red-osier dogwood community type	II	1.4 (3.5)
H34D	41.4	Group 1 pothole wetland	Non-jurisdictional	PEM, PSS, PUB	Common cattail habitat type	II	0.3 (0.7)
H35A	41.4	Irrigation feature	Jurisdictional	PEM, PFO, PAB, PUB	Reed canarygrass habitat type	III	0.02 (0.05)
H35B	41.4	Irrigation feature	Jurisdictional	PEM, PFO, PAB, PUB	Reed canarygrass habitat type	III	0.1 (0.2)
H36A	41.5	Roadside ditch	Non-jurisdictional	PEM	Common cattail habitat type	III	0.01 (0.02)
H37A	41.6 to 41.8	Group 1 pothole wetland, Kettle Pond 1	Non-jurisdictional	PEM, PUB	Reed canarygrass habitat type	II	2.4 (6.0)
H37B	41.6 to 41.8	Group 1 pothole wetland, Kettle Pond 1	Non-jurisdictional	PEM, PUB	Reed canarygrass habitat type	II	1.7 (4.2)
H38A	41.9	Group 2 pothole wetland	Non-jurisdictional	PEM	Unclassified riparian or wetland site	IV	0.04 (0.10)
H39A	41.9	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Common cattail habitat type	III	0.2 (0.5)
H39B	41.9 to 42	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Common cattail habitat type	III	0.6 (1.5)
H40A	42	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Common cattail habitat type	III	0.9 (2.2)
H40B	42	Group 2 pothole wetland	Non-jurisdictional	PEM, PUB	Reed canarygrass habitat type	III	0.10 (0.2)
H40C	42	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Common cattail habitat type	III	0.2 (0.5)

Table 4.10-2 (continued). Characteristics of wetlands in the US 93 Ninepipe/Ronan improvement project corridor.

Wetland ID	Reference Post	Wetland Type [a]	Provisional USACE Jurisdictional Status [b]	Cowardin Class [c]	Hansen Community Type [d]	Montana Wetland Category [e]	Size [f] Hectares (acres)
H40D	42	Roadside ditch	Non-jurisdictional	PEM	Common cattail habitat type	III	0.004 (0.01)
H40E	42.1	Group 3 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.1 (0.2)
H40F	42.1	Group 3 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.04 (0.10)
I1A	42.1	Irrigation feature	Non-jurisdictional	PEM	Common cattail habitat type	IV	0.004 (0.01)
I1B	42.1	Irrigation feature	Non-jurisdictional	PEM	Common cattail habitat type	IV	0.01 (0.02)
I2A	42.2	Group 2 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	IV	0.02 (0.05)
I3A	42.	Group 2 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.1 (0.2)
I3B	42.4	Group 1 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.1 (0.2)
I3C	42.3 to 42.4	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Reed canarygrass habitat type	II	0.2 (0.5)
I3D	42.4	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Reed canarygrass habitat type	II	0.4 (1.0)
I3E	42.8	Group 2 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.1 (0.2)
I4A	42.5 to 42.6	Group 1 pothole wetland, Kettle Pond 2	Non-jurisdictional	PEM, PUB	Reed canarygrass habitat type	II	2.00 (5.0)
I4B	42.5 to 42.6	Group 1 pothole wetland, Kettle Pond 2	Non-jurisdictional	PEM, PUB	Reed canarygrass habitat type	II	0.9 (2.2)
I5A	42.7	Group 2 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.1 (0.2)
I5B	42.5 to 42.7	Group 1 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.5 (1.2)
I6A	42.7	Group 1 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.10 (0.2)
I6B	42.7	Group 1 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.04 (0.10)
I6C	42.8	Group 3 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.03 (0.07)
I6D	42.8 to 42.8	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Reed canarygrass habitat type	II	0.7 (1.7)
I6E	42.8	Group 3 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.02 (0.05)
I7A	42.8 to 42.9	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Reed canarygrass habitat type	II	0.2 (0.5)
I7B	42.9	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Reed canarygrass habitat type	II	0.6 (1.5)
I7C	43	Group 2 pothole wetland	Non-jurisdictional	PEM	Unclassified riparian or wetland site	III	0.1 (0.2)
I8A	43	Group 1 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	II	0.1 (0.2)
I8B	43.1 to 43.2	Group 1 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	II	0.2 (0.5)
I8C	43.1 to 43.2	Group 1 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	II	0.6 (1.5)
I8D	43.2	Group 1 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	II	0.5 (1.2)

Table 4.10-2 (continued). Characteristics of wetlands in the US 93 Ninepipe/Ronan improvement project corridor.

Wetland ID	Reference Post	Wetland Type [a]	Provisional USACE Jurisdictional Status [b]	Cowardin Class [c]	Hansen Community Type [d]	Montana Wetland Category [e]	Size [f] Hectares (acres)
I9A	43.3	Group 1 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.3 (0.7)
I9B	43.3	Group 2 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.04 (0.1)
I10A	43.4	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Reed canarygrass habitat type	III	0.1 (0.2)
I11A	43.4	Roadside ditch	Non-jurisdictional	PEM	Common cattail habitat type	IV	.004 (0.01)
I11B	43.4	Roadside ditch	Non-jurisdictional	PEM	Common cattail habitat type	IV	.004 (0.01)
I11C	43.4	Roadside ditch	Non-jurisdictional	PEM	Common cattail habitat type	IV	.004 (0.01)
I11D	43.4	Roadside ditch	Non-jurisdictional	PEM	Common cattail habitat type	IV	.004 (0.01)
I12A	43.4	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Common cattail habitat type	III	0.1 (0.2)
I12B	43.5	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Common cattail habitat type	III	0.1 (0.2)
I12C	43.5	Group 2 pothole wetland	Non-jurisdictional	PEM, PUB	Common cattail habitat type	III	0.02 (0.05)
I13A	43.4	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Reed canarygrass habitat type	III	0.02 (0.05)
I13B	43.4 to 43.5	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Reed canarygrass habitat type	III	0.6 (1.5)
I13C	43.5	Group 3 pothole wetland	Non-jurisdictional	PEM, PUB	Reed canarygrass habitat type	III	0.02 (0.05)
I13D	43.5	Group 2 pothole wetland	Non-jurisdictional	PEM, PUB	Common cattail habitat type	III	0.1 (0.2)
I13E	43.5	Group 2 pothole wetland	Non-jurisdictional	PEM, PUB	Common cattail habitat type	III	0.02 (0.05)
I13F	43.5	Group 2 pothole wetland	Non-jurisdictional	PEM, PUB	Common cattail habitat type	III	0.03 (0.07)
I14A	43.6 to 43.7	Group 2 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.50 (1.2)
I14B	43.6	Group 1 pothole wetland	Non-jurisdictional	PEM	Reed canarygrass habitat type	III	0.2 (0.5)
I14C	43.6 to 43.8	Group 1 pothole wetland	Non-jurisdictional	PEM	Common cattail habitat type	III	0.9 (2.2)
I15A	43.8 to 44	Group 1 pothole wetland	Non-jurisdictional	PEM, PUB	Unclassified riparian or wetland site	II	2.4 (5.9)
I16A	44 to 44.2	Riparian zone (Crow Creek)	Jurisdictional	PEM, PSS, PAB, PUB	Unclassified riparian or wetland site	II	1.5 (3.7)
I16B	44 to 44.2	Riparian zone (Crow Creek)	Jurisdictional	PEM, PSS, PAB, PUB	Unclassified riparian or wetland site	II	0.8 (2.0)
I17A	44.2 to 44.3	Roadside ditch	Jurisdictional	PAB	Common cattail habitat type	IV	0.1 (0.2)
I17B	44.3	Roadside ditch	Jurisdictional	PAB	Common cattail habitat type	IV	0.02 (0.05)
I17C	44.4 to 44.5	Roadside ditch	Jurisdictional	PAB	Common cattail habitat type	IV	0.1 (0.2)
I17D	44.5 to 44.6	Roadside ditch	Jurisdictional	PAB	Common cattail habitat type	IV	0.1 (0.2)
I17E	44.7	Roadside ditch	Jurisdictional	PAB	Common cattail habitat type	IV	0.1 (0.2)
I18A	44.8	Roadside ditch	Non-jurisdictional	PAB	Common cattail habitat type	IV	0.004 (0.01)

Table 4.10-2 (continued). Characteristics of wetlands in the US 93 Ninepipe/Ronan improvement project corridor.

Wetland ID	Reference Post	Wetland Type [a]	Provisional USACE Jurisdictional Status [b]	Cowardin Class [c]	Hansen Community Type [d]	Montana Wetland Category [e]	Size [f] Hectares (acres)
I18B	44.8	Roadside ditch	Non-jurisdictional	PAB	Common cattail habitat type	IV	0.01 (0.02)
I18C	44.9	Roadside ditch	Non-jurisdictional	PAB	Common cattail habitat type	IV	0.02 (0.05)
I18D	44.9	Roadside ditch	Non-jurisdictional	PAB	Common cattail habitat type	IV	0.01 (0.02)
I19A	44.2 to 44.6	Roadside ditch	Jurisdictional	PAB	Common cattail habitat type	IV	0.6 (1.5)
I19B	44.6 to 44.7	Roadside ditch	Jurisdictional	PAB	Common cattail habitat type	IV	0.4 (1.0)
I20A	45.1	Roadside ditch	Non-jurisdictional	PAB	Common cattail habitat type	IV	0.004 (0.01)
I20B	45.1	Roadside ditch	Non-jurisdictional	PAB	Common cattail habitat type	IV	0.01 (0.02)
I20C	45.1	Roadside ditch	Non-jurisdictional	PAB	Common cattail habitat type	IV	0.01 (0.02)
I21A	45.1	Irrigation feature	Jurisdictional	PEM, PAB	Common cattail habitat type	III	0.3 (0.7)
I21B	45.1 to 45.3	Irrigation feature	Jurisdictional	PEM, PAB	Common cattail habitat type	III	0.2 (0.5)
I22A	45.5	Irrigation feature	Non-jurisdictional	PEM	Unclassified riparian or wetland site	IV	0.2 (0.5)
I22B	45.5	Irrigation feature	Non-jurisdictional	PEM	Unclassified riparian or wetland site	IV	0.04 (0.10)
J2A	47.2	Group 2 pothole wetland	Jurisdictional	PEM, PAB	Common cattail habitat type	III	0.1 (0.2)
J2B	47.2	Irrigation feature	Jurisdictional	PEM, PAB	Unclassified riparian or wetland site	III	0.1 (0.2)
J2C	47.1 to 47.2	Riparian zone (Ronan Spring Creek)	Jurisdictional	PEM, PSS, PUB	Reed canarygrass habitat type	II	0.9 (2.2)
J2D	47.1	Riparian zone (Ronan Spring Creek)	Jurisdictional	PEM, PSS, PUB	Reed canarygrass habitat type	II	0.1 (0.2)
J3A	47.4	Irrigation feature	Non-jurisdictional	PEM, PAB	Common cattail habitat type	III	0.6 (1.5)
J4A	48.2	Group 3 pothole wetland	Jurisdictional	PEM, PAB	Common cattail habitat type	III	0.3 (0.7)
J4B	48.3	Group 1 pothole wetland	Jurisdictional	PEM, PAB	Common cattail habitat type	III	1.3 (3.2)

[a] Wetland types, including the pothole wetland groupings, are described in this section.
[b] USACE jurisdictional status was determined by project biologists and has not been confirmed by the USACE. Wetlands within the project corridor are also regulated by the CSKT per Aquatic Lands Conservation Ordinance 87A.
[c] Source: Cowardin et al. 1979. Wetland classes include: PAB – palustrine aquatic bed, PEM – palustrine emergent, PFO – palustrine forested, PSS – palustrine scrub-shrub, PUB – palustrine unconsolidated bottom wetland.
[d] Source: Hansen et al. 1995.
[e] Source: MDT 1995.
[f] The size of the wetland is the area of the wetland generally within the proposed right-of-way for the widest alternative (Rural 9). Many of the wetlands in the project corridor are entirely within this limit and others, such as wetlands associated with streams and the Ninepipe Reservoir extend beyond this limit. For the latter case, the acreage presented does not represent the size of the entire system.

Pothole Wetlands

Pothole wetlands are depressions left in a mass of *Glacial Drift*, formed by the melting of an isolated block of glacial ice. Pothole wetlands are typically shallow depressions and have wetland characteristics described by the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) including wetland vegetation, hydrology, and hydric soils. Pothole wetlands can be landlocked or have an inlet and outlet for hydrologic connection. Typically, water ponds in pothole wetlands due to a subsurface soil layer with lower permeability (Environmental Laboratory 1987; Hansen et al. 1995; Cook 2001). For purposes of this assessment, pothole wetlands in the project corridor were divided into three groups based on water regime modifiers described by Cowardin et al. (1979). Water regime modifiers are general terms used to describe hydrologic characteristics of wetlands and deepwater habitats in terms of the duration and timing of surface inundation and ground water fluctuations. The three types of pothole wetlands are described in the following paragraphs. Most pothole wetlands in the project corridor were palustrine emergent or palustrine unconsolidated bottom systems (Cowardin et al. 1979). According to Hansen et al. (1995), pothole wetlands in the project corridor encompass a range of community/habitat types (Table 4.10-2).

Group 1 Pothole Wetlands

Group 1 pothole wetlands are inundated by precipitation, surface water runoff, and/or ground water inflow for all of the year. Group 1 pothole wetlands include permanently flooded, intermittently exposed, and semipermanently flooded water regimes. This group includes Kettle Ponds 1 and 2. Kettle ponds are formed similar to pothole wetlands but are usually characterized as deeper systems with year-round surface water. For the purposes of this project, the two largest and deepest depressions in the project corridor are referred to as “kettle ponds.”

Group 1 and 2 pothole wetlands with open water during some portion of the year received category II ratings. Most of these wetlands are potholes associated with the Ninepipe National Wildlife Refuge. These wetlands received high general wildlife ratings, as they are valuable waterfowl production areas. Other prominent functions of this wetland type are sediment and nutrient filtration, water storage, and high education and recreational value.

Group 2 Pothole Wetlands

Group 2 pothole wetlands are usually saturated at or near the soil surface for all or most of the year and inundated for portions of the year. Group 2 pothole wetlands include seasonally flooded and saturated water regimes.

Group 3 Pothole Wetlands

Group 3 pothole wetlands are depression areas that are inundated periodically, but with much longer lengths of time between inundations. Group 3 pothole wetlands include temporarily flooded and intermittently flooded water regimes.

Group 3 pothole wetlands, which are lacking open water habitat, received category III ratings. The lack of open water habitat lowers the general wildlife rating for the site. These wetlands are typically smaller in size than open water pothole wetlands, reducing their water storage capacity, filtration capacity, and flood retention functions.

Ninepipe Reservoir Wetlands

Wetlands at the Ninepipe Reservoir (H30A and H30B) associated with the US 93 right-of-way are palustrine, emergent wetlands dominated by reed canarygrass (Cowardin et al. 1979). Water levels in the reservoir fluctuate throughout the year so the wetlands are inundated or flooded for part of the growing season in some years and the soils are saturated in most years. Within the project corridor, wetlands associated with the Ninepipe Reservoir are described as reed canarygrass habitat type (Hansen et al. 1995).

Wetlands associated with the Ninepipe Reservoir received a category II functional rating. The Ninepipe Reservoir is a large deepwater habitat surrounded by shoreline and pothole wetlands. This area is of exceptional value to wildlife, especially bird species. Other prominent functions include production export and food chain support, sediment and shoreline stabilization, sediment/nutrient/toxicant removal and high recreation and education value.

Irrigation Feature Wetlands

Irrigation feature wetlands within the US 93 Ninepipe/Ronan project corridor include feeder canals, lateral canals, and features resulting from seepage of the irrigation system. Most of the irrigation feature wetlands are palustrine emergent wetlands, but a few irrigation features flow through areas with shrubs and trees and are considered palustrine scrub-shrub wetlands (Cowardin et al. 1979). Palustrine emergent wetlands occur mostly within the channels of canals. The edges of the canals define the boundaries of the wetland area and natural wetlands generally are not located outside of the canal channels. The canals are artificial wetlands that have developed wetland characteristics after many years of existence. Reed canarygrass, an invasive species, and Nebraska sedge, a native species that typically occurs in over-grazed habitats, dominate the canals. According to Hansen et al. (1995), irrigation feature wetlands in the project corridor encompass a range of community/habitat types (Table 4.10-2).

Some of the irrigation feeder canals and other irrigation features have palustrine emergent wetlands associated with them due to seepage or leaking from the irrigation system (H18A and B, H19B, H20A, H22B and H22C, H24A, H26A, I1A and I1B, I21A and I21B, I22A and I22B, J2B, J3A). These wetlands tend to be located next to an irrigation diversion or canal and sometimes in a natural depression, typically in pasture, agriculture, or rangeland. Sub-irrigation also provides hydrology for some of these wetland features. Irrigation feature wetlands tend to be disturbed from grazing or agriculture activities and hydrology appears to be dependent on the leaking from the irrigation system. Typically, these wetlands received a category III functional rating. Prominent functions include sediment stabilization and water storage.

Wetlands H19A (Post F Canal), H35A, H35B (Post A Canal), I21A, H21B (unnamed canal, flows into Crow Creek), and J4A and J4B (Ronan Canal) also received category III ratings. These wetlands are large irrigation canals that connect with perennial streams or they are tributaries to perennial streams or storage reservoirs supporting game fish species (non salmonids). These canals may function as limited fish habitat or as conduits for fish passage when in operation, with the exception of the Post F canal, which is screened off from Post Creek and is not accessible by fish. They also intercept ground water and tributary flow after the irrigation season.

Roadside Ditch Wetlands

Within the project corridor, all roadside ditch wetlands (H17B, H17C, H17D, H17E, and H17F; H21A and H21B; H22A; H23A, H23B, and H23C; H27I; H36A; H40D; I11A, I11B, I11C, and I11D; I17A, I17B, I17C, I17D, and I17E; I18A, I18B, I18C, and I18D; I19A and I19B; and I20A, I20B, and I20C) are palustrine emergent wetlands (Cowardin et al. 1979). All of these wetlands can also be described as the common cattail habitat type (Hansen et al. 1995). Many of these wetlands are artificial wetlands that did not historically exist and are present as a result of runoff from the roadway collecting and ponding in the ditches or interception of ground water from excavation of the ditches. Water is present for sufficient duration during the growing season for wetland characteristics to develop.

Roadside ditches that received a category III rating occupy a large enough area to support a substantial amount of wetland vegetation and, therefore, provide high sediment filtration. These wetlands also function as wildlife cover, particularly for birds. The category IV rating was given to roadside ditches with small wetland area and high disturbance due to proximity to US 93. Vegetation in these category IV roadside ditch wetlands is dominated by cattails and reed canarygrass. Their predominant function is sediment, nutrient, and toxicant storage.

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4.11 Floodplains and Streams

4.11.1 Analysis Methods and Assumptions

The evaluation of stream and floodplain conditions in the US 93 Ninepipe/Ronan improvement project area was based on a literature review and coordination with local agency representatives. This investigation included, but was not limited to:

- Review of a Federal Emergency Management Agency (FEMA) Flood Insurance Study for Lake County (FEMA 1987)
- Information from the *Preliminary Hydraulics Report* (Skillings-Connolly 2003b) prepared for this SEIS
- Review of local, state, and federal regulations and information applicable to the proposed project.

4.11.2 Regulations and Standards

All projects with federal sponsorship must comply with Executive Order 11988 – Floodplain Management. The order requires federal agencies to reduce the risk of flood loss, to minimize the impact of floods on human safety and to restore and preserve the natural and beneficial values served by the floodplains.

At the state level, Montana Fish, Wildlife & Parks (MFWP) administers the Montana Stream Preservation Act (SPA via a 124 Facilities Authorization), for activities that disturb the bed or bank of a stream. In addition, the Montana Department of Natural Resources and Conservation (DNRC) administers the Montana Floodplain and Floodway Management Act (via Floodway Development Permit approvals through the local floodplain administrator, typically at the County level), which covers all new construction within a floodplain.

At the Tribal government level the CSKT Shoreline Protection Office administers the Aquatic Lands Conservation Ordinance 87A, which regulates construction activities in aquatic lands of the Flathead Indian Reservation including lakes, rivers, streams, mudflats, wetlands, sloughs, potholes and ponds. Waters of the U.S. (including streams and some irrigation canals) are subject to regulation under the Clean Water Act Section 404 permit administered by the USACE. The ALCO 87A requires that:

> "construction of roads, bridges, culverts, and similar methods of crossing or channeling Reservation waters and aquatic lands, shall be designed and constructed in such a manner as to allow free and unrestricted passage of flowing

> waters and to accommodate and interfere to the least degree technically possible with any current or bed load patterns or erosional and depositional characteristics of Reservation waters at or near the project location. Such structures will be designed and constructed so as to cause the least change in sediment load and turbidity of Reservation waters and to minimize or preclude adverse impacts to aquatic lands."

The Flathead Indian Reservation is not subject to federal floodplain development regulations. However, because no specific criteria have been developed by CSKT, federal standards would likely be applied at stream crossings in the US 93 Ninepipe/Ronan project corridor (Makepeace 2003a personal communication). National Flood Insurance Program (NFIP) standards allow for up to a 0.3-meter (1-foot) increase in flood stage when designating a floodway or evaluating an encroachment where a floodway is not designated (FHWA 1986). In Montana, however, encroachment is limited to that which would lead to increases in flood height of 0.15 meter (0.5 feet) or less (FEMA 1987).

Criteria for flow control of stormwater runoff are being developed for other portions of US 93 Evaro to Polson corridor that are not encompassed in this document. Those criteria include flow control (detention) of highway runoff that discharges to sensitive water bodies so that post-developed peak discharge rates match pre-development peak discharge rates for 24-hour storm events with recurrence intervals of 2 years, 10 years, and 50 years (DMSC 2003). Stormwater flow control criteria have not yet been developed for the US 93 Ninepipe/Ronan improvement project, but would likely be similar.

4.11.3 Floodplains and Floodways

The most severe flooding in Lake County occurs in the spring and early summer due to rainfall runoff and/or snowmelt. Runoff from long, sustained rainfall can also occasionally lead to flooding (FEMA 1987). Based on documented flooding problems discussed in the following paragraphs, flooding of the US 93 roadway is not a widespread problem within the project corridor.

A Flood Insurance Study, developed under the NFIP, has been prepared for Lake County (FEMA 1987) using detailed and approximate methods of estimating 100-year floodplain boundaries. The 100-year floodplain is defined by the largest flood that would, on average, occur once within a 100-year period, estimated from historic stream flow records. The 100-year flood flow is the flood level with a 1 percent or greater probability of being equaled or exceeded in any given year. To develop the NFIP, approximate methods (using normal depth computations and topographic maps rather than detailed hydraulic modeling) were used to develop 100-year floodplain boundaries for the surface waters located in the project corridor. No floodplain elevations or floodway boundaries are reported for this area (Figure 4.11-1):

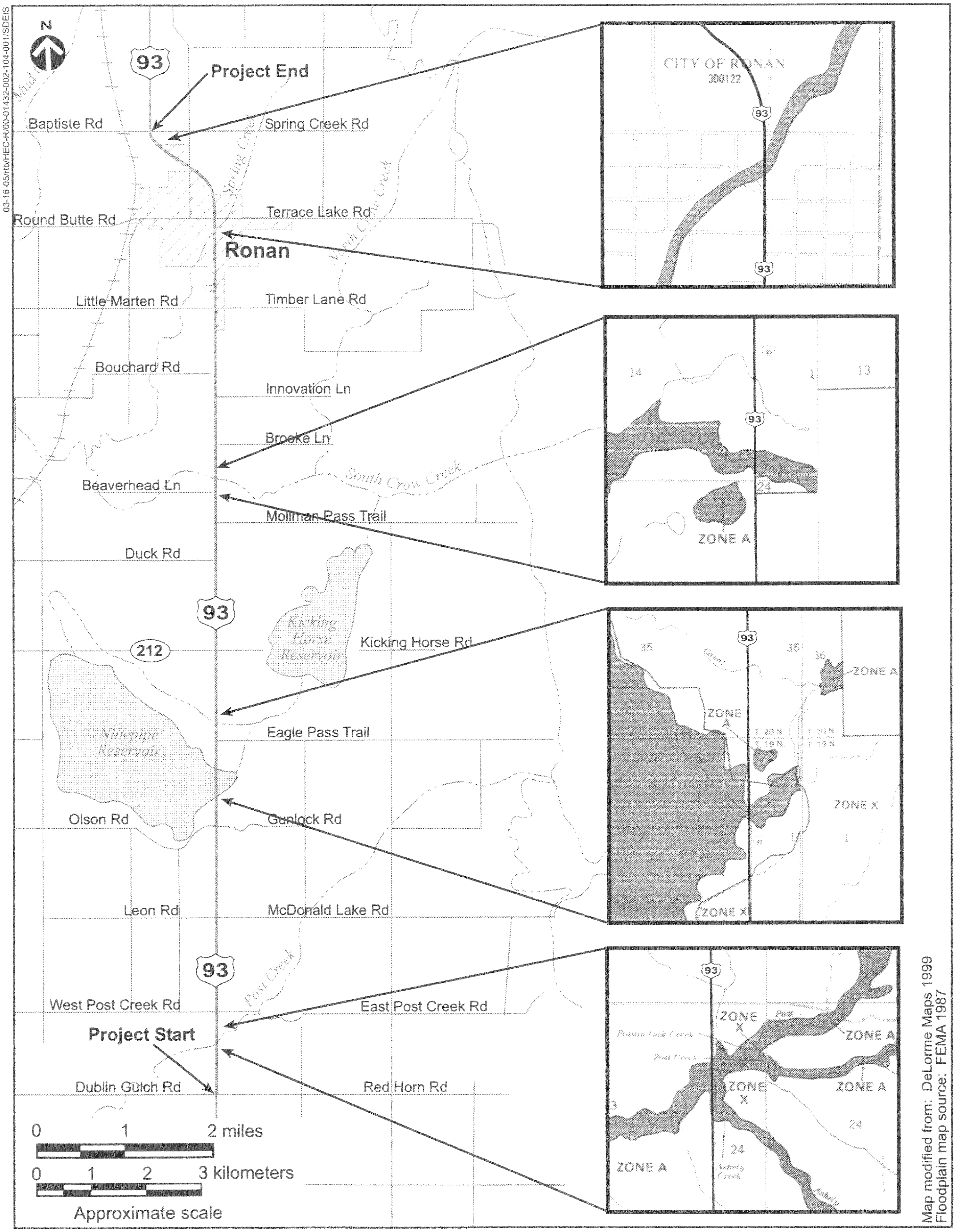

Figure 4.11-1. Floodplains within the US 93 Ninepipe/Ronan improvement project corridor.

- Post Creek – US 93 crosses the 100-year floodplain associated with Post Creek and three of its tributaries (Ashley Creek, unnamed tributary to Post Creek 2, and unnamed tributary to Post Creek 3). Approximately 400 meters (1,300 feet) of roadway passes through the floodplain at this location as mapped by FEMA (1987). Approximately 910 meters (3,000 feet) of the channel (beginning 90 meters [300 feet] upstream of US 93) was reconstructed in 2000 (Makepeace 2003b personal communication). This may affect the accuracy of the FEMA floodplain boundary shown in this area. For more information on the US 93 Post Creek crossing, refer to the following discussion of streams.

- Ninepipe Reservoir – US 93 crosses the 100-year floodplain associated with Ninepipe Reservoir near the inlet to the reservoir. Approximately 105 meters (350 feet) of roadway passes through the floodplain at this location as mapped by FEMA (1987).

- Crow Creek – US 93 crosses the 100-year floodplain associated with Crow Creek. Approximately 170 meters (550 feet) of roadway passes through the floodplain at this location as mapped by FEMA (1987). For more information on the US 93 Crow Creek crossing, refer to the discussion of streams in Section 4.11.4.

- Ronan Spring Creek – US 93 crosses the 100-year floodplain associated with Ronan Spring Creek. Approximately 45 meters (150 feet) of roadway passes through the floodplain at this location as mapped by FEMA (1987). This stream is culverted for approximately 88 meters (290 feet) under and downstream of US 93. In addition, the entire channel upstream of US 93 was reconstructed in 1996 (Makepeace 2003b personal communication). The accuracy of the FEMA floodplain boundary shown in this area may therefore be affected. For more information on the US 93 Ronan Spring Creek crossing, refer to the discussion of streams in Section 4.11.4.

Lake County is participating in the NFIP and has adopted standards for floodplain management, including requiring a floodplain permit for any encroachment or crossing of a designated floodplain. However, CSKT is not participating in the NFIP, and the federal floodplain regulations are not in effect on the Flathead Indian Reservation.

4.11.4 Streams

Streams located in the project corridor are described in *Section 4.9 Water Quality* (see also Table 4.9-1 and Figure 4.9-1). Conveyance, streamflow, and flooding issues associated with these streams are discussed in the following paragraphs.

Mission Creek Watershed

Unnamed Tributary to Post Creek 1 is conveyed under US 93 at approximate RP 37.3 through a concrete box culvert with a 1.8 x 1.8-meter (6 x 6-foot) opening. This structure does not restrict flows during high water events. The 100-year flood flow in this tributary was determined to be 1.2 cubic meters per second (41 cubic feet per second [cfs]) (USGS 1992).

Ashley Creek flows north along the east side of US 93 from approximate RP 37.4 to 37.8 before its confluence with Post Creek. The channel is conveyed under two driveways through culverts.

Mainstem **Post Creek** has a moderate to low gradient in the project area, and is conveyed under US 93 at RP 37.8 through a 15.2-meter (50-foot)-long, 9.5-meter (31-foot)-wide bridge. The channel at the bridge location is slightly narrowed and reinforced with rip rap, but is large enough to convey bank-full and larger flows. The 100-year flood flow in Post Creek at the US 93 crossing is estimated to be 34.2 cubic meters per second (1,209 cubic feet per second) (USGS 1992). Early USGS flow records indicate a peak flow rate in Post Creek exceeding the capacity of the channel (79.3 cubic meters per second [2,800 cfs] in 1908) (Makepeace 2003a personal communication). Approximately 910 meters (3,000 feet) of the channel (beginning 90 meters [300 feet] upstream of US 93) was reconstructed in 2000 as part of a restoration project (Makepeace 2003b personal communication).

Unnamed Tributary to Post Creek 2 flows along the east side of US 93 between RP 38.1 and 37.9, before leaving the project corridor and discharging to Post Creek upstream of the Post Creek bridge on US 93.

Unnamed Tributary to Post Creek 3 flows on the west side of US 93 between RP 38.1 and 37.8, and discharges into Post Creek downstream of the Post Creek bridge on US 93.

Crow Creek Watershed

Crow Creek flows through the project corridor between RP 44.1 and 44.2 and is conveyed under US 93 at approximate RP 44.2 through two 3- X 4.25-meter (10- X 14-foot) culverts. This culvert may not be adequate to convey high water flows. The 100-year flood flow in Crow Creek at the US 93 crossing is estimated to be 28.6 cubic meters per second (1,020 cfs) (USGS 2003). Crow Creek has overtopped the US 93 roadway due to inadequate conveyance capacity (Makepeace 2003a personal communication).

Ronan Spring Creek is conveyed underneath Terrace Lake Road through a 1.8-meter (6-foot)-diameter metal culvert. Approximately 30.5 meters (100 feet) below this crossing, the channel is crossed by US 93 at RP 47.0. The existing structure at this site is a structural steel plate pipe arch culvert. This culvert conveys Spring Creek flows under US 93, an adjacent commercial parking lot and building, and First Avenue SW into Ronan City Park (about 200 meters [656 feet] downstream and southwest).

The 100-year flood flow in Ronan Spring Creek at the US 93 crossing is estimated to be 4.5 cubic meters per second (157 cfs) (USGS 1992). No flooding problems are known to occur in Ronan Spring Creek (Makepeace 2003a personal communication). The entire channel upstream of US 93 was reconstructed in 1996 as part of a restoration project (Makepeace 2003b personal communication).

4.12 Fish and Wildlife

4.12.1 Analysis Methods and Assumptions

Vegetation Communities and Wildlife Occurrence

Lands in the project corridor were divided into vegetation communities including grasslands, wetlands, and urban-sparsely vegetated lands. Vegetation communities provide a useful means for describing the habitat available for wildlife in an area. There are no native grassland habitats in the project corridor (West 2003 personal communication); therefore, all grasslands are described based on the dominant land use within those systems, which ultimately influences the composition of the vegetation community. Information on the occurrence of plant species of concern within the project area was obtained from the Montana Natural Heritage Program (MNHP) and surveys conducted by Ecosystem Research Group in the project area in July 2002. The methods and results of that study are presented in *Rare Plant Survey: US 93 Ronan to St. Ignatius* (Ecosystem Research Group 2002).

Wildlife use and existing habitat conditions were observed and recorded during field investigations and analyzed from a review of existing reports and studies previously conducted in the project corridor.

Additional information on general wildlife use, vehicle caused wildlife mortality, and wildlife species of concern was obtained from interviews with federal, Tribal, local, and university biologists, representing the United States Fish and Wildlife Service (USFWS), CSKT, the Owl Research Institute, and the University of Montana Cooperative Wildlife Research Unit.

Aquatic Habitats and Fisheries Resources

Information on the fisheries resources, aquatic habitat conditions, and fish species of concern in the Post Creek watershed, Ninepipe Reservoir, Kicking Horse Reservoir, and Crow Creek watershed was obtained from existing literature, maps, and interviews with local biologists. Site visits were conducted to collect data and verify habitat conditions within stream reaches potentially affected by roadway improvements and realignments.

Stream Conditions

Field inspection of streams in the project corridor occurred in August and October 2002 and January 2003. Data on channel width, depth, substrate type, presence of pools, large woody debris and other aquatic habitat features, water passage structure type, bank and riparian condition, and adjacent land use were collected, and descriptions and observations of existing conditions were documented.

There is very little published information on instream habitat conditions in the project corridor. Published reports on water quality and aquatic habitat were used to extrapolate information about the stream reaches within the project corridor (CSKTa;b).

Stream Classification

Each stream was classified using Rosgen's guide for stream classification (1985). A summary of the criteria for stream classification using this methodology is provided in Table 4.12-1. The Rosgen classification system is used to describe streams in the project area and understand stream behavior, especially in response to disturbance. The classification system allows one to predict stream behavior (i.e., how it would react when disturbed), provides a frame of reference in describing streams, and allows for a better understanding of the relationships of the different aspects of stream morphology.

Rosgen's classification system describes streams based on factors such as channel width to depth ratio, velocity, discharge, channel slope, sediment load, substrate size, entrenchment ratio, sinuosity, and other features to determine stream type. The entrenchment ratio is the ratio of the flood-prone width of the stream to the stream depth. Sinuosity is an indicator of how much the stream meanders and curves along its length. The slope of the stream is the percentage of slope change from one point to another. Other features considered are landforms and soil types.

Fish Species Occurrence

Local fisheries biologists have not sampled sites within the project corridor. Fish use of the area was extrapolated from samples collected elsewhere in the stream system, field surveys of available fish habitat within the project area, and published literature. Additional information on species occurrence in the project area was obtained through communications with USFWS, the Montana Fisheries Information System, and interviews with local biologists.

4.12.2 Regulations and Standards

Few regulations or standards exist to directly protect fisheries and wildlife although regulations governing wetlands and endangered species have a secondary benefit of protecting fish and wildlife. For this project, the Endangered Species Act (ESA) is implemented by the FHWA in consultation with the USFWS. Conservation measures required to protect listed plant, animal and fish species may also benefit nonlisted species. The USFWS also manages bird species covered under the Bald and Golden Eagle Protection Act and the Federal Migratory Bird Treaty Act. The USFWS has developed the National Bald Eagle Management Guidelines to help minimize impacts to bald eagles prohibited by the Bald and Golden Eagle Protection Act (USFWS 2007). The Montana Natural Heritage Program maintains a list of species of concern in the state. Montana species of concern are native animals breeding in the state that are considered to be "at risk" due to declining population trends, threats to their habitat, and/or restricted distribution. While this designation affords no protection for the species, it helps to

Table 4.12-1. Summary of delineative criteria for Rosgen's classification of streams.

Stream Type	General Description	Entrenchment Ratio	W/D Ratio	Sinuosity	Slope	Landform/Soils/Features
Aa+	Very steep, deeply entrenched, debris transport streams.	<1.4	<12	1.0 to 1.1	>.10	Very high relief. Erosional, bedrock or depositional features; debris flow potential. Deeply entrenched streams. Vertical steps with deep scour pools; waterfalls.
A	Steep, entrenched, cascading, step/pool streams. High energy/debris transport associated with depositional soils. Very stable if bedrock or boulder-dominated channel.	<1.4	<12	1.0 to 1.2	.04 to .10	High relief. Erosional or depositional and bedrock forms. Entrenched and confined streams with cascading reaches. Frequently-spaced deep pools in associated step-pool bed morphology.
B	Moderately entrenched, moderate gradient, riffle dominated channel with infrequently spaced pools. Very stable plan and profile. Stable banks.	1.4 to 2.2	>12	>1.2	.02 to .039	Moderate relief, colluvial deposition and/or residual soils. Moderate entrenchment and W/D ratio. Narrow, gently sloping valleys. Rapids predominate w/occasional pools.
C	Low gradient, meandering, point-bar, riffle/pool, alluvial channels with broad, well-defined floodplains.	>2.2	>12	<1.4	<.02	Broad valleys w/terraces, in association with floodplains, alluvial soils. Slightly entrenched with well-defined meandering channel. Riffle-pool bed morphology.
D	Braided channel with longitudinal and transverse bars. Very wide channel with eroding banks.	n/a	>40	n/a	<.04	Broad valleys with alluvial and colluvial fans. Glacial debris and depositional features. Active lateral adjustment, w/abundance of sediment supply.
DA	Anastomosing (multiple channels) narrow and deep with expansive well-vegetated floodplain and associated wetlands. Very gentle relief with highly variable sinuosities, stable stream banks.	>4.0	<40	Variable	<.005	Broad, low-gradient valleys with fine alluvium and/or lacustrine soils. Anastomosed (multiple channel) geologic control creating fine deposition w/well-vegetated bars that are laterally stable with broad wetland floodplains.
E	Low-gradient, meandering riffle/pool stream with low width/depth ratio and little deposition. Very efficient and stable. High meander width ratio.	>2.2	<12	>1.5	<.02	Broad valley/meadows. Alluvial materials with floodplain. Highly sinuous with stable, well-vegetated banks. Riffle-pool morphology with very low width/depth ratio.
F	Entrenched meandering riffle/pool channel on low gradients with high width/depth ratio.	<1.4	<12	>1.4	<.02	Entrenched in highly weathered material. Gentle gradients, with a high W/D ratio. Meandering, laterally unstable with high bank-erosion rates. Riffle-pool morphology.
G	Entrenched gulley step/pool and low width/depth ratio on moderate gradients.	<1.4	<12	>1.2	.02 to .039	Gulley, step-pool morphology w/moderate slopes and low W/D ratio. Narrow valleys, or deeply incised in alluvial or colluvial materials; i.e. fans or deltas. Unstable, with grade control problems and high bank erosion rates.

Source: Rosgen, D.L. 1985. A Stream Classification System. pp 91-95 in: Riparian ecosystems and their management. Interagency North American Riparian Conference. General technical report. ROM-120. U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado.

increase awareness of the species presence; as a result, measures to reduce impacts are often incorporated in the project construction plans and designs. All waters of the U.S., including wetlands, are regulated by the USACE under the Clean Water Act. Wetlands on the Flathead Indian Reservation are regulated by the CSKT under ALCO 87A.

Regulations and standards for fisheries and wildlife habitat are also established through environmental permits. On the Flathead Indian Reservation, the ALCO 87A permit application for impacts on wetlands requires review by Tribal fisheries and wildlife programs and conditions may be added to the permit to protect these resources.

Executive Order 13112 requires federal agencies to work to prevent and control the introduction and spread of invasive species. The executive order requires agencies to address invasive species issues within the context of the NEPA documentation for a proposed project. An invasive species is a plant or animal species that is not native to an ecosystem and that does or is likely to cause harm to the health of the environment, economy, or humans (Executive Order 13112). A noxious weed is defined in the Plant Protection Act as any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment. These terms are commonly used interchangeably.

4.12.3 Vegetation and Terrestrial Wildlife Habitat

Vegetation Communities

Based on field observations and discussions with local biologists, the project area can be divided into three major vegetation communities: grasslands, wetlands, and urban sparsely-vegetated lands. Grassland communities and urban sparsely-vegetated lands are described in Table 4.12-2. Wetlands in the project corridor can be divided into five wetland types based on their appearance and position in the landscape: riparian zone wetlands, pothole wetlands, Ninepipe Reservoir wetlands, irrigation feature wetlands, and roadside ditch wetlands. Wetlands are described in detail in *Section 4.10 Wetlands*.

Culturally Significant Plants

The health and ecology of the plants on the Flathead Indian Reservation are seen as critical to the well-being of the CSKT members. Traditionally, plants not only provided the main supplement to the Tribal members' diet of buffalo meat, but also were used for medicine and ceremonies. While the days of buffalo hunting are over, the Tribal members continue to harvest and use the plants found in the landscape. All native plants in the landscape are seen as integral to the health and well-being of the Tribal home. Many species of plants have cultural significance to the Tribes and are included in their legends and stories.

Table 4.12-2. Vegetation communities within the US 93 Ninepipe/Ronan improvement project area.

Vegetation Community	Occurrence	Dominant Species	Wildlife Value
Agricultural Grasslands	Occur on lands managed for cattle grazing, hay, or crop production. Predominant vegetation community in the Post Creek Hill segment and at the north end of the Ninepipe segment, and at the south and north ends of the urban portion.	Tall grass species including orchard grass (*Dactylis glomerata*), tall fescue (*Festuca arundinacea*), timothy (*Phleum pratense*), red-top (*Agrostis gigantea*), and herbaceous species such as red clover (*Trifolium pratense*). Unless these areas are treated annually, either by burning, grazing, or chemical spraying, they are quickly invaded by noxious weeds.	Wildlife value is dependent upon how the land is managed from year to year. The presence of livestock or regular tilling deters many species from these areas. Generally not suitable habitat for upland nesting birds and less desirable nesting habitat than wildlife management or native grasslands. Small mammals, deer, and snakes are likely in these areas.
Wildlife Management Grasslands	These grasslands occur within the Ninepipe National Wildlife Refuge, on state wildlife management areas and USFWS conservation easements, and on other waterfowl production areas. Wildlife management grasslands are the predominant vegetation community in the Ninepipe Area of the proposed project.	Tall wheatgrass (*Agropyron elongatum*), intermediate wheatgrass (*Agropyron intermedium*), pubescent wheatgrass (*Agropyron trichophorum*), orchard grass, alfalfa (*Medicago sativa*), and sweet clover (*Melilotis sp*.). These areas are less susceptible to invasion by noxious weeds but require treatment every 4 to 5 years through grazing, burning, or chemical spraying (West 2003 personal communication).	Managed for waterfowl production and upland nesting birds Provide protected habitat for upland nesting ducks and other upland nesting birds, such as songbirds, pheasants, short-eared owls, long-eared owls, and northern harriers. Other wildlife species benefiting from these areas include deer, weasels, mice, voles, raccoons, badgers, ground squirrels, coyotes, red fox, bears, skunks, snakes, frogs, and painted turtles when these habitats surround pothole wetlands
Roadside Grasslands	Roadside grasslands occur within the existing US 93 right-of-way. Regularly mowed to maintain sight distances along the road corridor, and are also sprayed to control noxious weed invasion.	These areas support a mix of grass species also present in the agricultural and wildlife management grasslands. Occasionally, single trees or clusters of trees are also present.	Due to their proximity to the roadway, these areas have low habitat value. Maintained roadside grasslands may be inhabited by several species of small mammals. Garter snakes were commonly observed in roadside areas during road-kill field surveys conducted in the project corridor in the summer of 2002 (Griffin 2003a personal communication). Raptors commonly use these areas to forage and are often seen perched in roadside trees and on fence posts and power poles. Birds also use these areas to collect grit, which is required for their digestive systems.
Urban-Sparsely Vegetated Lands	Urban-sparsely vegetated lands occur in the Ronan segment of the project corridor. Areas of urban-sparsely vegetated lands are also found in association with commercial developments south of the Ronan segment.	Highly disturbed with commercial development and consist of paved lands, buildings, mowed grasses, and screen trees. These areas support few native plant species other than native trees. Noxious weeds are common in untreated areas.	Common, urban species adapted to highly developed habitats, including crows, starlings, house and tree sparrows, skunks, deer, and garter snakes. Raptors may be observed perched in trees and red fox and raccoons may also be encountered foraging for food.

On the Flathead Indian Reservation, culturally significant plants typically occur most frequently in riparian areas and wetlands, because of the great diversity of plants in these ecosystems. The US 93 Ninepipe/Ronan project area contains some of the most diverse and unique wetlands and riparian areas on the Flathead Indian Reservation. The pothole wetlands in the Ninepipe Area and the Post Creek and Crow Creek riparian systems all support populations of culturally significant plants. Populations of culturally significant plants are also scattered at other locations throughout the project area.

Invasive and Noxious Species

There are many invasive and noxious weed species in the Mission Valley and the project area, particularly within the US 93 right-of-way (Dupuis 2003 personal communication; Jackson 2003 personal communication; Price 2003a personal communication; and Invaders Database 2003). Table 4.12-3 identifies invasive and noxious weeds species known or suspected in the project area. Species identified as noxious weeds are those included on the noxious weed list compiled by the State of Montana. This list includes noxious weeds reported to occur in the project area and invasive weeds that occupy large areas in the project area and appear to displace native vegetation.

Spotted knapweed, Canada thistle, and oxeye daisy are common along most of the highway corridor. Grasslands and pastures also support these weed species as well as species such as musk thistle that occur as a result of grazing pressures. Wetlands often have infestations of noxious and invasive weeds suited to moist or saturated soil conditions. Purple loosestrife, yellowflag iris, and reed canarygrass are especially problematic in the project area. All of these weed species reduce food and cover value of habitat for wildlife and lower plant species diversity. In the wetland areas, they can also alter hydrology, reduce soil water holding capacity, and destabilize stream banks. Invasive and noxious species also threaten the abundance and diversity of culturally significant plants in the project area.

Plant Species of Concern

Occurrence of plant species of concern in the project corridor is summarized in Table 4.12-4. Plant species of concern are species native to Montana that are at risk due to declining population trends, threats to habitat, and/or restricted distribution. Plant species of concern included in the field survey, based on the assumed presence of suitable habitat, are ranked as category S1, S2, or SU by the MNHP.

- Category S1 species are critically imperiled because of extreme rarity or because some factor of its biology makes it especially vulnerable to extinction (typically five or fewer occurrences).
- Category S2 species are imperiled because of rarity or because other factors demonstrable make it very vulnerable to extinction (typically six to 20 occurrences).
- Category SU species are possibly imperiled but their status is uncertain and more information is needed.

Table 4.12-3. Invasive and noxious weed species reported for the US 93 Ninepipe/Ronan improvement project vicinity.

Invasive/Noxious Species	Problem Areas and Typical Habitat	Occurrence in the Project Vicinity
Canada thistle (*Cirsium arvense*) – Noxious	Roadsides, railroad rights-of-way, rangelands, forest lands, lawns, gardens, croplands, abandoned fields, stream banks, lake shores, other riparian areas, and occasionally sand dunes [a] Moist, open, disturbed valley areas [b]	Yes [c, d, e] McDonald Lake Road [f]
Common burdock (*Arctium minus*)	Roadsides, ditches, pastures [a]	Ronan [f] National Bison Range [f]
Common mullein (*Verbascum thapsus*)	Roadsides and disturbed areas	Yes [e]
Common tansy (*Tanacetum vulgare*) – Noxious	Disturbed sites, old homesteads, fence rows, and highways [b]	Possible [c]
Common teasel (*Dipsacus fullonum*)	Disturbed soils with appreciable water holding capacity [b]	Yes [d, e]
Dalmatian toadflax (*Linaria dalmatica*) – Noxious	Roadsides, near dwellings, vacant lots, cemeteries, gravel pits, fields, waste areas, and over-grazed pastures [a] Dry grasslands, foothills and valleys [b]	Possible [c] Yes [d, e] Roadside in Ronan [f]
Field bindweed (*Convolvulus arvensis*) – Noxious	Roadcuts, abandoned fields, pastures, and gardens [b]	Possible [c] Minimal amounts in cultivated areas [e] Dry roadside south of Ronan [f]
Houndstongue (*Cynoglossum officinale*) – Noxious	Disturbed area especially logging roads and heavily grazed pastures in valley and montane zones [b]	Yes [c, e] Wet areas near Ronan, widespread [f]
Leafy spurge (*Euphorbia esula)* – Noxious	Pastures, roadsides, abandoned cropland, areas disturbed by development [a]	Found nearby and continually monitored [e]
Meadow hawkweed (*Hieracium pratense, H. floribundum, or H. piloselloides*) – Noxious	Pastures, roadsides, abandoned fields, and meadows`	Yes [c, e]
Musk thistle (*Carduus nutans*)	Heavily grazed pasture [a] Roads and other disturbed areas to 1,830 meters (6,000 feet) [b]	Yes [e] West of McDonald Lake [f]
Orange hawkweed (*Hiearcium aurantiacum*) – Noxious	Pastures, roadsides, abandoned fields, and meadows [a] Neglected lawns [b]	Yes [c] Minimal [e] West of Ronan [f]
Oxeye daisy (*Chrysanthemum leucanthemum*) – Noxious	Meadows, grasslands, pastures, waste areas, railway embankments, and roadsides [a] Moist to dry, open habitats below 5,000 ft (1520 m) [b]	Yes [c, e] National Bison Range [f]
Purple loosestrife (*Lythrum salicaria*) – Noxious	Streambanks, shorelines, irrigation areas, wetlands, and upland areas with moist soils [a]	Yes [c, d] Spring Creek [f] South of Ronan, pothole wetland [f] Ronan, wetland areas [f]
Reed canarygrass (*Phalaris arundinacea*)	Marshes, sloughs, and roadside ditches in valleys and foothills [b]	

Table 4.12-3 (continued). Invasive and noxious weed species reported for the US 93 Ninepipe improvement project vicinity.

Invasive/Noxious Species	Problem Areas and Typical Habitat	Occurrence in the Project Vicinity
Spotted knapweed (*Centaurea maculosa*) – Noxious	Roadsides, ditches, forest-grassland interface [a]	Yes [c, d] US 93 bridge at Ninepipe reservoir inlet [e] Roadsides [f] National Bison Range [f]
St. Johnswort (*Hypericum perforatum*) – Noxious	Rangelands, pastures, transportation rights-of-way, and neglected lands [a]	Yes [c, d, e]
Sulfur cinquefoil (*Potentilla recta*) – Noxious	Roadsides, waste places, abandoned fields, clearcuts, other disturbed sites [a] Dry, disturbed grasslands in valleys and foothills [b]	Yes [c, d, e] Reservoir Road fork [f]
Tall buttercup (*Ranunculus acris*) – Noxious	Irrigated hay meadows and acidic meadows [b]	Ronan, moist meadow [f]
White top (*Cardaria draba*) – Noxious	Roadsides, ditches, rangeland, sub-irrigated pasture [a] Valleys with fertile, neutral or alkaline, disturbed soils [b]	Yes [c, d, e]
Yellow-flag iris (*Iris pseudocorus*)	Wet areas, sloughs [b]	Yes [c]
Yellow star thistle (*Centaurea solstitialis*) – Noxious	Roadsides, waste areas, rangeland, pasture [a]	Wildlife Management Area – eradicated [f] West of Ninepipe Reservoir [f]
Yellow toadflax (*Linaria vulgaris*)	Roadsides, near dwellings, vacant lots, cemeteries, gravel pits, fields, waste areas, and over-grazed pastures [a] Disturbed soils of fields and irrigated farmlands, valleys [a]	National Bison Range [f]

[a] Sheley and Petroff 1999.
[b] Lackschewitz 1991.
[c] Dupuis 2003 personal communication.
[d] Price 2003a personal communication; Jackson 2003 personal communication.
[e] West 2003 personal communication.
[f] Invaders Database at <http://invader.dbs.umt.edu>.

Table 4.12-4. Habitat requirements and occurrence of plant species of concern in the US 93 Ninepipe/Ronan improvement project corridor.

Common Name (*scientific name*)	Status	Documented Occurrence in the Project Corridor? [a]	General Habitat Requirements
Sweetflag (*Acornus americanus*)	S1	No	Sweetflag grows along lakeshores, swampy areas, and along streams in valleys (975 to 1,006 meters [3,200 to 3,300 feet]).975 meters [3,200 feet]).
Chaffweed (*Centunculus minimus*)	S2	No	Chaffweed grows in vernally wet, sparsely vegetated soils around ponds and along rivers and streams in plains (below 975 meters [3,200 feet]) and valleys (975 to 1,006 meters [3,200 to 3,300 feet]).
Yellow-staining Collomia (*Collomia tinctoria*)	S1	No	Yellow-staining collomia is found in dry grasslands and rocky, open slopes from the valley to montane zones (975 to 1,219 meters [3,200 to 4,000 feet]).
Clustered lady's slipper (*Cypripedium fasciculatum*)	S2	No	Clustered lady's-slipper is found in dry to moist forests in the montane zone (913 to 1,433 meters [2,995 to 4,700 feet]).
Scribner's panic grass (*Dichanthelium oligosnthes* var. *scribnerianum*)	S1	No	Scribner's panic grass is found in open ponderosa pine woodlands of the valleys and plains (951 to 1,195 meters [3,120 to 3,920 feet]).
California waterwort (*Elatine californica*)	SU	No	California waterwort is found in shallow waters and mudflats along edges of wetlands at elevations of 914 to 1,219 meters (3,000 to 4,000 feet).
Flowering quillwort (*Lilaea scilloides*)	S1	No	Flowing quillwort is found in shallow water or mud around ponds in valleys at elevations of 890 to 914 meters (2,920 to 3,000 feet).
Guadalupe water nymph (*Najas guadalupensis*)	S1	No	Guadalupe water-nymph is found in shallow, fresh waters of oxbow sloughs, ponds, and reservoirs in valleys at elevations of 881 to 1,036 meters (2,890 to 3,400 feet).
Kruckberg's sword-fern (*Polystichum kruckebergii*)	S1	No	Kruckberg's sword-fern is found in cliff crevices and talus slopes at elevations between 2,195 to 2,835 meters (7,200 to 9,300 feet).
Toothcup (*Rotala ramosior*)	S1	No	Toothcup is found in open, wet gravelly soil around ponds and sloughs in the valley zone at elevation of 927 to 1,311 meters (3,040 to 4,300 feet).
Oregon checker-mallow (*Sidalcea oregana*)	S1	Yes	Oregon checker-mallow is found in grasslands in the valley and montane zones at an elevation of 922 to 2,080 meters (3,026 to 6,840 feet).
Norwegian tortula moss (*Tortula norvegica*)	S1	No	Norwegian tortula moss is found on soil and rock in sub-alpine and alpine areas up to 2,700 meters (8,100 feet).
Columbia water-meal (*Woffia columbiana*)	S2	No	Columbia water-meal is found in fresh, shallow water of ponds and sloughs in the valley zone at elevation of 881 to 1,006 meters (2890 to 3300 feet).

[a] Source: *Rare Plant Survey: US 93 Ronan to St. Ignatius* (Ecosystem Research Group 2002).

Species of concern are not afforded special protection. Rather, the designation is used to make biologists aware of the presence of these species in their districts.

Wildlife Occurrence

The Tribes of the Flathead Indian Reservation view their homeland as an interconnected, continuous landscape. Within that landscape, certain landscape features, animals, and plants are highly valued for their cultural significance. The Ninepipe Area is of considerable interest to the Tribal government and the Tribal cultural communities due to the unique geological features and the abundance of plants and animals. The project area supports an abundance of wildlife, largely attributed to the presence of a large number of acres of protected lands and the diversity of habitats in the project vicinity (Figure 4.12-1). The Ninepipe National Wildlife Refuge, within the Ninepipe segment of the project corridor, consists of 834 hectares (2,062 acres) including a 677-hectare (1,672-acre) reservoir and 158 hectares (390 acres) of surrounding grasslands.

Additional grassland areas surrounding the refuge include 1,384 hectares (3,420 acres) of State Wildlife Management Areas, approximately 1,214 hectares (3,000 acres) of Tribal lands, many of which are dedicated to wildlife and wildlife habitat uses, and 809 hectares (2,000 acres) of USFWS conservation easements and Waterfowl Production Areas (WPAs). The proximity of Flathead Lake, the Pablo National Wildlife Refuge, and the Mission Mountain Range also contribute to the abundance of wildlife in the project area.

Use of the project area by threatened and endangered species is described in *Section 4.13 Threatened and Endangered Species*.

Birds

The project area is notable for the numerous species and numbers of birds it supports. The species checklist for the Ninepipe and Pablo National Wildlife Refuges includes 188 species of birds that have been observed on those refuges (USFWS 1983). The species on the list range from those recognized as common breeders to those seen only rarely as transients or migrants. Information on breeding habitat and habitat features of the Ninepipe National Wildlife Refuge is summarized from unpublished notes provided by the USFWS, National Bison Range, Montana (USFWS 2003a).

Waterfowl are one of the most abundant groups of birds in the project area. Numbers of waterfowl on the refuge vary throughout the year with the highest concentrations occurring in spring and fall. Spring migration peaks from late March to early May when as many as 100,000 birds may be observed on the Ninepipe and Pablo reservoirs. Fall populations often peak at more than 200,000 birds in early October to late November. Waterfowl (ducks) nesting occurs from April until July and the Ninepipe Area has been found to have some of the highest nest success in North America for upland nesting duck. From 1988 to 1999, the number of nesting pairs on the Ninepipe refuge ranged from 206 to 748. In the adjacent Kicking Horse Reservoir, located to the east of the project corridor, nesting pairs ranged from 32 to 133 for the period from 1988 to 2001.

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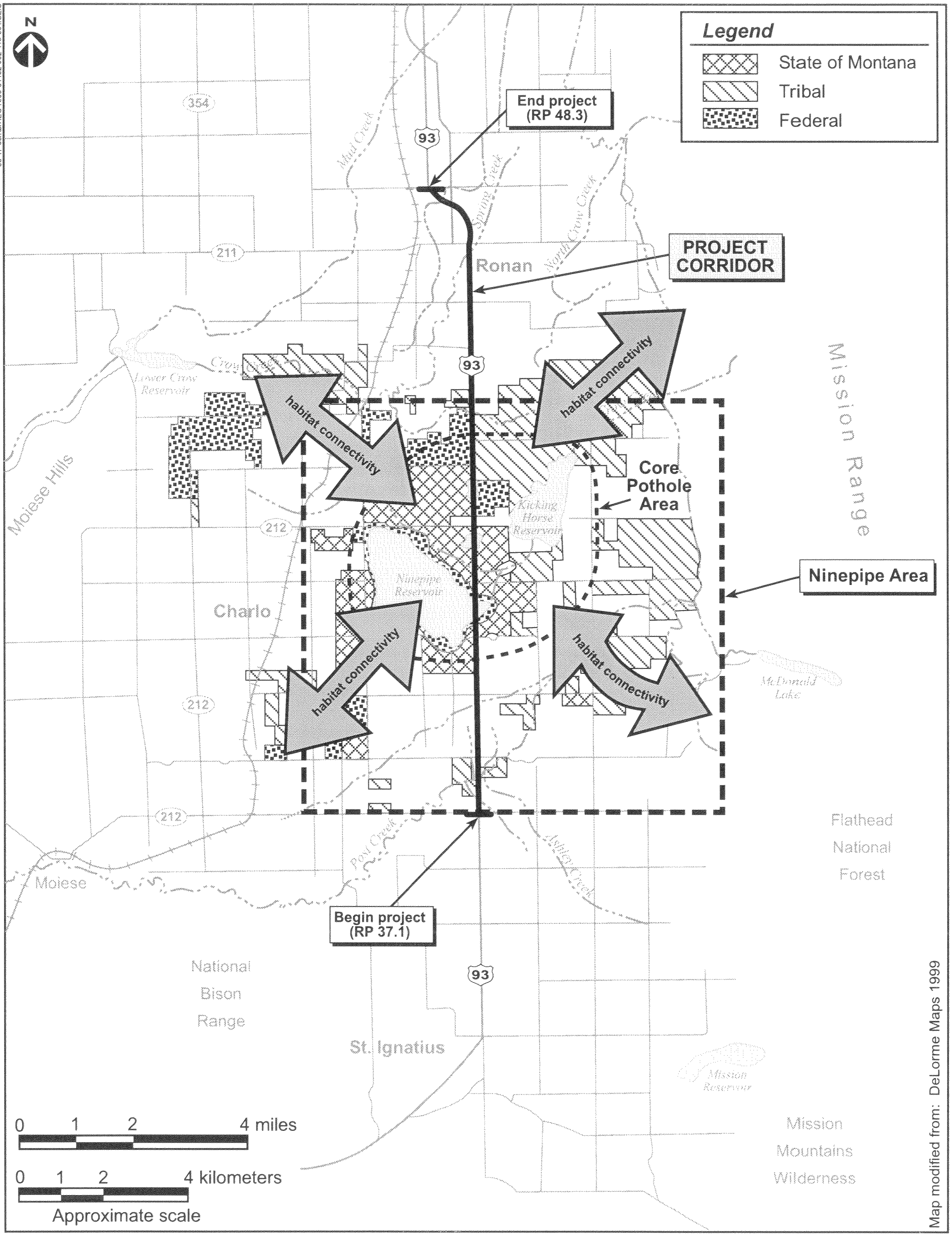

Figure 4.12-1. Lands owned by federal, state, and Tribal governments and managed for wildlife and habitat connectivity in the US 93 Ninepipe/Ronan improvement project corridor.

Ducks are typically grouped as dabblers or divers, which refers to the way they partition resources. Divers are ducks that propel themselves underwater and have large feet attached to short legs situated far back on their body. These ducks dive to forage and are also high wing-load birds requiring sufficient open water for take-off and landing. Common breeding divers in the project area include redheads (*Aythya americana*) and ruddy ducks (*Oxyura jamaicensis*). Other breeding divers include canvasbacks (*A. valisineria*), lesser scaups (*A. affinis*), and ring-necked ducks (*A. collaris*). Dabblers are ducks with smaller feet situated more forward on their body. These ducks typically skim the surface or feed in shallows by submerging their heads and necks. Common breeding dabblers in the project area include mallards (*Anas platyrhnychos*), pintails (*Anas acuta*), and wigeons (*Anas americana*). Other breeding dabblers include green-winged teal (*Anas crecca*), blue-winged teal (*Anas discors*), cinnamon teal (*Anas cyanoptera*), and northern shovelers (*Anas clypeata*).

Other waterfowl that occur in the project area include Canada geese (*Branta canadensis*), snow geese (*Chen caerulescens*), mergansers (*Mergus merganser*), goldeneyes (*Bucephala clangula*), buffleheads (*Bucephala albeaola*), and swans. The Ninepipe Refuge has in recent years become an important breeding and staging area for a large portion of the Mission Valley Canada goose population. In addition, the Ninepipe/Kicking Horse area is one of the areas the Tribal Wildlife Management Program is using as a site for trumpeter swan (*Bygnus columbianus*) reintroduction.

The project area supports numerous other waterbirds including grebes, herons, cormorants, gulls, and terns. Five species of grebes nest on the refuge, including the only nesting western grebe (*Aechmorphorus occidentalis*) colony in the Mission Valley. Great blue heron (*Ardea herodius*) and cormorant rookeries (*Phalacrocorax auritus*) (nesting colonies) are present on the refuge, approximately 2 kilometers (1.25 miles) from the project corridor. American bitterns (*Botaurus lentigninosus*), sora rails (*Porzana carolina*), and Wilson’s phalarope (*Phalaropus tricolor*) nest in the project area.

The project area is also an important shorebird migration corridor. Shorebirds use the exposed shorelines of the Pablo, Ninepipe, and Kicking Horse reservoirs and the waterfowl production areas managed by the State of Montana. The area is important nesting and breeding grounds for several shorebird species including the long-billed curlew (*Numenius americanus*), American avocet (*Recurvirostra americana*), and the black-necked stilt (*Himantopus mexicanus*). Other breeders include the common snipe (*Gallinago gallinago*), spotted sandpiper (*Actitis macularia*), and killdeer (*Charadrius vociferous*).

The Ninepipe Area is also important habitat for raptors. The project area supports the largest wintering concentration of rough-legged hawks *(Buteo lagopus*) in the United States, with over 300 birds observed during a single wintering season. Several hawks also breed in the project area, including the northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensi*), and Swainson’s hawk (*Buteo swainsoni*). According to the bird checklist for the Ninepipe and Pablo National Wildlife Refuges, four species of owls have been recorded in the project area, and nest density and success rates for short-eared owls are high. According to Holt (2003 personal communication) up to six additional species of owls including the great gray owl (*Strix nebulosa*), barred owl (*S. varia*), barn owl (*Tyto alba*), western screech owl (*Otus kennicottii*), saw whet owl (*Aegolius acadicus*), and pygmy owl (*Glaucidium gnoma*), have been recorded in the Ninepipe refuge area, with great horned owls (*Bubo virginianus*), short-eared owls (*Asio flammeus*), long-eared owls (*Asio otus*), and pygmy owls being the most common. Bald eagle (*Hailiaeetus leucocephalus*) also occur in the project area and are discussed in the section on Wildlife Species of Concern below.

Eighty-one species of passerine birds have been recorded in the project area. (Passerine birds are the perching birds or songbirds and flycatchers.) Common breeders include swallows, magpies (*Pica pica*), horned lark (*Eremophila alpestris*), marsh wren (*Cistorthorus palustris*), American robin (*Turdus migratorius*), common yellowthroat (*Geothlypis trichas*), house sparrow (*Passer domesticus*), western meadowlark (*Sturnella neglecta*), sparrows, and yellow-headed (*Xanthocephalus xanthocephalus)* and red-winged blackbirds (*Agelaius phoeniceus*).

Mammals

Mammals inhabiting or occurring in the project area include grizzly bears (*Ursus arctos*), whitetail deer (*Odocoileus virginianus*), muskrats (*Ondatra zibethicus*), badgers (*Taxidea taxus*), beavers (*Castor canadensis*), striped skunks (*mephitis mephitis*), raccoons (*Procyon lotor*), weasels (*Mustela erminea*), mink (*M. vison*), river otters (*Lontra canadensis*), Columbia (*Spermophilus columbianus*) and thirteen-lined ground squirrels (*Spermophilus tridecemlineatus*), coyotes (*Canis latrans)*, red fox (*Vulpes vulpes*), field mice (*Peromyscus maniculatus*), shrews (*Sorex cinereus*), and montane (*Microtus montanus*) and meadow voles (*Microtus pennsylvanicus*) (Becker 2003b personal communication; FHWA and MDT 1996).

The Ninepipe Area provides a variety of foraging opportunities for mammals, including eggs, small mammals, and aquatic insects and mollusks. Grizzly bears also forage on succulent aquatic vegetation and tubers. In summer 1998, a bear was observed foraging at the reservoir edge after the water had receded and was later determined to have been foraging on snails (Becker 2003a personal communication). Grasslands provide foraging habitat and cover for deer, skunks, weasels, coyotes, red fox, mice, and voles. Skunks, raccoons, weasels, coyote and red fox prey on eggs and nestling birds. There is some evidence that bears are particularly attracted to the area when vole (*Microtis sp.*) populations in the wildlife management grasslands are peaking, approximately every five years (West 2001 personal communication). Additional information on grizzly bear use of the project corridor is included in *Section 4.13 Threatened and Endangered Species*.

Beavers, muskrats, mink, and deer are expected in riparian wetlands in the project corridor, although numerous species likely use the cover of the riparian areas for movement.

Species that may occur occasionally as transients include grizzly and black bears (*Ursus americanus*), bobcats (*Lynx rufus*), and porcupine (*Erechizon dorsatum*). These species likely move into the valley from the Mission Mountains through riparian corridors and may forage along the way, but do not breed or raise young in the valley.

While several species of bats likely inhabit the Flathead Valley and the forests of the Mission Mountain Range, species likely in the project area include the little brown bat (*Myotis lucifugus*), big brown bat (*Eptisicus fuscus*), yuma myotis (*Myotis yumanensis*), and western small-footed myotis (*Myotis ciliolabrum*) (Genter and Jorist 1995). Bats are often overlooked but are an important part of Montana's ecosystem, providing large economic benefits by consuming vast quantities of insect pests. All of the species likely in the project area are insectivorous and forage on nocturnal insects (Genter and Jorist 1995).

Amphibians and Reptiles

Amphibian and reptile occurrence in the project area is summarized from *Amphibians and Reptiles on the Flathead Reservation* (Werner et al. 1998).

From 1993 to 1997, Werner et al. (1998) surveyed 203 sites in six study areas within the Flathead Indian Reservation. Study areas included portions of the project area. Based on their observations, the following species are likely in the US 93 Ninepipe/Ronan project area.

Reptile species observed in the project area and considered common included western terrestrial garter snakes (*Thamnophiselegans*) and western painted turtle (*Chrysemys picta belli*). One other reptile species is likely to occur in the project area, the western garter snake. Garter snakes are expected in grasslands near water, roadside ditches, and streams. Painted turtles inhabit ponds and lakes and are abundant in the project area. These turtles migrate to upland areas to lay their eggs and movements greater than several hundred meters are not uncommon (Government of British Columbia 1998). All three of these species were regularly observed by researchers studying painted turtles between 2002 and 2004 (Griffin 2005 personal communication).

One amphibian species, the spotted frog (*Rana pretiosa*), was observed in the project area. During the extremely dry summer of 2002, incidental observations noted the presence of only two spotted frogs in the Ninepipe segment of the project area (Griffin 2003a personal communication). During field work in the summers of 2003 and 2004, less than 10 frogs were noted per year, and no evidence of breeding was noted (Griffin 2005 personal communication). Other amphibian species that may occur in the project area include long toed salamanders (A*mbystoma macrodactylum*), pacific tree frogs *(Pseudacris regilla*), and western toads (*Bufo boreas*). All of these species breed in temporary or permanent ponds, although long-toed salamanders appear to favor pools in streams and small lakes (Government of British Columbia 1998).

Culturally Significant Wildlife

Animals play an integral role in Tribal culture. The Salish, Kootenai, and Pend d'Oreille Tribal members assign great significance to many animals as part of their spiritual life both in their creation stories and in their Tribal ceremonies. Animals that were traditionally hunted or fished and used for food and clothing are also highly valued today as Salish, Kootenai, and Pend d'Oreille Tribal members seek to preserve their heritage and pass their traditions through the generations. Animals are a reminder of the Tribes' close connection with the natural environment as home to people, animals, and plants (Jones and Jones 2004).

The unique habitats of the project area support many animals that play an active role in Tribal legends and culture. Viewing these species on the Flathead Indian Reservation reminds the Tribal members of their creation, legends, and heritage. Tribal attitudes towards wildlife, birds, and fish have been shaped by many generations living in close connection with the landscape. They rely on animals for their inspiration, food, and clothing. In an effort to responsibly care for the land and the Flathead Indian Reservation, the CSKT members often give voice to those things that cannot speak for themselves, including animals. Tribal members value the diversity of animals found on the Flathead Indian Reservation, often describing the fish and wildlife as integral to the landscape as a whole (Jones and Jones 2004).

Wildlife Species of Concern

The MNHP database contains five records of wildlife species of concern in the project area including common loon (*Gavia immer*), Caspian tern (*Hydroprogne caspia*), Forster's tern (*Sterna forsteri*), trumpeter swan (*Cygnus buccinator*) (Miller 2003), and bald eagle (*Hailiaeetus leucocephalus*). Species of concern are native animals that breed in Montana and that are at risk due to declining population trends, threats to habitat, and/or restricted distribution.

The animal species of concern recorded in the project area are ranked as category S1, S2, S3, and S4 species (Roedel 1999). Species of concern are not afforded special protection. Rather, the designation is used to make biologists aware of the presence of these species in their districts and to help set priorities for the statewide Comprehensive Fish and Wildlife Plan developed by MFWP.

- Category S1 species are critically imperiled because of extreme rarity, or because of some biological factor that makes it especially vulnerable to extinction.
- Category S2 species are imperiled because of rarity or because of other factors that have been demonstrated to make the species very vulnerable to extinction throughout its range.
- Category S3 species are either very rare and are found locally throughout their ranges, or are found locally in a restricted range (even though it may be abundant in some locations), or are vulnerable to extinction throughout its range because of other factors.
- Category S4 species are apparently secure, though they may be quite rare in parts of their range (Roedel 1999).

The habitat requirements and use of the project area for the five animal species of concern are summarized in Table 4.12-5.

Table 4.12-5. Habitat requirements and occurrence of wildlife species of concern in the US 93 Ninepipe/Ronan improvement project corridor.

Common Name (Scientific name)	Status	Documented Occurrence in the Project Corridor?	General Habitat Requirements
Common loon (*Gavia immer*)	S2	May occur in corridor, but no nesting is currently known.	Nests on large and small lakes on vegetation at the edges of the shallow water
Caspian tern (*Sterna Caspia*)	S2	No	Caspian terns breed on sand and gravel beaches and occasionally marshes. Their nests are may consist of eggs placed on rocks, in sand or among driftwood and lined with moss, grass or seaweed.
Forster's tern loon (*Sterna Forsteri*)	S2	Yes, nesting is reported within 0.4 km (0.25 miles) of the corridor.	Forster's terns breed in fresh and saltwater marshes, and in marshy borders of lakes and ponds.
Trumpeter swan (*Cygnus buccinator*)	S2	May occur in corridor, but no nesting is currently known.	Trumpeter swans typically occur in freshwater habitats at the vegetative margins of lakes and ponds.
Bald Eagle (*Haliaeetus leucocephalus*)	S3	Yes, wintering bald eagles have been observed near RP 41.5. Wintering bald eagles are found throughout the valley in the early part of the winter season before freeze up (December). After freeze up, eagles congregate in areas with open water, such as Post Creek, Ninepipe Reservoir, and Flathead Lake, to prey on waterfowl, particularly coots. Around mid-February, when the calving season starts, eagles are distributed throughout the valley, foraging on after-birth. Nesting pair occurs approximately 0.8 km (0.5 miles) from the corridor (Morrison-Maierle 1995; Becker 2003b personal communication).	The Bald Eagle habitat is primarily forested areas along rivers and lakes, especially during the breeding season. Important year-round habitat includes wetlands, major water bodies, spring spawning streams, ungulate winter ranges and open water areas

Wildlife Movement Corridors

The existing US 93 roadway through the project area is likely a barrier to most wildlife species. However, some wildlife do cross the corridor. Typically, mammalian wildlife cross roadways at locations where vegetation and topography provide adequate cover for secure movement between suitable habitats. These areas are usually associated with forested or riparian corridors or areas along the road corridor where dense vegetation is present in close proximity to the road and it is a short distance to cover. However, white-tailed deer often cross in random patterns as demonstrated in Table 4.12-6, which summarizes road kill data collected by MDT between 1998 and 2005. Currently, wildlife crossing areas in the corridor are centered around the Post Creek riparian area at RP 37.7, and the core pothole area from RP 39.4 to 44.1 (see Figure 4.12-1). Additional crossings occur at the Crow Creek riparian area at RP 44.2.

Table 4.12-6. Road-kill data collected by MDT between 1998 and 2005 for the US 93 Ninepipe/Ronan project corridor.

Approximate RP Locations	Time Period	Road Killed Animals
RP 31.2 to 37.9	June 13, 2000 to August 26, 2005	13 deer, 1 grizzly bear
RP 38.0 to 38.9	December 30, 2002 to July 12, 2005	14 deer
RP 39.5 to 39.9	January 1, 2003 to August 1, 2005	7 deer
RP 40.0 to 40.5	July 10, 2000 to September 4, 2004	6 deer
RP 41.2 to 41.8	July 1, 2002 to August 24, 2005	10 deer
RP 42.2 to 42.9	November 30, 2004 to May 14, 2005	4 deer
RP 43.1 to 43.9	June 23, 2003 to June 23, 2005	6 deer
RP 44.0 to 44.8	November 1, 2005 to August 8, 2005	4 deer, 1 coyote
RP 45.0 to 45.9	February 28, 2000 to February 1, 2005	36 deer, 1 raccoon
RP 46.0 to 46.2	December 17, 1998 to June 9, 2004	4 deer
RP 48.0 to 48.5	March 8, 19999 to July 18, 2005	7 deer

The Post Creek riparian area provides a movement corridor for wildlife from the Mission Mountains to the valley. It is one of the few corridors in the Mission Valley (the lands associated with the Mission Creek watershed) that is not highly fragmented by urban development. The riparian corridor is fairly intact, although the condition of the habitat is compromised in some areas. Restoration efforts are currently underway to further improve the condition of this corridor. This site is used by whitetail deer, grizzly and black bears, small mammals, and may occasionally be used by mountain lions (Becker 1996; Becker 2003a personal communication). Ideally, wildlife traveling through a riparian corridor could cross roadways by passing underneath the roadway bridge. The existing US 93 bridge over Post Creek does not provide adequate space for dry land passage by wildlife, so wildlife are forced to cross over the roadway. While current levels of mortality at this crossing location are low (Becker 1996), two grizzly bear mortalities were reported at this site in the past 4 years and signify its importance as a crossing corridor. On August 28, 2001, an approximately 5- to 6-year old female grizzly bear was struck and killed in the evening hours in the Post Creek vicinity. A second female was struck and killed on June 6, 2002 in the early morning in the same general vicinity. Whitetail deer are also commonly struck and killed in the Post Creek vicinity (Becker 2003a personal communication). In addition, in 1998, a sub-adult female grizzly bear was killed near the Ninepipe Reservoir.

High levels of mortality for nongame birds, upland gamebirds, waterfowl, small mammals, amphibians, and reptiles are reported for the segment of roadway that crosses the core pothole area in the project corridor (Becker 1996). This area extends from approximately RP 39.5 to 44.0. Painted turtles are the most commonly struck species with hot spots occurring at various locations within this area. Fowle (1996) reported 205 road-killed turtles for this same segment of roadway between May 7 and August 24, 1995. Table 4.12-7 summarizes the results of surveys conducted by Griffin (2005 personal communication) between Gunlock Road (RP 40) and Beaverhead Lane (RP 44.0) from July to September 2002 and from May to September 2003 and 2004. After reptiles, which primarily represents turtles, birds were the second most common road-killed wildlife recorded from 2002 to 2004. Commonly struck birds included swallows, blackbirds, and grouse/pheasants, but a wide range of species were represented (Griffin 2005 personal communication).

Table 4.12-7. Road kill rates for turtles, aquatic species, birds, and other species between Olson Road/Gunlock Road (RP 40.0) and Beaverhead Lane (RP 44.0) between July and September 2002 and between May and September 2003 and 2004.

Approximate Survey Locations	Reptiles [a]			Birds [b]			Small Mammals [c]			Medium Mammals [d]			Large Mammals [e]		
	2002	2003	2004	2002	2003	2004	2002	2003	2004	2002	2003	2004	2002	2003	2004
RP 40.0 to 41.0	106	105	78	86	75	27	6	10	13	9	19	6	0	0	0
RP 41.0 to 42.0	71	112	58	25	27	14	2	1	6	10	31	6	0	1	0
RP 42.0 to 43.0	93	112	42	51	29	5	5	4	2	14	13	1	0	2	0
RP 43.0 to 44.0	92	141	77	15	17	10	2	6	1	3	4	0	0	0	0
Total	362	470	255	177	148	56	15	21	22	36	67	13	0	3	0

Source: Griffin 2005 personal communication.
[a] Reptiles includes snakes and turtles. Turtles accounted for 1,001 kills while snakes accounted for 87.
[b] Swallows made up the greatest amount (57), while blackbirds (41) and grouse/pheasants (30) were next abundant in mortality.
[c] Small mammals include bats.
[d] Medium mammals include badgers, skinks, canines, cats, weasels, and muskrats. The majority of road mortality in this category were muskrats which accounted for 93 out of the 116 total.
[e] Large mammals consisted solely of deer.

Crow Creek riparian area and adjacent areas are also important wildlife movement areas in the project corridor. While its value is currently limited by the proximity of homes, lack of vegetative connectivity, and lack of dry land passage for wildlife underneath the US 93 crossing over Crow Creek, it is suspected that grizzly bears may be using this corridor to travel from the Mission Mountains to the Moiese Hills west of Charlo (Figure 4.12-1) (Becker 2003a personal communication).

4.12.4 Aquatic Habitat and Fisheries Resources

Major streams and fisheries resources in the project area are shown in Figure 4.10-1 and in Appendix E. Streams in the US 93 Ninepipe/Ronan project corridor drain two watersheds: the Post Creek drainage area of the Mission Creek watershed and the Crow Creek watershed. Post

Creek flows into Mission Creek, a tributary to lower Flathead River. Crow Creek flows directly into the lower Flathead River. All streams in the area flow from east to west due to geologic controls. Other aquatic habitat for fish in the project corridor includes an off-channel water storage facility, the Ninepipe Reservoir.

Fisheries resources and aquatic habitat within the project corridor have been heavily impacted by urbanization and water diversions for irrigation. Irrigation withdrawals from almost every natural stream are common in both watersheds and irrigated agriculture is one of the prominent land uses along the project corridor. A transbasin diversion (a diversion canal that diverts water from a stream or river in one watershed to a stream, river, canal, or reservoir in another watershed) from Post Creek to Crow Creek exists at the base of the Mission Mountains and connects the two watersheds. Numerous feeder and lateral canals (canals that divert water from a major canal to an irrigators land or other canal) are present on lands adjacent to the proposed project. Three large feeder canals, the Post F, Post A, and Ronan canal cross under US 93 within the project limits (Figure 4.10-1). Some of these canals provide fish passage between and within streams when in operation.

Traditionally, the Tribes that comprise the Flathead Indian Reservation did not rely on fish to the same degree as many other Northwest Tribes; however, fish provided a major food staple. Most fishing was done in the winter time through a hole in the ice (Jones and Jones 2004). Bull trout were the Tribes' primary aquatic food source because of their large size and the Tribal peoples' livelihoods were affected by the decline in this population of fish.

Mission Creek Watershed

Streams in the southern portion of the project area are a part of the Mission Creek watershed. The main stream in this portion of the project area is Post Creek, which originates as a high elevation stream in the Mission Mountains, and is the main tributary to Mission Creek. The Post Creek drainage area is 158.2 square kilometers (61.1 square miles). Post Creek has an on-channel irrigation storage facility near its headwaters called McDonald Lake. Water releases from this reservoir, tributary flow, and irrigation return flow to lower Post Creek control the hydrologic patterns of this stream. Water from Post Creek also supplies Ninepipe and Kicking Horse Reservoirs. The 10-year flood flow was determined to be 36.5 cubic meters per second (1,290 cubic feet per second [cfs]) based on the U.S. Geological Survey Water-Resources Investigation Report 92-04048 (FHWA and MDT 1996). Post Creek has a 0.6 cubic meters per second (22.0 cfs) minimum instream flow requirement through the project corridor (FAID 1990).

Post Creek and an unnamed tributary to Post Creek are crossed by US 93 within the project corridor. Three additional tributaries to Post Creek, including Ashley Creek and two unnamed tributaries, flow parallel to US 93 within the project corridor. The characteristics of these systems as well as the Ninepipe reservoir are summarized in the section titled *Fisheries Resources* and in Table 4.12-8.

Table 4.12-8. Characteristics of fisheries resources in the US 93 Ninepipe/Ronan improvement project area.

Stream and Wetland ID	Location	Rosgen Classification	Culvert Condition	Instream Habitat	Streambank Conditions	Fish Use
Post Creek Watershed						
Unnamed tributary to Post Creek 1 (H14A, H14B)	US 93, Red Horn Road RP 37.1	B	Provides fish passage and appears to convey high water events.	Degraded High siltation, fine sediment, silt, and organic debris.	Mostly stable, at culvert, invasive species dominate.	Northern pikeminnow (*Ptychocheilus oregonensis*), redside shiner (*Richardsonius balteatus*), longnose dace (*Rhinichthys cataractae*) are expected.
Ashley Creek (H15A, H15B, H15C)	US 93 RP 37.4 to 37.8	C	Provides fish passage and appears to convey high water events.	Degraded. High siltation, fine sediment, silt, and organic debris.	Portions are highly entrenched, while other portions are overly widened due to sediment deposition, lack of a normal flow regime, and an undefined channel.	Northern pikeminnow, redside shiner, longnose dace are expected.
Post Creek (H16A, H16B)	US 93 RP 37.8	C	The existing bridge conveys bank-full and larger flows and provides fish passage.	Riffle habitat with lateral scour pools and deeper pools under the Post Creek bridge. Fine sediment deposition is generally isolated to slower velocity areas along stream margins.	Mostly stable throughout the reach, reed canarygrass and shrub species dominate.	Bull trout (*Salvelinus confluentus)*, brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), largescale sucker (*Catostomus macrocheilus)*, mountain whitefish (*Prosopium williamsoni*), are documented. Longnose sucker (*Catostomus catostomus*), hybrid cutthroat trout, slimy sculpin (Cottus cognatus) are expected
Unnamed tributary to Post Creek 2 (H16B, H16C)	US 93, West Post Creek Road RP 37.9 to 38.1	G	Above the confluence with Post Creek, a 0.6 meter (2 foot) drop structure is a fish passage barrier.	Slightly sinuous Fine sediments near mouth of tributary	Slightly entrenched, herbaceous species and large willows dominate.	Northern pikeminnow, redside shiner, longnose dace are expected
Unnamed tributary to Post Creek 3 (H19B, H20A)	US 93, East Post Creek Road RP 37.8 to 38.1	G	Fish passage restricted by undefined channel and natural drop structures (vegetation formed)	Degraded. High levels of sediment and degraded water quality.	Highly entrenched, reed canarygrass, cattail, and shrub species dominate.	Northern pikeminnow, redside shiner, longnose dace are expected

Table 4.12-8 (continued). Characteristics of fisheries resources in the US 93 Ninepipe project area.

Stream and Wetland ID	Location	Rosgen Classification	Culvert Condition	Instream Habitat	Streambank Conditions	Fish Use
Post Creek Watershed (continued)						
Ninepipe Reservoir	US 93, RP 40.7	NA	NA	Water quality degradation from irrigation water and inputs of stormwater runoff from US 93 crossing over the reservoir inlet.	NA	Largemouth bass (*Micropterus salmoides*), yellow and black bullhead (*Ictalurus natalis* and *melas*), pumpkinseed sunfish (*Lepomis gibbosus*), yellow perch (*Perca flavescens*) and rainbow trout are documented.
Crow Creek Watershed						
Crow Creek (I16A, I16B)	US 93 RP 44.2	C	Provides fish passage and conveys bank full flows, but not low recurrence high water events.	Low gradient and sinuous with deep run habitat and deeper pools under the crossing structure	Mostly stable throughout the reach, reed canarygrass, cattails, and sedges dominate.	Brook trout, brown trout, rainbow trout are documented. Largescale and longnose suckers, mountain whitefish, northern pikeminnow, redside shiner , longnose dace are expected.
Ronan Spring Creek (J2C, J2D)	US 93, Main Street RP 47.0	B	Provides fish passage, but restricts flows and would not accommodate 100-year flood flows.	Highly sinuous upstream, channelized within the project corridor. Excessive fine sediment deposition.	Mostly stable throughout, reed canarygrass, and cattails dominate.	Rainbow trout, Brook trout, mountain whitefish are documented Brown trout, largescale and long nose sucker, redside shiner, northern pikeminnow and longnose dace are expected.

Fish Species of Concern

A fish species of concern is a native Montana fish with limited habitat and/or limited numbers in the state. The MFWP and the Montana chapter of the American Fisheries Society jointly designate species to be included on this list. The list is not enforceable by law, but is intended to alert the public and wildlife managers to the status of these fish. Westslope cutthroat trout (*Oncorhynchus clarki lewisi*) is a species of concern in Montana (Miller 2003).

Westslope cutthroat trout are present in the upstream reaches of project area streams but are generally not known to occur in the project area. Within the Mission Creek watershed, Ashley Creek supports a population of pure westslope cutthroat trout isolated by an irrigation canal high in the drainage. Three populations of westslope cutthroat trout exist above McDonald Lake in the Post Creek drainage. McDonald Lake is stocked with westslope cutthroat trout and outmigrants may be present in Post Creek below the reservoir. Populations below the reservoir are assumed to be hybridized with rainbow trout, including those individuals that may use Post Creek in the project corridor.

Fisheries Resources

Unnamed Tributary to Post Creek 1 (Wetlands H14A and H14B)

The unnamed tributary to Post Creek 1 originates on the valley floor approximately 3.2 kilometers (2 miles) above its confluence with Post Creek and drains 6.5 square kilometers (2.5 square miles). At the US 93 crossing, the stream is conveyed underneath the roadway through a concrete box culvert with a 1.8- X 1.8-meter (6- X 6-foot) opening. The 100-year flood flow was determined to be 1.2 cubic meters per second (41 cfs) (FHWA and MDT 1996).

Excessive mid-channel deposition would continue in the channel’s current state due to low gradient, channelization, and excess sediment inputs to the stream. No sampling in the project area has been done to determine fish use of this system. Expected fish use is provided in Table 4.12-8.

Ashley Creek (Wetlands H15A, H15B, and H15C)

Ashley Creek is a perennial tributary to Post Creek. The stream originates in the Mission Mountains and flows through the valley and wetland areas before entering Post Creek. US 93 does not cross Ashley Creek, but two entrances to an adjacent property (referred to as Hunt’s Sawmill) cross the stream. Both of these crossings have 1.8-meter (6-foot) concrete culverts conveying the stream’s flow. Both structures are partially filled with fine sediment, soil, and aquatic vegetation, but convey the entire flow of Ashley Creek and do not appear to hinder fish passage. Stream velocities are low within the stream and high sediment accumulations are present above and below these structures.

Entrance into Ashley Creek from Post Creek is unrestricted; however, the extent of fish passage in Ashley Creek above its confluence with Post Creek is unknown. Passage into the small water storage pond south of Hunt's Sawmill likely poses a complete barrier to fish migration upstream.

Known and expected fish use is provided in Table 4.12-8.

Main Stem Post Creek (Wetlands H16A and H16B)

Post Creek is conveyed under US 93 via a 15-meter (50-foot) long, 9.5-meter (31-foot) wide bridge. The channel under the bridge has been slightly narrowed and stabilized with large riprap. Upstream of the bridge a levee is located on the north bank. The levee is presumed to have been constructed to help route streamflows through the existing Post Creek bridge. The levee currently restricts flows and reduces channel/floodplain interactions (Makepeace 2003 personal communication).

No sampling for fish occurrence has been done within the project corridor. Other reaches of Post Creek contain spawning habitat for rainbow trout, brown trout, and largescale suckers migrating from the Flathead River. Resident spawning by rainbow trout, brown trout and brook trout also occurs in Post Creek. Species use of the project corridor is most likely as a migration corridor to spawning and rearing habitat further upstream, although sufficient instream cover exists in the project corridor.

Unnamed Tributary to Post Creek 2 (Wetlands H16B and H16C)

This unnamed tributary stream enters Post Creek approximately 6 meters (20 feet) upstream of the Post Creek bridge on US 93. Based on map and aerial photo interpretations, this stream was historically a natural drainage to Post Creek. The stream is spring fed and exists entirely on the valley floor. The stream originates on private land near RP 38.5 above East Post Creek Road. The stream is slightly sinuous and enters the project corridor below an aspen dominated wetland (wetland H16C) area at a private residence north of East Post Creek Road. The stream flows south in and out of the project corridor from RP 37.8 to 38.1.

The stream is not crossed by US 93, but is conveyed under East Post Creek Road where it enters the project corridor. The existing structure is a 1.8-meter (6-foot) culvert. Expected fish use is provided in Table 4.12-8.

Unnamed Tributary to Post Creek 3 (Wetlands H16A and H17A)

This tributary stream enters Post Creek about 24 meters (80 feet) downstream of the Post Creek bridge on US 93. Based on map and aerial photo interpretations, this stream was tributary to unnamed tributary to Post Creek 2 discussed previously. The stream is diverted from what appears to be its natural channel originating on the valley floor above West Post Creek Road near RP 38.1, and is then diverted again into a ditch extending along the western edge of US 93. The stream becomes deeply incised through private land outside of the project corridor before flowing back into the corridor approximately 30 meters (100 feet) above its confluence with Post Creek. High levels of sediment and degraded water quality are apparent. The stream and associated wetlands are functioning in a filtering capacity for stormwater runoff from US 93 into Post Creek. Expected fish use is provided in Table 4.12-8.

Ninepipe Reservoir (Wetlands H30A and H30B)

Ninepipe reservoir is an off-channel water storage facility operated by the Bureau of Indian Affairs (BIA) and FAID. The US 93 Ninepipe/Ronan project corridor crosses the inlet of the reservoir at RP 40.7. The reservoir receives water from the Kicking Horse reservoir, also an off-channel storage facility operated by the FAID.

Ninepipe Reservoir has an approximate surface area of 485.6 hectares (1,200 acres) and an approximate shore length of 12.9 kilometers (8 miles) (MFWP and NRIS 2003). The average depth of the reservoir is 2.4 meters (8 feet), with a maximum depth of 8.2 meters (27 feet). Water levels are controlled by FAID. The reservoir is the center of the Ninepipe National Wildlife Refuge and lands surrounding the reservoir are managed by the USFWS for waterfowl production and recreation. The reservoir is at low risk for shoreline development (CSKT 2000b). Sources of water quality degradation include irrigation water and inputs of stormwater runoff from US 93 crossing over the reservoir inlet. Irrigation return flows have been identified as contributing a large portion of the water quality contaminant load in the watershed (CSKT 2000a).

Crow Creek Watershed

Crow Creek originates in the Mission Mountains and drains the northern half of the Flathead Valley. It is associated with wetlands I16A, I16B, J2C and J2D in the project corridor. Crow Creek drains 127.7 square kilometers (49.3 square miles). Headwater tributaries are steep and forested. The Crow Creek watershed is made up of three distinct forks, South, Middle, and North Crow creeks. It is a tributary to the lower Flathead River. Along the valley floor, Crow Creek is a sinuous silt and gravel-bedded stream with a well developed alluvial floodplain. Streamflow in Crow Creek is characteristic of a snowmelt dominated hydrograph. The 100-year flood flow was determined to be 28.6 cubic meters per second (cms) (1,009 cfs) (FHWA and MDT 1996).

Major tributaries to Crow Creek include Mud Creek, Ronan Spring Creek, and a number of smaller coulees and drainageways. Mud Creek is outside of the project corridor. Ronan Spring Creek is crossed by US 93 near the north end of Ronan, Montana, at Main Street (RP 47.0). This stream is a large, ground water supplied tributary to Crow Creek located entirely on the valley floor. The characteristics of these systems are summarized in the section titled *Fisheries Resources* and in Table 4.12-8.

Fish Species of Concern

Within the Crow Creek watershed, westslope cutthroat trout are present in the headwaters of North Crow Creek above a natural barrier. However, they are not known to occur in the project area streams.

Fisheries Resources

Crow Creek (Wetland I16A and I16B)

Crow Creek is conveyed under US 93 via a double 3- X 4.25-meter (10- X 14-foot) steel pipe arch. Within the project corridor, Crow Creek is low gradient and sinuous. The segment of Crow Creek flowing under US 93 has been straightened. Downstream of the culverts, the channel splits into two channels (west of US 93). The southernmost branch flows into a meander bend that was cut off, probably during the construction of the highway. This is apparent from aerial photo and field observations. Stream habitat within the reach is mainly deep run habitat with deeper pools under the crossing structure. Known and expected fish use is provided in Table 4.12-8.

Ronan Spring Creek (Wetland J2C and J2D)

Ronan Spring Creek is a spring-fed tributary to Crow Creek that originates on the valley floor approximately 5 miles north of the City of Ronan, Montana. Ronan Spring Creek drains 14.2 square kilometers (5.5 square miles). The 100-year flood flows were determined to be 4.4 cms (157 cfs) (FHWA and MDT 1996). The stream enters the project corridor near the US 93 and Main Street intersection, near RP 47.0 at the north end of the City of Ronan.

There are no known barriers between Ronan Spring Creek and Crow Creek downstream of the project corridor. Within the project corridor, Ronan Spring Creek is culverted underneath and downstream of US 93. Known and expected fish use is provided in Table 4.12-8.

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4.13 Threatened and Endangered Species

4.13.1 Analysis Methods and Assumptions

Information on use of the project corridor by federally listed threatened and endangered plants, wildlife, and fish was obtained from interviews with federal, Tribal, local, and university biologists, representing the USFWS, CSKT, the Owl Research Institute, and the University of Montana Cooperative Wildlife Research Unit. For additional information on threatened and endangered species in the US 93 Ninepipe/Ronan project corridor, refer to the *Biological Assessment: US 93 Ninepipe/Ronan Improvement Project* (Herrera 2005b).

According to USFWS (2003d) two plant species listed as threatened under the ESA and one plant species which is a candidate for listing under the ESA may occur in the US 93 Ninepipe/Ronan project corridor. In addition, four species of terrestrial wildlife and one fish species listed as threatened under the ESA may occur in the US 93 Ninepipe/Ronan project corridor. One additional species, Ute ladies'-tresses, was not identified as potentially occurring in the project area in correspondence from the USFWS but was included in the rare plant surveys conducted in the project corridor, and is therefore included in this analysis. These species are identified in Table 4.13-1 and are described in *Section 4.13.3 Plant Species* and *Section 4.13.4 Fish and Wildlife Species*.

Table 4.13-1. Terrestrial and aquatic threatened and proposed threatened species considered for the US 93 Ninepipe/Ronan improvement project.

Species Name	Scientific Name	Status
Plant Species		
Ute Ladies'-tresses	*Spiranthes diluvialis*	Threatened
Water howellia	*Howellia aquatilis*	Threatened
Spalding's campion/catchfly	*Silene spaldingii*	Threatened
Slender moonwort	*Botrychium lineare*	Candidate
Fish and Wildlife Species		
Bald eagle	*Haliaeetus leucocephalus*	Delisted
Grizzly bear	*Ursus artctos horribilis*	Threatened
Gray wolf	*Canus lupus*	Threatened
Canada lynx	*Felis lynx*	Threatened
Bull trout	*Salvelinus confluentes*	Threatened

4.13.2 Regulations and Standards

Section 7(c) of the federal ESA of 1973, as amended, requires all federal agencies implementing a major construction activity to prepare a biological assessment to identify listed species that may be affected by the proposed project. The federal agency must then consult with the USFWS to determine the effects of the project actions. For this project, the ESA is implemented by the FHWA in consultation with USFWS. This section summarizes the information compiled in support of the biological assessment and consultation process.

4.13.3 Plant Species

Ute Ladies'-tresses

The MNHP has documented 11 occurrences of this species in Montana, but there were no occurrences documented for the project area (MNHP 2004). Additional population surveys have discovered more populations are present since the original listing of this species (Sipes 2002), but this species was not found during the rare plant survey for the project area. Because this species is not expected in the project corridor, no further evaluation is provided. For additional information on Ute ladies'-tresses, refer to the *Biological Assessment: US 93 Ninepipe/Ronan Improvement Project* (Herrera 2005b).

Water Howellia

There are no documented occurrences of water howellia in the project area (MNHP 2004). All known populations in Montana are located in the Swan River drainage, east of the Mission Mountains (Mantas 2001), and this species was not found during the rare plant survey for the project area. Because this species is not expected in the project corridor, no further evaluation is provided. For additional information on water howellia, refer to the *Biological Assessment: US 93 Ninepipe/Ronan Improvement Project* (Herrera 2005b).

Spalding's Campion/Catchfly

There are no documented occurrences of Spalding's campion/catchfly in the project area (MNHP 2004), and this species was not found during the rare plant survey for the project area. In Montana, populations of Spalding's campion/catchfly are restricted to remnant Palouse grassland habitats. There are no native Palouse grassland habitats in the US 93 Ninepipe/Ronan project corridor (West 2003 personal communication). Because this species is not expected in the project corridor, no further evaluation is provided. For additional information on Spalding's campion/catchfly, refer to the *Biological Assessment: US 93 Ninepipe /Ronan Improvement Project* (Herrera 2005b).

Slender Moonwort

There are no documented occurrences of slender moonwort in the project area, and it was not found during the rare plant survey for the project area. Because this species is not expected in the project corridor, no further evaluation is provided. For additional information on slender moonwort, refer to the *Biological Assessment: US 93 Ninepipe/Ronan Improvement Project* (Herrera 2005b).

4.13.4 Fish and Wildlife Species

Bald Eagle

Status

On July 9, 2007 the bald eagle was removed from the list of threatened and endangered wildlife under the ESA by the USFWS. The determination to delist the bald eagle was based on a thorough review of all available information, which indicated that the threats to this species have been eliminated or reduced to the point that the species has recovered and no longer meets the definition of threatened or endangered under the ESA. Although the draft SEIS included a thorough analysis of impacts to bald eagles as a result of this project in Section 4.13 Threatened and Endangered Species, they are no longer discussed in this section of the final document due to the recent delisting. For information regarding bald eagles in the project vicinity see Section 4.12.3 Vegetation and Terrestrial Wildlife Habitat, Wildlife Species of Concern.

Bull Trout

Status and Distribution

The USFWS listed the Columbia River and Klamath River distinct population segments of bull trout (which include populations in the Snake River basin) as threatened on June 10, 1998 (63 FR 31647). Bull trout are native to the Pacific Northwest and Canada, and historically they were abundant and widespread throughout Pacific Northwest drainages. Today, the numbers and distribution of bull trout are reduced over much of their historical range due to land use practices. Bull trout still occur throughout the Columbia River basin, in the Klamath River in Oregon, in the headwaters of the Saskatchewan River in Alberta, and in the MacKenzie River system in Alberta and British Columbia, Canada. Populations of bull trout in Montana are limited to the Columbia and Saskatchewan River basins (Carnefix 2003).

Life History

The bull trout appears to have relatively specific habitat requirements and a complex life history. In places where they do occur, bull trout often display a patchy distribution and may not always be present in all available habitats (Rieman and McIntyre 1993). Life-history strategy appears to influence habitat usage to a large extent.

Bull trout exhibit both migratory and resident life-history strategies throughout much of their range. The two forms may coexist, and one particular life-history form may dominate under stable conditions, while the other form may be favored under changing environmental conditions (Rieman and McIntyre 1993).

Both migratory and resident bull trout move in response to developmental or seasonal habitat needs (MBTSG 1998). Migratory fish may spend much of their lives throughout a river basin (Rieman and McIntyre 1993) but spawn primarily in tributary streams. 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. Their eggs remain covered up to 15 centimeters (6 inches) deep in spawning gravels until spring, when the fry emerge. Young bull trout remain in the stream for one to four years, huddled among bottom rocks and other cover. Bull trout reach lengths of up to 94 centimeter (37 inches) and weights as much as 9 kilograms (20 pounds) (Carnefix 2003). Juveniles spend one to four years in the tributaries before migrating to a lake (adfluvial form), a river (fluvial form), or to salt water (anadromous form) to mature. Resident fish often remain in tributary streams or smaller watersheds throughout their life cycle (Rieman and McIntyre 1993).

Spawning takes place primarily in third- and fourth-order streams in low-gradient stream reaches (less than 2 percent gradient). Spawning often occurs in areas where ground water exchange takes place and temperature and flow conditions are more stable. Nonmigratory trout may occasionally use second-order streams formed by the confluence of two or more first-order stream channels for spawning. Limited spawning in fifth-order streams has been documented, but most bull trout spawning in Montana occurs in fourth-order streams (MBTSG 1998).

Bull trout require very cold, clean, complex, connected waters. Five habitat characteristics are reported to be particularly important for bull trout persistence: cover, substrate composition, channel stability, temperature, and migratory corridors (Rieman and McIntyre 1993).

Species Occurrence in the Project Area

Bull trout may occur in the project area in Post Creek. 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 2000c).

There is little information available on the life history of bull trout residing in Post Creek. It is assumed that bull trout using Post Creek have always been of the migratory form (CSKT 2000c). 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. Redd counts have averaged 23 redds per year since 1986 (MBTSG 1996).

Actual occurrence within Post Creek below the reservoir is not well known. Electroshocking of the main stem of Post Creek has produced very few bull trout, and less than 50 individuals are assumed to use the stream (CSKT 2000c). In general, numbers are thought to increase from the mouth of the creek to the headwaters near McDonald Reservoir (Evarts 2003 personal communication). It is not known if the bull trout present are a result of outmigration from McDonald Reservoir, 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 Reservoir 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 2000c). Three individuals were captured in 1984 and 1985 moving from the Flathead River into Mission Creek (U.S. DOE 1986), but movement into Post Creek was considered unlikely due to degraded water quality in the lower reaches. There is not enough information 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 spawning and rearing habitat occur in the area of US 93 and use of the stream in this area is most likely limited to migration.

Bull Trout Critical Habitat

Bull trout critical habitat was proposed for the Klamath River and Columbia River distinct population segments in November 2002. Within this project's action area, Post Creek was included in the proposed rule for critical habitat. However, when the final critical habitat designation was issued in October 2004, no critical habitat for bull trout in Montana was included.

On September 26, 2005 the USFWS again designated critical habitat for the Klamath River, Columbia River, Jarbidge River, Coastal-Puget Sound, and Saint Mary-Belly River populations of bull trout in the coterminous United States pursuant to the Act. This final designation totals approximately 6,161 kilometers (3,828 miles) of streams, 57,958 hectares (143,218 acres) of lakes in Idaho, Montana, Oregon, and Washington, and 1,585 kilometers (985 miles) of shoreline paralleling marine habitat in Washington. This rule became effective October 26, 2005 and includes areas in Montana, including Post Creek, that were not included in the October 2004 designation.

Canada Lynx

Lynx do not occur in resident populations within the US 93 Ninepipe/Ronan improvement project area. Resident populations are present in suitable habitats in the surrounding Rocky Mountain range. While lynx are capable of traveling long distances, and it is probable that dispersing animals sometimes traverse the US 93 corridor in search of suitable habitat located in nearby mountain ranges, it is unlikely that lynx cross the US 93 corridor in the US 93 Ninepipe/Ronan project area (Becker 2003a personal communication; Soukkala 2001 personal communication). Because this species is not expected in the project corridor, no further evaluation is provided. For additional information on Canada lynx, refer to the *Biological Assessment: US 93 Ninepipe/Ronan Improvement Project* (Herrera 2005b).

Gray Wolf

Status and Distribution

There are no known den or rendezvous sites in the project corridor and no packs are present in the project vicinity (Soukkala 2001 personal communication; USFWS et al. 2002). Wolves are reported sporadically in the Flathead Valley, although most observations are reported from the vicinity of MT 200 or the base of the Mission Mountains (Becker 2003a personal communication; Soukkala 2001 personal communication).

Wolf use of the Ninepipe Area is not reported (Becker 2003a personal communication; Soukkala 2001 personal communication). Wolves do cross the US 93 corridor and are primarily reported to cross in the Evaro area. Because this species is not expected in the project corridor, no further evaluation is provided. For additional information on gray wolves, refer to the *Biological Assessment: US 93 Ninepipe/Ronan Improvement Project* (Herrera 2005b).

Grizzly Bear

Status and Distribution

The grizzly bear was listed as a threatened species on July 28, 1975. Grizzly bears once ranged over a third of the lower United States. Today, the recovery plan for grizzly bears focuses on populations in six areas with suitable habitat for self-sustaining populations of bears. Only five of these areas are currently inhabited: Yellowstone National Park, Northern Continental Divide, North Cascades, Selkirk, and Cabinet-Yakk. There are currently no bears in the Bitterroot recovery area. The Yellowstone National Park grizzly bear population is the strongest and most viable. The Northern Continental Divide ecosystem is the next most viable and supports approximately 300 to 400 bears. The project area is in the vicinity of the Northern Continental Divide ecosystem. The remaining three ecosystems support a few dozen or fewer bears each.

Life History and Habitat Requirements

Grizzly bears are solitary wanderers, except when they are caring for young. Grizzlies are not considered territorial animals, and their home ranges often overlap, although they typically maintain a minimum distance from one another. The search for food is the primary factor in determining the size of a bear's home range. Bears mate in late May through mid July, typically becoming reproductive at the age of five years (reproduction may occur at 3.5 years). Females produce one to four cubs approximately every three years. Cover is a key habitat component for grizzly bears. They are opportunistic feeders, foraging on carrion, squirrels, vegetation, nuts, berries, and insects. During the winter months, grizzly bears hibernate at high elevations where snow accumulations are deep. Grizzly bears emerge in spring and move to the lowlands to forage on winter-kill carcasses or newly emerging vegetation, which is rich in protein. In the late summer and early fall, bears move back up to higher elevations to forage on the abundant berries in the avalanche slides. Den digging begins in early September through November. Grizzly bears typically remain in their dens for about five months (USFWS 1993).

Species Occurrence in the Project Area

The project corridor is located on the western front of the Northern Continental Divide grizzly bear recovery area, which roughly corresponds with the northern Rocky Mountain Range. While the project corridor is not located within the recovery area, grizzly bears range into the Ninepipe Area in the spring (May 30) through late fall (end of October) (Becker 2003c personal communication).

The Ninepipe Area provides a variety of foraging opportunities including eggs, small mammals, succulent aquatic vegetation and tubers. In summer 1998, a bear was observed foraging at the reservoir edge after the water had receded and was later determined to have been foraging on snails (Becker 2003a personal communication). There is some evidence that bears are particularly attracted to the area when *Microtis sp.* populations in the wildlife management grasslands are peaking, approximately every five years (West 2001 personal communication).

The Ninepipe Area appears to provide an escape area for young dispersing males or females with cubs evading aggressive male bears. The number of grizzly bears in the area is highly variable and generally ranges from 1 to 4 individuals. Grizzly bears likely access the area from the Mission Mountains via the Post Creek riparian area and perhaps the Crow Creek riparian area. Once they are in the area, bears do occasionally cross US 93. For example, bears reported from the Moiese Hills west of Charlo likely cross US 93 in the Ninepipe Area. Three grizzly bears have been struck and killed in the Ninepipe Area in the last five years. One was killed near the Ninepipe Reservoir and two were killed in the Post Creek vicinity in the same general location in 2001 and 2002.

Some bears in the Ninepipe Area appear to use the habitat around the refuge without dispersing much farther west. There is limited habitat available west of the project vicinity; however, the risk of human-bear conflicts is greater.

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4.14 Cultural Resources

4.14.1 Analysis Methods and Assumptions

Background

The project area lies within the Flathead Indian Reservation, home to the Confederated Salish and Kootenai Tribes. Two distinct categories of cultural resources exist within the project area: 1) traditional cultural resources of the Salish, Kootenai, and Pend d'Oreille tribes and 2) rural or agrarian resources associated with past agricultural development.

Traditional Cultural Resources – The Ethnographic Cultural Landscape

The distinct features of the Mission Valley together with the adjacent Mission Mountains create a unique physical setting that has shaped the responses of human inhabitants through the millennia. Archaeological evidence and oral tradition suggest that the Tribal groups culturally affiliated with the landscape within the project area have inhabited the region for 12,000 years. Three main Tribal groups reside on the Flathead Indian Reservation: the Bitterroot Salish, the Kootenai, and the Upper Pend d'Oreille. These groups' continuous interaction with the land has resulted in specific cultural values, traditions, practices, and resources that persist today. Traditional cultural resources comprise an ethnographic landscape, a cultural landscape that mirrors the systems of meanings, ideologies, beliefs, values, and worldviews shared by a group of people who have inhabited a particular place over a long period of time. The ethnographic landscape contains resources that may be in physical form, such as archaeological sites, as well as resources that may occur in less apparent form, e.g., geological landforms, cultural plants, and animals. Impacts to geological and biological systems that constitute resources that occur in less apparent form also affect traditional cultural resources. The following discussion focuses primarily on cultural resources that may be in physical form, such as archaeological sites.

The Salish and Kootenai Cultural Committees, and the CSKT Tribal Preservation Office are the primary repositories of traditional cultural knowledge and information, and the authoritative voice on the cultural significance of all these resources.

Rural or Agrarian Resources – The Vernacular Cultural Landscape

Changes in land use from Native American subsistence-based practices to Euro-American agrarian practices dramatically altered the western Montana landscape in the last century. The introduction of new political, social, religious, and economic institutions imposed new forms on the land, including farm complexes, fields, pastures, irrigation canals, reservoirs, roads, and small towns. These recent land practices have drastically impacted the natural systems that formed the resource base upon which traditional cultural practices are based, and have altered or destroyed some physical cultural resources. At the same time, human activity on the land in the last one hundred years has created a distinct agrarian cultural landscape, or a vernacular landscape. Vernacular landscapes tend to reflect repetitive human activities such as farming, and are typically comprised of historic resources in physical form, such as homesteads, farm buildings, or other standing structures; infrastructure systems (irrigation, transportation); fields, pastures, or orchards. This second category of cultural resources typifies resources frequently documented and catalogued on the National Register of Historic Places (NRHP).

Methods

Methods employed in this cultural resource study include:

- Landscape analysis
- Archival and document research
- Records search
- Car and pedestrian field surveys
- Salish Cultural Committee elder interviews
- Consultation with the CSKT Tribal Preservation Office.

Literature and record searches were conducted at Montana State Historic Preservation Office, Salish-Kootenai College library, University of Montana library, and Tribal Preservation Office archives. A pedestrian and vehicular field survey of vernacular (rural/agrarian) cultural resources was conducted between the dates of April 2001 and February 2003 along the existing US 93 Ninepipe/Ronan project corridor to evaluate the eligibility of recorded standing structures (identified during the scoping phase to be older than 50 years within the 200-square-kilometer [77-square-mile] area of potential effect).

An archaeological study of the Ninepipe National Wildlife Refuge pull-off area just west of US 93 was conducted previously (Aagberg 2000). This study did not uncover any finds; however, based upon prior Tribal Preservation Office cultural resource studies of linear sites, the Tribal Preservation Office predicts that a discovery rate of 1 archaeological site roughly every 6.4 kilometers (4 miles) could be expected. A full cultural resource inventory has not been conducted by the CSKT. The Tribal Preservation Office is coordinating with MDT to conduct elder interviews and field reviews of selective, potentially sensitive sites along the project corridor. This survey will focus primarily on traditional (ethnographic) cultural properties.

The State Historic Preservation Officer (SHPO) reviewed earlier cultural reports and preliminary recommendations for eligibility on the NRHP, as reported in the US 93 Evaro to Polson FEIS. In addition, the Tribal Historic Preservation Officer (THPO), whose position was established subsequent to earlier compliance efforts, has also reviewed recommendations for cultural property eligibility, and the THPO's recommendations are documented in Appendix C.

4.14.2 Regulations and Standards

The Salish and Kootenai Cultural Committees, and the Tribal Preservation Office are the primary repositories of traditional cultural knowledge and information, and the authoritative voice on the significance of these resources. On the Flathead Indian Reservation, the THPO is the regulatory authority charged with determining compliance.

Federal laws, regulations, Executive Orders, policies, and guidelines have been enacted to identify, evaluate, and protect cultural resources, including NEPA, the National Historic Preservation Act (NHPA), the Historic Sites Act, the Archaeological Resources Protection Act, the American Indian Religious Freedom Act, the Native American Graves Protection and Repatriation Act, Executive Order 13007, and the Montana State Burial Ordinance. All potential historic properties, including traditional cultural properties, are evaluated by a set of criteria established by the Montana State Historic Preservation Office and the National Park Service.

NEPA as amended requires agencies to determine project impacts on diverse types of cultural and natural resources. NEPA documents typically address potential effects to cultural resources by documenting compliance with Section 106 of the NHPA.

The NHPA requires agencies to consider the effects of their actions on historic properties of various types, including archaeological resources and cultural landscapes. As a result of the NHPA, the NRHP was created. The NRHP is a register of historic sites that are considered to be significant. Historic properties are defined in NHPA as "any prehistoric or historic district, building, structure or object included in, or eligible for inclusion on the National Register (of Historic Places), including artifacts, records, and material remains related to such a property." This law also requires federal agencies and recipients of federal assistance and permits to identify and manage historic properties through a process detailed in Section 106.

The Historic Sites Act of 1935 established the National Park Service as the federal government's primary historic preservation advocate. The National Park Service publishes guidelines or bulletins for identifying and evaluating a wide range of historic properties, including archaeological sites and traditional cultural properties.

The Archaeological Resources Protection Act of 1979 established a permitting process for archaeological excavation on federal land; requires the federal land manager to notify Indian tribes of possible harm to sites having religious or cultural importance; and prohibits unauthorized excavation, removal, or defacement of archaeological resources and set penalties.

The American Indian Religious Freedom Act requires the federal government to consider impacts of a project to American Indian Tribes' free exercise of traditional religion. This law relates to the practices of a religion as well as the places and objects used in those practices. Unlike the NHPA, which typically does not apply to cultural resources less than 50 years old, the American Indian Religious Freedom Act does address impacts to recent and contemporary practices and places.

The Native American Graves Protection and Repatriation Act of 1990 protects marked and unmarked American Indian graves on public lands, as well as associated and unassociated grave goods of cultural importance. This act also regulates excavation of Native American remains on federal and Indian land.

Executive Order 13007 was enacted in 1996 to address Indian sacred sites on federal and Indian land. The order encourages agencies to avoid damage to sacred sites and to avoid restricting access to those sites by Tribal traditional practitioners. This order does not require a "sacred site" to be a registered historic property in order to qualify for consideration.

The Montana State Burial Ordinance is a state law that protects marked and unmarked graves in Montana. This ordinance establishes a procedure for the discovery of human remains found on non-federal lands. First the local coroner is notified, and then the State Burial Board, which is comprised of Tribal representatives, representatives from the Montana State Historic Preservation Office, the State Coroners association, physical anthropologists, and archaeologists.

All potential historic properties, including traditional cultural properties, are evaluated by a set of criteria established by the Montana State Historic Preservation Office and the Advisory Council on Historic Preservation (ACHP). On the Flathead Indian Reservation, the THPO is the regulatory authority charged with determining compliance. Historic properties are determined to be eligible for inclusion on the NRHP if they meet the following criteria:

- The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and
    - That are associated with events that have made a significant contribution to the broad patterns of our history
    - That are associated with the lives of persons significant in our past
    - That embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction
    - That have yielded, or may be likely to yield, information important in prehistory or history.

If sites do not meet the criteria of eligibility for the National Register after consultation with the appropriate parties, Section 106 of NHPA stipulates no further consideration of cultural resources is necessary and the undertaking may proceed. Section 106 requires that if a site meets any of these criteria, a permitting or managing agency must determine the effect of the proposed action on the site. One of the following three outcomes is possible:

- No historic properties affected – the agency has determined that either there are no historic properties present or there are historic properties present but the undertaking will have no effect upon them. The agency will notify all consulting parties and make the documentation available for public inspection prior to approving the undertaking.

- Historic properties affected – the agency finds that there are historic properties that may be affected by the undertaking or the SHPO/THPO or the ACHP objects to the agency's findings. The agency then will notify all consulting parties, invite their views on the effects and assess adverse effects, if any.

- Adverse effect – the agency determines that the effect on eligible cultural resources will be adverse. When an undertaking has been determined to have an adverse effect on a property eligible for listing to the NRHP, the agency is directed to consult with the SHPO/THPO and other consulting parties to develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties. Mitigation of a significant cultural resource entails a range of options including project redesign and avoidance, documentation (photography and archival research), and restoration and data recovery (through archaeological excavation). Mitigation options are selected on a case-by-case basis and are tailored to the distinct values of the property and the planning options available within the project design. Once the agency (MDT), the THPO, and, in this case, the CSKT agree on mitigation measures for eligible properties affected by the federal undertaking and the conditions or stipulations have been met, and a Memorandum of Agreement has been approved by FHWA, THPO, MDT, and ACHP, then the project may proceed.

4.14.3 Background and Context

The Flathead Indian Reservation is located in the Rocky Mountain region, and is characterized with diverse landforms – low, wide valleys, forested hills, rocky buttes, high mountains peaked by glaciers, alpine tundra, semi-arid sagebrush/grasslands, and dozens of rivers, streams, lakes, and wetlands. This natural setting has supported human occupation since the last glacial retreat. Archaeological evidence and Native American stories suggest that Native Americans have inhabited the region for 12,000 years. Today three main Tribal groups reside on the Flathead Indian Reservation: the Bitterroot Salish, the Kootenai, and the Upper Pend d'Oreille.

4.14.4 Cultural and Historic Resources

The geologic features and animals, fish, and birds in the project area are considered part of the ethnographic cultural resources in the project area. Geologic resources are addressed in *Section 4.19 Geology and Soils* and *Section 5.19 Geology and Soils*, and biological resources are addressed in *Section 4.12 Fish and Wildlife* and *Section 5.12 Fish and Wildlife*. The following discussion focuses primarily on cultural resources that may be in physical form, such as archaeological sites.

Affected Ethnographic Cultural Resources

Recorded Ethnographic Cultural Properties

A distinction exists between properties that have been formally recorded and subjected to the Section 106 review process, and those that are of traditional cultural or spiritual significance to the Tribes. While both vernacular and ethnographic cultural resources are protected under preservation laws, vernacular resources are more frequently documented and recorded on the National Register. Information regarding ethnographic cultural resources is largely confidential, thus these properties are not typically recorded, assigned numbers, and entered into Montana statewide cultural resource site files. To date, no ethnographic cultural properties in the project area have been recorded as eligible for the NRHP. As previously described, CSKT has not yet completed a full cultural resource inventory of the project area, nor has an independent field or archaeological survey occurred. In order to avoid impacts to these culturally sensitive sites, the CSKT Tribal Preservation Office proposes to work directly with project consultants during final project design.

Ethnographic Landscape Systems in the Project Area

Ethnographic cultural resources are not considered by the Salish, Kootenai, or Pend d'Oreille tribes as isolated features, but rather, are contained within the larger cultural landscape. These resources do not fall within the definition of cultural resources that may be eligible for the NRHP. For this reason, they are not discussed further in this section.

Affected Vernacular Cultural Resources

Types of Vernacular Cultural Resources

Five major types of vernacular cultural resources remain from the early days of the homesteader/settler immigration into the project area. These cultural resources are unique to the area and are significant because of their age and their link to trade, agriculture, development, and homesteading on the Flathead Indian Reservation.

Military Sites

The Hudson Bay Company in 1845 established a trading post near Post Creek, east of the present US 93. The fort included 18 buildings, one of which is still standing. When Fort Connah was closed in 1871, it was the last fur trading post in Montana (CSKT, TPO 2000).

Irrigation Canal System

The major periods of construction for the irrigation canal system on the Flathead Indian Reservation were 1907 to 1912 when surveying was done and the first canals were dug, and 1927 to 1939 when the Flathead Agency Irrigation District was formed and the reservoirs were constructed. The actual components of the irrigation system include the earthen dams that form the reservoirs, pumping plants, feeder canals, distribution canals, laterals, and floodgates. The steady development of the Flathead Indian Reservation in the first half of the 20th century is a direct result of the construction of the irrigation project (McAlear and Bergman 1962).

Historic Homesteads

With allotment of the “surplus” lands on the Flathead Indian Reservation to white settlers, the landscape of the project area changed to one of agricultural fields dotted with homesteads. The first homes built by white settlers were primitive wood shacks that were quickly constructed on newly claimed land. The sturdier homes that have remained to the present day had wood floors and as many as two rooms.

Agricultural Lands

Many of the area farms, fields, and pastures retain the same acreage and boundaries as the original allotment-sized parcels. These farmlands retain a strong spatial organization: structures are sited on high points of the terrain, the fields or pastures are typically bounded by wooden or barbed-wire fence lines, a stream tributary or irrigation canal usually bisects the property, and planted trees or ornamental shrubs often define the immediate homestead site.

Stagecoach Route

There have been one or more trails leading from Ravalli, Montana up through the Mission Valley throughout prehistory. The Jocko Trail was a significant path that ran north-south, following in the general location of present day US 93, skirting the areas of the National Bison Range and Ninepipe National Wildlife Refuge properties to the east. It was an Indian trail, and later an exploration route for early white traders and explorers. The foot trail used by Indians became a horse trail, then a wagon trail used for a passenger and mail stagecoach, and finally a route that US 93 roughly followed when it was constructed in the early 1930s (CSKT, TPO 2000).

Most of the stagecoach road cannot be seen today, having been buried by the 1930s construction of US 93 or plowed under for agriculture use. However, portions of the old stagecoach road are visible through the Ninepipe Area. The dirt route follows the southwest edge of the Ninepipe Reservoir before crossing US 93, and continues in a northerly direction through USFWS wildlife management areas.

Recorded Vernacular Cultural Properties

One site in the US 93 Ninepipe/Ronan project corridor is listed on the National Register: Fort Connah (24LA0057). In addition, three other sites are eligible for listing: the Anderson Farmstead (24LA0161), the stagecoach route (not recorded), and the Flathead Agency Irrigation Project (24LA91). Sites that are listed or eligible for listing on the NRHP are located in the rural portion of the corridor and are presented in Table 4.14-1 and shown on Figure 4.14-1.

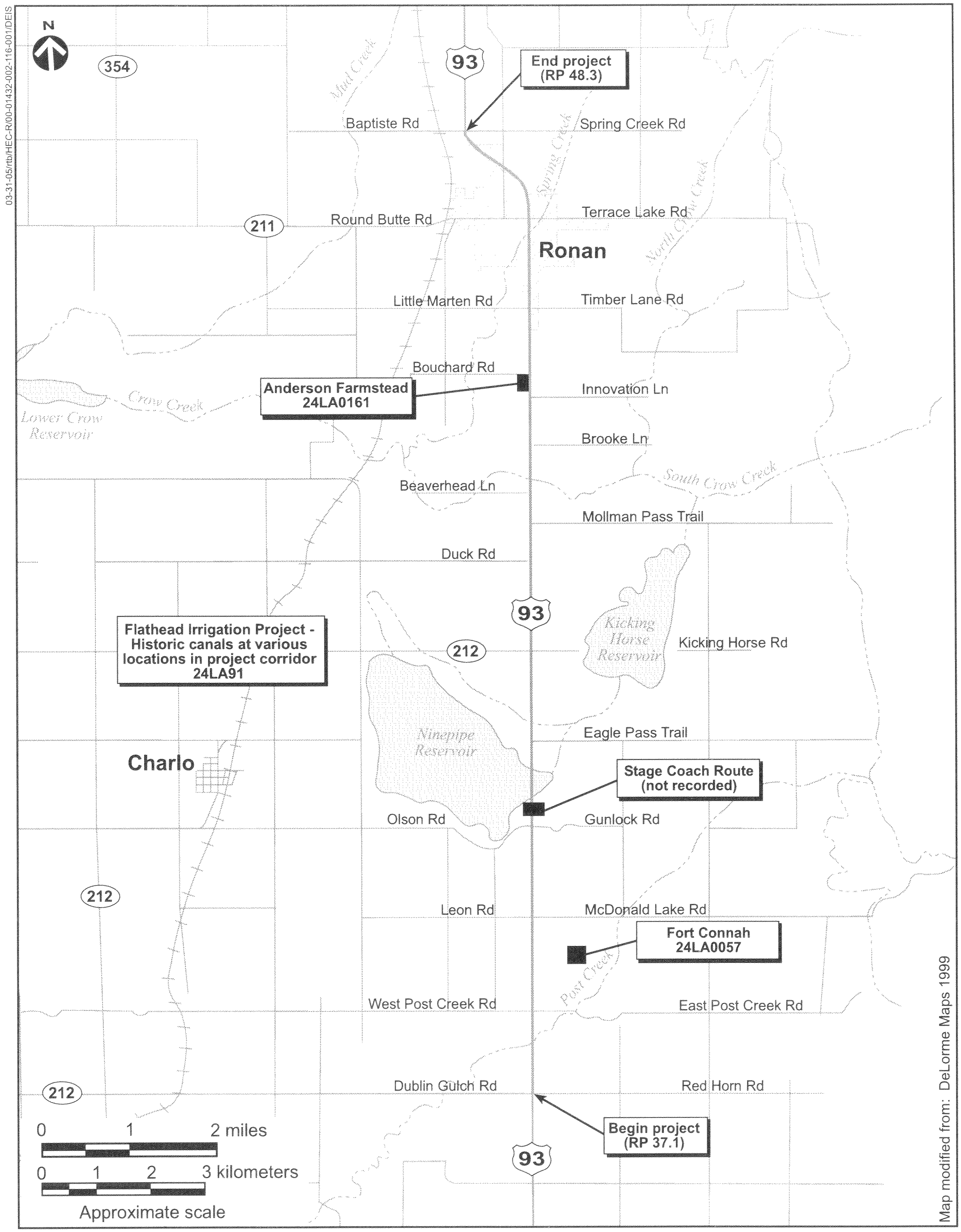

Figure 4.14-1. Locations of cultural properties listed or eligible for listing on the National Register of Historic Places in the US 93 Ninepipe/Ronan improvement project area.

Table 4.14-1. Cultural resources in the US 93 Ninepipe/Ronan improvement project area.

Site Number	Location (approximate)	Type of Site	Site Name	Date Established	Ownership	Examiner	Listing Status [a]
No Record	Vicinity of Ninepipe Reservoir	Early transportation corridor	Stagecoach Route	1889	USFWS	J&J	Eligible for the NRHP
24LA0057	665 meters (2,100 feet) east of US 93 at RP 38.6	Military site	Fort Connah	1845	Private	M&B	Listed on the NRHP
24LA91	Throughout the project area	Historic irrigation	Flathead Irrigation Project	1900s	BIA	HRA	Eligible for the NRHP per Memorandum of Agreement NH-F 5-1(9)6F
24LA0161	RP 46.5	Agricultural	Anderson Farmstead	1925	Private	HRA	Eligible for the NRHP

[a] Listing status refers to listed, eligible for listing, not listed, status unresolved for the NRHP.
Sources:
J&J – Jones and Jones 2004.
M&B – McAlear and Bergman 1962.
HRA – Historical Research Associates 1993.

The US 93 Evaro to Polson FEIS also identified three sites that are entered in the Montana statewide cultural resource site files as potentially eligible for the NRHP: Jenkins/Rungborg farmstead (24LA0159), Woods Agricultural complex (24LA0158) and Weber farmstead (24LA0156). The CSKT TPO provided recent documentation that these sites are not eligible for listing on the NRHP; therefore, these sites are not further discussed in this document.

Cultural Properties Listed on the National Register

Fort Connah (24LA0057)—One property located within the project area, the Fort Connah site, is listed on the NRHP. The Fort Connah cultural site (24LA0057) contains the oldest structure listed on the Montana Historic Register. This building is located in an open field approximately 665 meters (2,100 feet) east of US 93. A dirt access road leads from a pull-off area on the east side of US 93 to the structure.

Cultural Properties Eligible for Listing on the NRHP

Three properties in the project area have been determined to retain integrity and significance as eligible historic properties for National Register listing.

Anderson Farmstead – Barn (24LA161)—The Anderson farmstead (24LA161) is situated immediately west of US 93 and 1.6 kilometers (1 mile) south of Ronan. The Anderson property consists of a house, a garage, a shed, and two barns. The buildings are all in close proximity to one another, and are linked by an asphalt driveway and turn-around. Cultivated grasses, flowers, and a garden surround the house. The site is protected from the southward expansion of Ronan by a pasture buffer. The barn has been determined to be the only eligible component of this property, under criterion C.

Flathead Irrigation Project (24LA91)—The Flathead Irrigation Project (24LA 91) is an extensive system of irrigation canals, structures, and features that crisscross the Flathead Indian Reservation. The system is operated by the FAID and BIA. Less than 3 percent of the system is contained within the project area. US 93 crosses or travels parallel to five primary canals in the system and several additional lateral canals connecting the primary canals to an irrigator's lands. This property has been determined eligible for listing per Memorandum of Agreement NH-F-5-1(9)6F.

Stagecoach Route—The historic stagecoach route roughly followed the US 93 corridor from Ravalli to Polson. As previously discussed, the route most likely followed an early Indian trail through the Mission Valley. The dirt route follows the southwest edge of the Ninepipe Reservoir before crossing US 93, and continues in a northeast direction through USFWS wildlife management lands. Portions of the old stagecoach road are still visible in the Ninepipe Area. Archaeological remains (nails, wood planks) of a wood bridge are visible at a canal crossing along the former stage route east of US 93.

The stagecoach route is mentioned in the *Cultural Resource Inventory of the Ronan-South Project Corridor* (HRA 1993) in reference to site LA0062 (a wood truss bridge on US 93 at Ninepipe Reservoir, which is not eligible for listing). However, the stagecoach route itself is not recorded as a cultural property. This property has been determined eligible for listing per a programmatic agreement between MDT and SHPO.

4.15 Parks and Recreation

4.15.1 Analysis Methods and Assumptions

Recreation activity in the project area falls into two general categories. There is developed recreation, which consists of organized sports and requires fairly developed facilities. Examples of developed recreation and facilities in the project area include activities such as baseball, softball, basketball, football, soccer, golf, tennis, and the associated fields, courts and courses for these recreation activities. Smaller areas support these recreation activities. The other general category of recreation activity is dispersed recreation, which consists of outdoor, nature-based sports that require less developed to undeveloped facilities. Typically, dispersed recreation areas are larger in area, managed for high wildlife habitat value and have little, if any developed facilities. Examples of dispersed recreation and facilities in the project area include activities such as wildlife watching, birding, hiking, hunting, fishing, camping, bicycling, and the associated areas managed to support these activities.

Impacts to recreation were assessed in two ways: 1) quantifying direct impacts to sites designated for recreational use such as developed recreation resources, wildlife management areas, and CSKT wildlife management lands; and 2) impacts to the natural environment were used as indicators for assessing indirect impacts to the quality of the dispersed recreation experience. In contrast to developed recreation resources, the natural systems that support dispersed recreation activities are present throughout the broader landscape. Thus impacts to natural systems affect the quality of the dispersed recreation experience. There is a perceptible correlation between the quality of the dispersed recreation experience and the quality of nature. People pursue a higher quality dispersed recreation experience by seeking out “pristine” natural areas and habitat. This phenomenon supports the method of using impacts to habitat and wildlife throughout the study area as an indicator of impacts to the quality of the dispersed recreation experience.

4.15.2 Regulations and Standards

Section 4(f)

Requirements to consider the impacts of transportation projects on recreational (and historical resources) are provided in Section 4(f) of the 1966 U.S. Department of Transportation Act (Title 23 of the Code of Federal Regulations [23 CFR 771.135]). Resources that qualify for protection under Section 4(f) include significant, publicly owned public parks and recreation areas and significant, publicly owned wildlife and waterfowl refuge areas (as well as historic properties on or eligible for the NRHP). Section 4(f) prohibits the U.S. Department of Transportation from approving the *use* of land from a 4(f) resource unless:

- There is no feasible or prudent alternative to the use of such land
- The proposed action includes all possible planning to minimize harm to the property resulting from such use.

Publicly owned public parks, recreation areas, and wildlife and waterfowl refuge areas are parks, recreation areas, and wildlife and waterfowl refuge areas that have been “officially designated as such or when federal, state, or local officials having jurisdiction over the land determine that one of its major purposes or functions is for park, recreation, or refuge purposes. Incidental, secondary, occasional, or dispersed recreational activities do not constitute a major purpose” (FHWA 1989b). Additional information on Section 4(f) resources is provided *Part 6 – Section 4(f) Evaluation.*

Section 6(f)

Recreation resources that are acquired or improved with Land and Water Conservation Fund monies are protected under Section 6(f) of the Land and Water Conservation Fund Act as stated in the FHWA Environmental Guidebook.

> “State and local governments often obtain grants through the Land and Water Conservation Fund Act to acquire or make improvements to parks and recreation areas. Section 6(f) of this Act prohibits the conversion of property acquired or developed with these grants to a non-recreational purpose without the approval of the U.S. Department of the Interior’s (U.S. DOI) National Park Service. Section 6(f) directs U.S. DOI to assure that replacement lands of equal value, location and usefulness are provided as conditions to such conversions. Consequently, where conversions of Section 6(f) lands are proposed for highway projects, replacement lands will be necessary. Regardless of the mitigation proposed, the Section 4(f) evaluation should document the National Park Service’s tentative position relative to Section 6(f) conversion.”

4.15.3 Recreation Opportunities

Many recreational activities identified by both residents and non-resident visitors to Montana are associated with outdoor resources, which include those listed in *Section 4.15.1 – Analysis Methods and Assumptions*. For example, of the Montana households with one or more participants that provided information for the study, 75 percent identified walking as the highest-ranking recreational activity (Table 4.15-1). Other activities identified by Montana residents include wildlife watching (52 percent), day hiking (37 percent), biking (35 percent), and picnicking (31 percent). Table 4.15-2 shows a similar preference for recreation activities by nonresident visitors to Montana. In addition to activities associated with outdoor and dispersed recreation resources, both of these study participant groups identified passive activities such as visiting museums and interpretive centers as well as recreational shopping among the most popular forms of recreation.

Table 4.15-1. Overall activity participation of Montana households.

Activity	Percentage of Households with One or More Participants	Rank [a]
Walking	75	1
Recreational Shopping	53	2
Wildlife Watching	52	3
Attending Sporting Events	47	4
Day Hiking	37	5
Biking	35	6
Attending Festivals	34	7
Swimming	32	8
Picnicking	31	9
Attending Performances	29	10
Participate in Sporting Events	29	11
Nature Photography	29	12
Visiting Museums	29	13
Visiting Interpretive Centers	28	14
Fishing (other than fly)	27	15
Gambling	24	16
Visiting Art Galleries	24	17
Motorcycling	22	18
Visiting Native American Sites	19	19
Hunting	18	20
Tent Camping	18	21
Golfing	16	22
Horseback Riding	15	23
Visiting Attractions	14	24
Fly Fishing	13	25
Motor Boating	13	26
Vehicle Camping	13	27
Backpacking	12	28
Non-Motor Boating	11	29
Sledding	11	30
ATV/Off-road Recreation	10	31
Downhill Skiing	10	32
Snowmobiling	7	33
Water Skiing	10	34
Cross Country Skiing	5	35
Ice Fishing	5	36
Snowboarding	4	37
Snowshoeing	2	38

Source: Institute for Tourism & Recreation Research. 2002.
ATV-All-terrain vehicle
[a] 1 = Most Participation, 38 = Least Participation

Table 4.15-2. Activities participated in by nonresident visitors while in Montana [a]

	All Year [b]		Winter		Spring		Summer		Fall	
	All [c]	Primary [d]	All	Primary	All	Primary	All	Primary	All	Primary
Picnicking	**23%**	7%	6%	4%	**11%**	7%	**29%**	7%	8%	4%
Camping (developed)	**19%**	9%	5%	4%	**15%**	**10%**	**23%**	**10%**	7%	3%
Camping (undeveloped)	8%	4%	2%	6%	6%	5%	9%	4%	**10%**	6%
Day Hiking	**27%**	**11%**	**12%**	5%	**14%**	8%	**33%**	**12%**	**16%**	9%
Golfing	5%	2%	2%	1%	3%	1%	7%	2%	1%	1%
Backpacking	3%	<1%	2%	1%	2%	>1%	4%	1%	1%	2%
Mountain Biking	2%	<1%	1%	–	>1%	>1%	3%	1%	3%	2%
Road/tour Biking	3%	1%	<1%	–	3%	1%	3%	1%	1%	<1%
Off Highway/ATV	2%	<1%	3%	2%	1%	1%	3%	1%	2%	<1%
Fishing	**14%**	6%	5%	3%	8%	6%	**16%**	6%	**13%**	5%
Motor boating	3%	<1%	–	–	1%	>1%	4%	1%	1%	<1%
Water-skiing	1%	<1%	–	–	1%	–	1%	<1%	<1%	–
Canoe/Kayaking	3%	<1%	–	–	1%	>1%	3%	1%	–	–
Sail/Windsurf	<1%	<1%	–	–	–	–	<1%	<1%	–	–
Rafting/Floating	5%	2%	–	–	1%	1%	7%	2%	2%	2%
Nature Study	**10%**	3%	6%	1%	3%	1%	12%	3%	2%	1%
Hunting	2%	<1%	<1%	–	1%	1%	1%	<1%	**17%**	**11%**
Wildlife watching	**30%**	**12%**	**17%**	9%	**12%**	6%	**36%**	**13%**	**22%**	**11%**
Sporting Event	3%	<1%	7%	3%	2%	1%	3%	1%	2%	2%
Gambling	8%	2%	**12%**	5%	5%	2%	8%	2%	5%	2%
Shopping	**37%**	**13%**	**41%**	**23%**	**27%**	**15%**	**39%**	**11%**	**34%**	**21%**
Snowmobiling	<1%	<1%	6%	3%	>1%	–	–	–	–	–
Downhill Skiing	1%	1%	**12%**	8%	1%	1%	–	–	–	–
Snowboarding	<1%	<1%	3%	2%	>1%	>1%	–	–	–	–
XC Skiing	<1%	<1%	3%	1%	1%	–	–	–	–	–
Snowshoeing	<1%	<1%	3%	2%	–	>1%	–	–	–	–
Ice Fishing	<1%	<1%	1%	–	–	1%	–	–	–	–
Visited sites										
Native American	**13%**	3%	6%	1%	**13%**	7%	**14%**	3%	3%	1%
Lewis & Clark	**13%**	3%	8%	1%	9%	4%	**15%**	3%	7%	4%
Other History	**23%**	8%	8%	5%	**22%**	**10%**	**26%**	8%	9%	5%
Museums	**17%**	4%	8%	3%	**13%**	7%	**20%**	4%	**10%**	3%
Festivals/Events	**10%**	3%	9%	4%	6%	3%	**11%**	3%	7%	5%

Source: Institute for Tourism & Recreation Research. 2002.
[a] Percentages may not add to 100% due to rounding.
[b] All numbers 10% or higher in each column have been highlighted.
[c] The percentage of visitors that listed the particular activity as one of the recreational activities engaged in while visiting Montana.
[d] The percentage of visitors that listed the particular activity as the primary activity they engaged in while in Montana.

4.15.4 Recreation Resources

Developed Recreation Resources

Developed recreation resources in and adjacent to the US 93 Ninepipe/Ronan project corridor include Ronan City Park and the recreation facilities for Ronan High School and Ronan Middle School. These recreation resources are all located within the City of Ronan. Ronan City Park primarily supports passive recreational activities (e.g., picnicking) and includes access from First Avenue SW. The recreation facilities at and adjacent to the high school and middle school include school ball fields plus four public ball fields, none of which directly have access from US 93 or First Avenue SW in the project corridor.

Dispersed Recreation Resources

Dispersed recreation resources adjacent to US 93 are primarily used for outdoor, nature-based recreation. These resources include:

- Ninepipe National Wildlife Refuge (managed by USFWS)
- Ninepipe Wildlife Management Area (owned by MFWP)
- Duck Haven Waterfowl Production Area (managed by USFWS)
- Kicking Horse Waterfowl Production Area (managed by USFWS)
- Ereaux Waterfowl Production Area (managed by USFWS)
- CSKT wildlife management lands (CSKT parcels 4-34, 4-72, and 4-85).

All of these resources have access from US 93 or from side roads intersecting US 93 (Figure 4.15-1).

The Ninepipe National Wildlife Refuge is a popular bird watching and nature photography site, it attracts tour groups for wetland tours, and schools use the refuge as an outdoor educational site. Interpretive walks, picnicking, auto touring, and fishing are also activities associated with the Ninepipe National Wildlife Refuge (Jones and Jones 2003).

While some of these activities are offered informally, the refuge also has several facilities that exist for recreation. Kiosks are located at a number of access points, both drive-in and walk-in, to inform visitors of recreational opportunities, closures, rules and regulations. A few of these offer interpretive materials for self-guided tours and activities, including a “seasonal” panel at a parking area on US 93. The refuge also has a short interpretive walk located on US 93 with interpretive panels and a picnic area with a fireplace, tables, and toilets. Hunting is not allowed on the refuge.

The Ninepipe Wildlife Management Area and the three waterfowl production areas are open to hunting, fishing, wildlife watching, and photography, and are managed for the conservation of waterfowl and upland game birds.

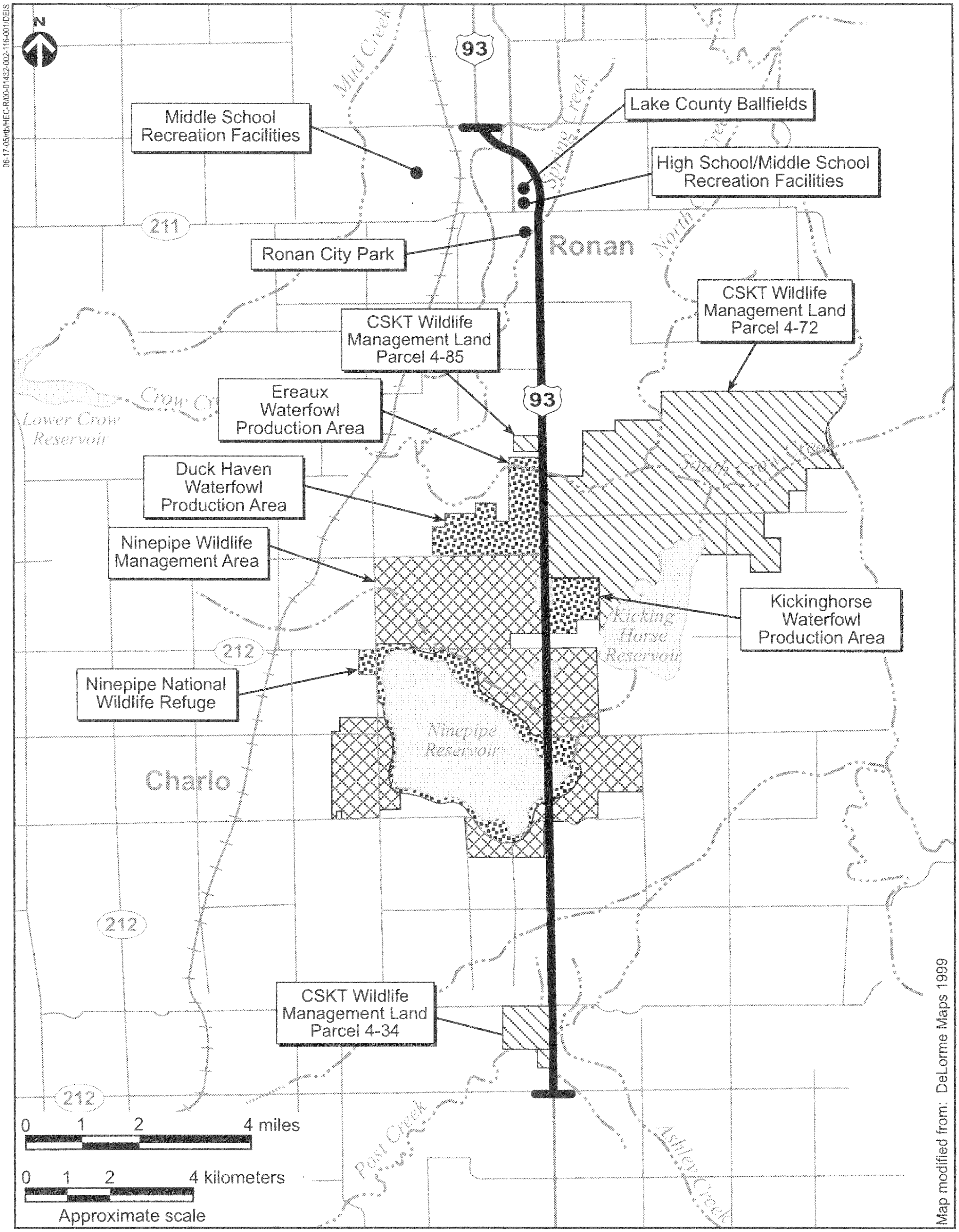

Figure 4.15-1. Locations of developed and dispersed recreation resources in the US 93 Ninepipe/ Ronan improvement project corridor.

The CSKT wildlife management lands along the project corridor are open for recreational uses, including hunting and fishing, by Tribal members or by non-Tribal members with appropriate permits. These parcels are not publicly-owned, and therefore, are not Section 4(f) properties. However, the project proponents agreed to treat these parcels similar to Section 4(f) properties to preserve them for wildlife and recreation use.

4.15.5 Section 4(f) Resources

The resources described in the preceding subsection (except for the CSKT parcels) fall under the definition of “publicly owned public parks, recreation areas, and wildlife and waterfowl refuge area”, and, therefore, use – as defined under Section 4(f) – of these resources as a result of the proposed improvements to US 93 is described in *Part 6 – Section 4(f) Evaluation*.

4.15.6 Section 6(f) Resources

Recreation resources that are acquired or improved with Land and Water Conservation Fund monies are protected under Section 6(f) of the Land and Water Conservation Fund Act. The following are Section 6(f) resources within the project area (Figure 4.15-2):

Ronan Park Acquisition

Traveling north on Old Highway 93, this site is on the left side of Old Highway 93 on the north edge of the City of Ronan between the rodeo grounds and a car dealership.

Ninepipe Reservoir Fishing Access Site

This site is located 9.6 kilometers (6 miles) south of Ronan across from the Ninepipes Lodge and Ninepipes Museum. (Boats not allowed.)

Ronan Tennis Courts

Traveling north on US 93, this site is accessed by turning left on to Round Butte Road and then turn right on Third Avenue NW. The tennis courts are next to the school.

Ronan Park and Softball Fields

This site is accessed by turning left on Round Butte Road from northbound US 93. From Round Butte Road, the ball fields are 0.8 kilometers (0.5 miles) west of the City of Ronan on Thirteenth Avenue SW.

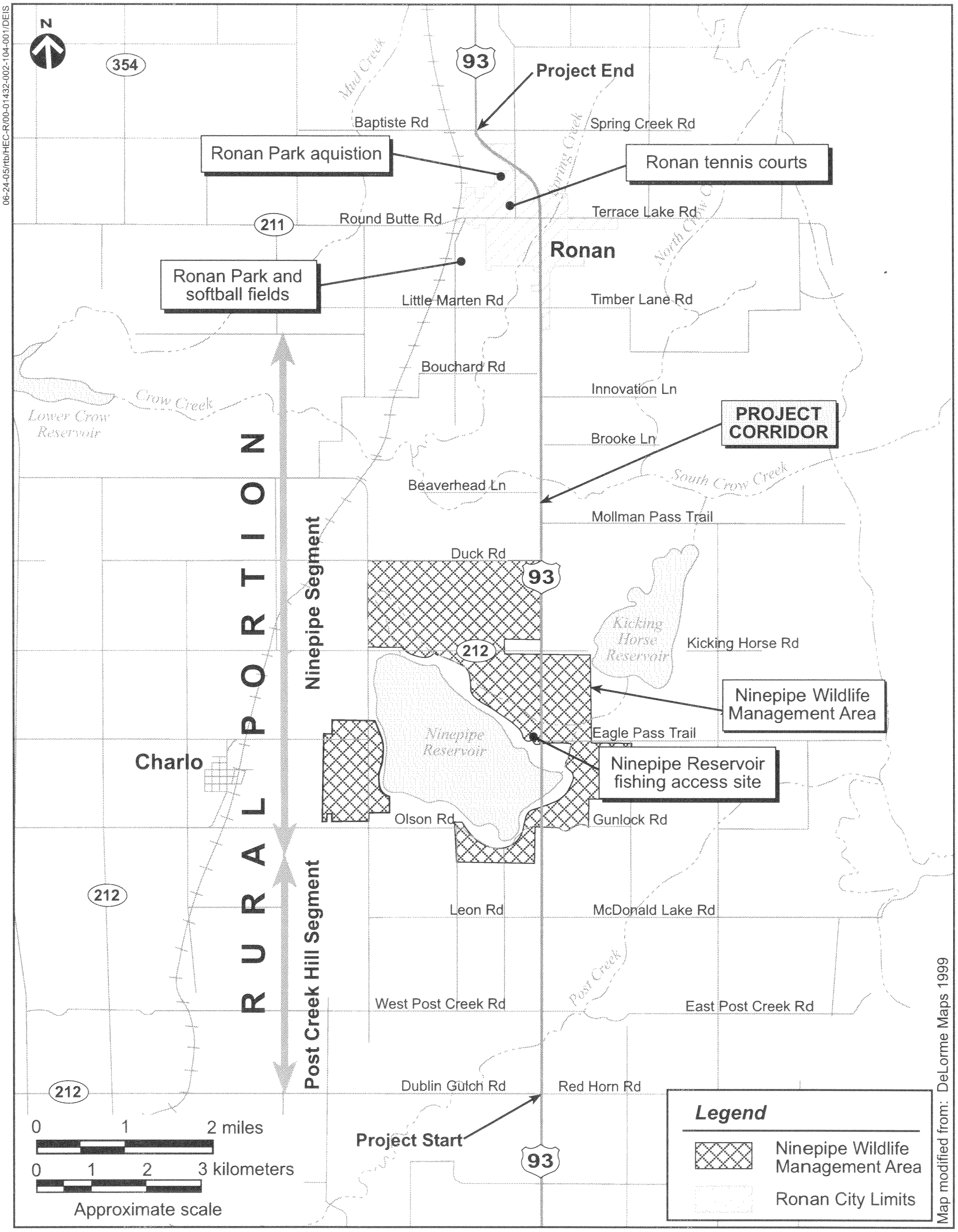

Figure 4.15-2. Section 6(f) resources within the US 93 Ninepipe/Ronan improvement project area.

Ninepipe Wildlife Management Area

This site lies on both sides of US 93 and MT 212, surrounding most of the Ninepipe National Wildlife Refuge. The Ninepipe Wildlife Management Area is crossed by several county roads and signed parking areas are located along many of these roads.

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4.16 Hazardous Materials

4.16.1 Analysis Methods and Assumptions

Facilities or properties that have released hazardous materials or waste to the environment, or that manage hazardous materials or waste in substantial quantities, are required to report these activities to both federal and state regulatory agencies. The first step in evaluating a potential for hazardous materials impacts involves reviewing current databases maintained by these agencies. Identified sites have been evaluated and classified according to whether (1) chemical releases to the environment have been identified (referred to as a "documented release"), or (2) hazardous materials have been managed, with no release identified (referred to as a "potential release"). Regulatory files were then reviewed and compiled for each site having a reported environmental release to determine the magnitude of impact on the environment, the potential to affect project construction, and the potential to affect public health and safety.

Historical information was reviewed for the project area to identify activities that may have impacts on soil and ground water. Sources reviewed included records of previous environmental site investigations. Historical documentation for the project area was found from the following standard sources:

- Sanborn Fire Insurance maps
- Historic aerial photographs
- City directories.

A site reconnaissance and limited interviews with individuals knowledgeable about the area provided verification of property configurations and firsthand knowledge of site settings, including the surrounding environs.

4.16.2 Regulations and Standards

Hazardous materials may be classified in different categories based on the laws and regulations that define their characteristics and use. These classifications include the following:

- Hazardous waste
- Hazardous substances
- Toxic substances.

The U.S. EPA and MDEQ maintain databases to track sites with potential and documented releases of chemicals to the environment. These agencies also monitor facilities that manage hazardous materials as part of their operations. The following paragraphs provide a brief summary of laws and regulations enforced by these agencies.

The federal Resource Conservation and Recovery Act (RCRA) defines what is meant by hazardous waste. In Montana, the MDEQ has been authorized by the U.S. EPA to implement most of the RCRA program. Authorization was based on state hazardous waste regulations that are consistent with and at least as stringent as the federal requirements. The U.S. EPA tracks hazardous waste management at individual facilities throughout the state based on notification requirements and records. These requirements and records define the magnitude of waste generated (e.g., small or large quantity), define the type of handling performed (e.g., treatment, storage, or disposal), and they identify whether a release to the environment has occurred. The MDEQ tracks facilities based on required registration of underground storage tanks; it also maintains an inventory of solid waste facilities and landfill sites.

Nationally, the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), also known as Superfund, defines hazardous substances. The MDEQ operates a parallel program in Montana under the Comprehensive Environmental Cleanup and Responsibility Act (CECRA). Both programs are designed and administered to provide appropriate responses to the release of hazardous substances to the environment. The CECRA also addresses releases of petroleum products not covered under federal statutes. The U.S. EPA tracks sites based on reported potential or actual releases to the environment, emergency response notifications, and cleanup progress at major release sites. The MDEQ tracks the same types of sites and also tracks petroleum releases from underground storage tanks.

Toxic substances are a subset of hazardous substances also regulated by the federal Toxic Substances Control Act (TSCA). A toxic substance is a chemical or mixture that may present an unreasonable risk of injury to human health or the environment. The TSCA was adopted so that all new chemical substances and existing chemicals put to new uses, other than as pesticides, could be evaluated for health and environmental effects. Additional controls governing disposal, beyond the CECRA and the RCRA, have been specifically applied to polychlorinated biphenyls (PCBs). Toxic Substances Control Act sites are tracked by the U.S. EPA.

4.16.3 Site Categories

Hazardous materials sites in the project area fall into two categories based on whether a release to the environment has been documented or the site is considered a potential threat.

Documented Release Sites

Documented releases of hazardous materials to the environment identified in regulatory agency site files directly affect soil and/or groundwater. Releases to soil generally are limited in lateral extent and consequently can result in impacts when found on or adjacent to a property associated with the proposed action. Releases to ground water tend to extend farther from the area of origin and can potentially result in impacts on a property within the construction limits for the proposed action when the source is located beyond the construction limits.

Potential Release Sites

A potential for release is based on the site activity registered with regulatory agencies, the development of site activities evident from historical documentation (e.g., a foundry site that became a service station and then was developed for an office building), or the current activity evident from visual observation (e.g., junk yard). Potential release sites have had no reported release of hazardous substances. Homes within the project right-of-way could include heating oil tanks, asbestos, or lead-based paints.

4.16.4 Documented and Potential Hazardous Materials Sites

Documented and potential hazardous materials sites along the project corridor are summarized in Table 4.16-1 and in *Hazardous Materials Corridor Investigation: US 93 Ninepipe/Ronan Improvement Project* (Herrera 2004). For documented release sites, the extent of contamination was interpreted as a result of past characterization efforts. Reported releases to soil at designated sites also may have had an impact on ground water, though this may not have been investigated and reported.

Potential release sites were identified based on the following categories:

- Reported current activities, such as the generation of hazardous waste
- Reported current features, such as registered underground storage tanks
- Recorded historical activities, such as the operation of gas and oil facilities
- Recorded historical features, such as a mapped tank farm
- Visually identified activity or feature.

Sites with potential for releases have not been characterized and may or may not have soil and/or ground water contamination. Potential release sites have been identified within approximately 150 meters (500 feet) of the corridor right-of-way.

Table 4.16-1. Potential and documented hazardous materials sites in the rural and urban portions of the US 93 Ninepipe/Ronan project corridor.

Reference Post	Parcel Number	Site Name and MDEQ Facility ID (if available)[a]	Address	Type of Site[b]	Location on Alignment	Site Condition
Rural Portion, Post Creek Hill Segment – Potential Release Sites						
37.1	4-22	Abandoned gas station/Coffman, Bill and Delores (formerly known as the Post Creek Store)	SE corner US 93 and Red Horn Road	UST/Recon	Adjacent - east side US 93	No database evidence of a contaminant release exists. Tanks removed according to previous owner.
37.1	4-24	44 Store Bar/Café	NE corner US 93 and Red Horn Road	Recon	Adjacent - east side US 93	No visual evidence of a contaminant release exists.
37.1	4-23	Wadsworth Manufacturing (a.k.a AIREFCO Inc.)	NW corner US 93 and Red Horn Road	Recon	Adjacent - west side US 93	No visual evidence of a contaminant release exists.
37.3	4-32	Ruff and Dabs Antiques and Second Hand Items	US 93	Recon	Adjacent - west side US 93	No visual evidence of a contaminant release exists.
37.3	4-29	Hunt's Timbers	East side US 93, south of Post Creek Road	Recon	Adjacent - east side US 93	No visual evidence of a contaminant release exists.
37.5	4-35	Logcrafters	East side US 93	Recon	Adjacent - east side US 93	No visual evidence of a contaminant release exists.
38.1	4-41	All West Drilling Inc.	38543 US 93 (north of Post Creek Road)	Recon	Adjacent - west side US 93	No visual evidence of a contaminant release exists.
Rural Portion, Ninepipe Segment – Potential Release Sites						
42.1	4-64	MT Department of Transportation (Ronan Site)	RP 42.0 US 93	UST	Adjacent - east side US 93	No database evidence of a contaminant release exists.
42.1	4-66	Countryside Café and Truckstop/Wartick, Gerald	42154 Hwy. 93/NE corner US 93 and Kicking Horse Road	UST	Adjacent - east side US 93	No database evidence of a contaminant release exists.
42.3	4-67	Long's Toy Storage and Country Scrapbooks/ former Long's Livestock and Trucking Company	West side US 93, second parcel north of MT 212	UST	Adjacent - west side US 93	No database evidence of a contaminant release exists.
43.3	4-75	Farm/Ranch	West side US 93	Recon	Adjacent - west side US 93	No visual evidence of a contaminant release exists.
44.2	4-81	Bev's Bloomers	44072 US 93	Recon	Adjacent - east side US 93	No visual evidence of a contaminant release exists.
45.0	4-92	Jore Manufacturing	45000 Hwy. 93 S.	RCRA [c] -SQG, FINDS	Adjacent - east side US 93	No database evidence of a contaminant release exists.
45.4	4-95	Western Ag Sales and Service	North of intersection of US 93 and Bouchard Road	Historic [d]	Adjacent - east side US 93	No visual evidence of a contaminant release exists. Potential pesticide and fertilizer release to soil.
45.9	4-104	Browning Ferris Industries/ former STEDJE Brothers/ former High Peak Tractor	1124 Hwy. 93 S.	UST	Adjacent - east side US 93	No database evidence of a contaminant release exists.

Table 4.16-1 (continued). Potential and documented hazardous materials sites in the rural and urban portions of the US 93 Ninepipe/Ronan project corridor.

Reference Post	Parcel Number	Site Name and MDEQ Facility ID (if available)[a]	Address	Type of Site[b]	Location on Alignment	Site Condition
Urban Portion – Potential Release Sites						
46.0	4-107	Don Aadsen Ford Inc./formerly Joe's Conoco Service/formerly Pete's Conoco MDEQ Facility ID 24-07355	US 93	UST	Adjacent - east side US 93	No database evidence of a contaminant release exists.
46.0	4-109	Timberlane Auto	41 Timberlane Road	FINDS	Adjacent – east side US 93	No database evidence of a contaminant release exists.
46.0	East of 4-109	Collision Service	90 Timberlane Road	FINDS	Not adjacent - east side	No database evidence of a contaminant release exists.
46.4	4-117	Suds N Duds	East side US 93 (south of Harvest Foods)	Recon	Adjacent - east side US 93	No visual evidence of a contaminant release exists.
46.4	4-118	Harvest Foods/ former New Holland Ford Dealership	East side US 93 (south of Georges Conoco)	Historic	Adjacent - east side US 93	No visual evidence of a contaminant release exists.
46.5	4-121	2nd Hand Store	SE corner US 93 and Garfield	AST/Recon	Adjacent - east side US 93	No visual evidence of a contaminant release exists.
46.6	4-123	93 Discount Store	714 US 93	AST/Recon	Adjacent - east side US 93	No visual evidence of a contaminant release exists.
46.6	4-124	Ace Hardware	705 Hwy. 93 S.	UST	Adjacent - west side US 93	No database evidence of a contaminant release exists.
1st Ave SW	West of 4-193	First Baptist Church – Abandoned	207 Eisenhower St. SW	UST/AST	Not adjacent - west side US 93	No database evidence of a contaminant release exists.
1st Ave SW	4-193	Residence	SW corner 1st Ave. and Eisenhower St.	AST/Recon	Adjacent to Alt. 3, 4, and 5 alignments. Not adjacent to Alt. 1 and 2 alignments	Stained soil visible around AST during site recon.
46.7	4-128	Lynn's Drive In/former Hoppy's Truck Stop/Thunderbird	NW corner US 93 and Eisenhower	Historic	Adjacent - west side US 93	No visual evidence of a contaminant release exists.
1st Ave SW	4-199	Residence	523 1st St.	AST/Recon	Adjacent on west side of Ronan Couplet	No visual evidence of a contaminant release exists.
46.7	4-131	Exxon Town Pump Inc. (Ronan) MDEQ Facility ID 24-08718	1213 29th St.	UST	Adjacent - west side US 93	No database or visual evidence of a contaminant release exists. Four active UST onsite.
46.8	4-144	Les Schwab Tire Center	SE corner US 93 and Buchanan	Recon	Adjacent - east side US 93	No visual evidence of a contaminant release exists.
1st Ave SW	Approximately one block west of 4-223	Moody, Ruth S. Trust	316 Buchanan SW	UST	Not adjacent - west side US 93	No database evidence of a contaminant release exists.

Table 4.16-1 (continued). Potential and documented hazardous materials sites in the rural and urban portions of the US 93 Ninepipe/Ronan project corridor.

Reference Post	Parcel Number	Site Name and MDEQ Facility ID (if available)[a]	Address	Type of Site[b]	Location on Alignment	Site Condition
Urban Portion – Potential Release Sites (continued)						
46.9	4-146	Parts Plus	NE corner US 93 and Buchanan	Recon	Adjacent - east side US 93	No visual evidence of a contaminant release exists.
46.97	4-147	Napa Auto Parts/Former Jensen Oil Company and Conoco Station	NE corner US 93 and Cleveland St.	UST/Historic	Adjacent - east side US 93	No database or visual evidence of a contaminant release exists.
46.9	4-148	Ronan State Bank/former Arnies Texaco	123 Hwy. 93 S.	UST	Adjacent -west side US 93	No database evidence of a contaminant release exists. Two USTs were removed. Two USTs may exist onsite, but owners are uncertain.
1st Ave SW	Approximately one block west of 4-238	Ronan Laundry and Dry Cleaning/formerly Norge Laundry and Dry Cleaning	217 Main St. SW	RCRA-SQG, FINDS	Not adjacent - west side US 93	No database or visual evidence of a contaminant release exists. Use of perchloroethylene (PCE) onsite. No documented release.
1st Ave SW	Approximately one block west of 4-238	Liquor Store	127 Main St. (southeast corner of Main St. and 2nd St.)	AST	Not adjacent - west side US 93	No visual evidence of a contaminant release exists.
1st Ave SW	Approximately one block west of 4-238	Ronan Pioneer Press	123 Main SW	Historic	Not adjacent - west side US 93	No visual evidence of a contaminant release exists.
1st Ave SW	4-238	Hodges Radiator Repair/former Dailey Radiator and Welding	SW corner of 1st Ave. and Main St. SW	Historic	Adjacent to alignment of Alt 3, 4 and 5. Not adjacent to alignment of Alt. 1 and 2.	No visual evidence of a contaminant release exists.
1st Ave SW	Approximately one block west of 4-241	Husky Station	228 Main St. SW	UST	Not adjacent - west side US 93	No database evidence of a contaminant release exists. Seven USTs removed from site. No documented release.
1st Ave SW	4-241	Ronan Power Products	West of Lindburg Drug	Historic	Not adjacent - west side US 93	No visual evidence of a contaminant release exists.
47.0	West of 4-155 and east of 4-242	Gardner Apartments	116 Main St. SW	UST	Not adjacent - west side US 93	No database evidence of a contaminant release exists. One inactive UST onsite. No documented release.
47.0	4-155	Napa Ronan Auto Parts, Inc.	29 US 93	Recon	Adjacent- west side US 93	No visual evidence of a contaminant release exists.
47.0	4-154	Dupuis Smoke Shop	SE corner US 93 and Terrace Lake Road	Recon	Adjacent - east side US 93	No visual evidence of a contaminant release exists.
47.0	4-154	Storage facility	East of Dupuis Smoke Shop which is on the SE corner of US 93 and Terrace Lake Road	Recon	Not adjacent - east side US 93	No visual evidence of a contaminant release exists.
47.2	Approximately two blocks west of 4-157	Devor, Ruth Snyder	115 3rd Ave. NW	UST	Not adjacent - west side US 93	No database evidence of a contaminant release exists.

Table 4.16-1 (continued). Potential and documented hazardous materials sites in the rural and urban portions of the US 93 Ninepipe/Ronan project corridor.

Reference Post	Parcel Number	Site Name and MDEQ Facility ID (if available)[a]	Address	Type of Site[b]	Location on Alignment	Site Condition
Urban Portion – Potential Release Sites (continued)						
47.2	Approximately two blocks west of 4-157	Ronan High School	130 3rd Ave. NW	UST	Not adjacent - west side US 93	No database evidence of a contaminant release exists.
47.2	4-157 *Parcel includes several properties. Site boundaries are unclear.	East of Ronan Middle School	200 Round Butte Road	UST	Adjacent to alignment of Alt 3, 4 and 5. Not adjacent to alignment of Alt. 1 and 2.	No database evidence of a contaminant release exists.
47.2	4-157 *Parcel includes several properties. Site boundaries are unclear.	Mission Valley Power Maintenance Yard - Abandoned	200 block of Round Butte Road	Historical	Adjacent to alignment of Alt 3, 4 and 5. Not adjacent to alignment of Alt. 1 and 2.	No visual evidence of a contaminant release exists.
47.2	4-157 *Parcel includes several properties. Site boundaries are unclear.	School District Maintenance Yard – Abandoned MDEQ Facility ID 24-04824	200 block of Round Butte Road	Historical	Adjacent to alignment of Alt 3, 4 and 5. Not adjacent to alignment of Alt. 1 and 2.	No visual evidence of a contaminant release exists.
47.2	4-157 *Parcel includes several properties. Site boundaries are unclear.	Boys and Girls Club/former John's Fuel Farm MDEQ Facility ID 24-07437	308 Hwy. 93 S.	UST	Adjacent - west side US 93	No database evidence of a contaminant release exists.
47.5	5-3 *Parcel includes several properties. Site boundaries are unclear.	Novus Windshield Doctor	US 93 (just north of 703 US 93)	Recon	Adjacent - west side US 93	No visual evidence of a contaminant release exists. Several 55-gallon drums visible during recon.
47.5	5-3 *Parcel includes several properties. Site boundaries are unclear.	Total Home/former Ronan Auto Body Sales and Service	719 US 93	UST/Historical	Adjacent - west side US 93	No database or visual evidence of a contaminant release exists. Precise location of site is unclear.
47.6	Approximately 0.1 mile west of the Old US 93 alignment	Former Bulk Fuel Distributor	Approximately 0.1 mile west of the Old US 93 alignment	Historical/AST	Not adjacent - west side US 93	No visual evidence of a contaminant release exists.
47.9	5-9	Triple W Equipment	SW corner of US 93 and Old US 93	Recon	Adjacent - east side US 93	No visual evidence of a contaminant release exists.

Table 4.16-1 (continued). Potential and documented hazardous materials sites in the rural and urban portions of the US 93 Ninepipe/Ronan project corridor.

Reference Post	Parcel Number	Site Name and MDEQ Facility ID (if available)[a]	Address	Type of Site[b]	Location on Alignment	Site Condition
Urban Portion – Documented Release Sites						
48	5-13	Lake Seed Inc. (Glacier View Farm)	NE corner of US 93 and Spring Creek Road	UST	Adjacent - east side US 93	No database evidence of a contaminant release exists.
46.4	4-112 Cenex Limited	Cenex Supply and Marketing Bulk Plant MDEQ Facility ID 24-07909	1407 Hwy. 93 S. west side of highway	UST	Adjacent - west side US 93	Petroleum release to soil and ground water from events at site 4-113. Ground water flows southwest. USTs have been removed.
46.4	4-113 Cenex Limited	Cenex Farm and Home Supply	1408 Hwy. 93 S.	LUST/UST/ FINDS	Adjacent - east side US 93	Petroleum release to soil and ground water. Ground water flows southwest. Five active USTs onsite. .
46.4	4-114	Old Creamery Mall/former Consolidated Dairy of Ronan/former Scott Lynch Fencing	1317 Hwy. 93 S.	LUST/UST	Adjacent - west side US 93	Petroleum release to soil. Site was closed by DEQ in 1996.
46.5	4-119 and 4-179	Georges Conoco/BP MDEQ Facility ID 24-07532	1018 Hwy. 93 S.	LUST/UST; RCRA-SQG, FINDS	Adjacent - east side US 93	Petroleum release to soil and ground water. Ground water flows southwest. Monitoring is ongoing. Six active UST onsite.
1st Ave SW	4-181	Stephens, Maynard	130 Franklin St. SW	LUST/UST	Not adjacent - west side US 93	Petroleum release to soil.
46.8	4-140	Graham, Jimmy formerly Naffzinger, Dennis	111 Cleveland St.	LUST	Adjacent – east side US 93	Petroleum release to soil. Soil has been excavated.
1st Ave SW	Approximately one block west of 4-234	US Post Office	222 Adams St. SW	LUST/UST	Not adjacent on the west side of the Ronan Couplet	Petroleum release to soil. Soil has been excavated.
1st Ave SW	Approximately two blocks west of 4-238	Granley, Gary or Norma	207 Main St. SW	LUST	Not adjacent - west side US 93	Petroleum release to soil. Soil has been excavated. Site is under consideration for closure by DEQ.
1st Ave SW	Approximately two blocks west of 4-241	Mission Mountain Enterprises	300 Main St. SW	LUST/UST	Not adjacent - west side US 93	Release to soil of unknown type and amount of product in 1998. Twelve foot depth to ground water.
1st Ave SW	4-242	Lindburg Drug MDEQ Facility ID 24-11810	128 Main St. SW	LUST/UST	Adjacent to alignment of Alt 3, 4 and 5. Not adjacent to alignment of Alt. 1 and 2.	Petroleum release to soil. Soil has been excavated. Site is under consideration for closure by DEQ.
1st Ave SW	Approximately two blocks west of 4-244	City of Ronan MDEQ Facility ID 24-12053	Near intersection of 2nd Ave. SW and Main St.	LUST	Not adjacent - west side US 93	Petroleum release to soil. Soil has been excavated. Site is under consideration for closure by DEQ.
1st Ave SW	Approximately two blocks west of 4-244	Ronan Telephone Shop	316 Main St.	LUST	Not adjacent - west side US 93	Petroleum release to soil.
1st Ave SW	Approximately two blocks west of 4-244	City of Ronan/Ronan City Hall	109 2nd Ave. SW	LUST	Not adjacent - west side US 93	Petroleum release to soil. Soil has been excavated.

Table 4.16-1 (continued). Potential and documented hazardous materials sites in the rural and urban portions of the US 93 Ninepipe/Ronan project corridor.

Reference Post	Parcel Number	Site Name and MDEQ Facility ID (if available)[a]	Address	Type of Site[b]	Location on Alignment	Site Condition
Urban Portion – Documented Release Sites (continued)						
47	4-156 and 4-243	Conoco Service Station/former Arnie's Gas and Tire Center MDEQ Facility ID 24-05517	9 Hwy. 93 S.	RCRA-SQG, FINDS, LUST/UST	Adjacent - east side US 93	Petroleum release to soil. Soil cleanup monitoring is ongoing.
47.2	Approximately two blocks west of 4-157	Don Aadsen Ford MDEQ Facility ID 24-13662	5 3rd Ave. NW	LUST, RCRA-SQG, FINDS	Not adjacent - west side US 93	Petroleum release to soil and Spring Creek. Soil has been excavated.
47.2	4-157 *Parcel includes several properties. Site boundaries are unclear.	Dyno Mart/former Midnite Market #031/former J's Restaurant Convenience Store and Sinclair MDEQ Facility ID 24-05768	303 Hwy. 93 N.	LUST	Adjacent - west side US 93	Petroleum release to soil. Soil has been excavated.
47.5	5-3 *Parcel includes several properties. Site boundaries are unclear.	Ronan Auto Body Sales and Service, Inc./former Ronan Chrysler Dealership	703 US 93, additional buildings behind on 3rd St.	LUST/UST; RCRA-SQG, FINDS	Adjacent - west side US 93	Petroleum release to soil and ground water. Soil has been excavated.

[a] MDEQ Facility ID is from the Montana Department of Environmental Quality, Waste and Underground Tank Management Bureau, Underground Storage Tank - Leak Prevention Program

[b] Type of Site:
- AST – Aboveground Storage Tank
- FINDS – Facility Index System
- LUST – Leaking Underground Storage Tank
- RCRA – Resource Conservation and Recovery Act
- SQG – Small Quanity Generator
- UST – Underground Storage Tank
- Historical – identified by historic aerial photos and Sanborn Fire Insurance Maps
- Recon – identified during drive-through of the project corridor.

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4.17 Visual

4.17.1 Analysis Methods and Assumptions

This section was prepared in accordance with *Visual Impact Assessment for Highway Projects* (FHWA 1990). Analysis of visual resources considers the relationship of the highway with the surrounding visual environment. The aesthetic quality of a resource is determined by the visual character and visual quality of the landscape. Visual character is a descriptive inventory of visual environment, which consists of elements such as form (low hills or massive outcroppings), color (light gray rocks or dark brown soils), line (meandering stream or gently curving road) and texture (smooth water or craggy mountains). Visual character is also described by relationships such as dominance (looming factory), scale (tiny stream), diversity (varied development types) and continuity (abrupt transition from agriculture to commercial). Visual quality is a quantitative method for assessing how the visual environment is experienced. Indicators used to evaluate visual quality include vividness (the memorability of the view), intactness (the lack of eyesores), and unity (the level of organization and symmetry). When assessing roadway projects the visual quality is considered from the perspective of the road users with a view from the road (VFR) and the perspective of other occupants of the landscape with views of the road (VOR).

4.17.2 Regulations and Standards

The following federal regulations and standards apply to visual quality and aesthetics for federally funded highway projects.

Presidential Memorandum on Environmentally Beneficial Landscaping, FRL-5054-1 (1994) (60 FR 40837) directs federal agencies to lead the country toward more environmentally and economically beneficial landscape practices including:

- Use of regionally native plants
- Construction with minimal impact to habitat
- Reduced use of fertilizer, pesticides, and other chemicals
- Use of water-efficient and runoff-reduction practices
- Use of demonstration projects employing these practices.

The memorandum applies to all highway programs that use federal funds and directs the development of implementation guidance. The implementation guidance must be incorporated into agency landscape guidelines, procedures, and practices by February of 1996.

FHWA Scenic Enhancement Initiatives Memorandum, HRW-12 (1990) rescinds a 1977 memorandum permitting selective clearing of right-of-way vegetation to improve visibility of outdoor advertising structures. It encourages states to retain excess lands that could be used to restore, preserve or enhance the scenic beauty and quality of the highway environment, including scenic vistas, wetlands, and preservation of wildlife habitat.

The *Highway Beautification Act of 1965* (23 CFR 752) and all subsequent amendments establishes provisions and controls to protect the public investment, promote safety and recreation, and preserve natural beauty along federal and primary highway system roadsides including:

- Control of outdoor advertising signs
- Authorization for information centers at safety rest areas
- Control of junkyards.

It requires allocation of 3 percent of federal aid funds be apportioned to states for landscape and roadside development, and for acquisition of interest in and improvement of strips of land necessary for the restoration, preservation, and enhancement of scenic beauty adjacent to the highways.

4.17.3 Viewers

The viewers of the proposed changes in landscape character can be divided into two groups, the viewers from the road and the viewers of the road. This is based on the point of reference of the viewer and the characteristics of that point of reference.

Viewers from the Road

This group consists of local traffic, commuters, commercial traffic, and tourists. Views from the road are typically transitory with viewers' attentions shifting rapidly between views of the road itself, the immediate surroundings, and more distant views. For viewers from the road, the roadway is a prominent part of the visual landscape.

Viewers of the Road

This group consists of residents, businesses, travelers and communities. Residents are probably the most sensitive to landscape character changes caused by US 93. Changes such as increased traffic, road widening, construction activities, and the reduction or removal of spatial, landform or vegetative buffers can affect visual quality. Variables include the distance between the viewer and the highway, the angle of view, and how well the highway fits into the existing landscape. Generally, for an individual viewer, as the highway encroaches on personal space or becomes more prominent, with for example, a higher grade than the surrounding area, there is a negative impact on that viewer's view. The US 93 roadway itself is a relatively prominent visual element to viewers who by virtue of topography and location, have an elevated or head-on view (e.g., viewers south of Dublin Gulch Road/Red Horn Road who view US 93 climbing up Post Creek

Hill). The roadway is less prominent to viewers located to the side and at approximately the same elevation as the roadway. For these viewers, vehicles are the most visually prominent component of the roadway.

4.17.4 General Visual Character of the Landscape

The US 93 Ninepipe/Ronan project corridor and the surrounding area lie on the floor of the Mission Valley. The valley floor along and near the corridor is gently rolling and tall vegetation is limited. Because of these two characteristics, views from US 93 and views from locations in the vicinity of US 93 are typically unobscured and therefore regionally extensive. The Mission Mountains, along the east side of the valley, form the most visually prominent large-scale landscape feature viewed from the US 93 Ninepipe/Ronan project corridor and surrounding locations. The valley floor sweeps away from the viewer and abruptly terminates at the base of the Mission Mountains, whose dark green, forested slopes rise steeply to tall peaks forming a jagged line against the sky. Similar but less dramatic visual contrasts occur in views westward and southward toward the Salish Mountains. The valley floor is varied visually as described in the following sections. In general, human-made features in the landscape, including the existing US 93 roadway, are dominated by straight lines and similar geometric elements that contrast strongly with the typically curvilinear, irregular lines of natural landscape features. Colors of natural landscape features, and many human-made features as well, on the valley floor tend to be muted shades of brown, gray, blue, and green. The US 93 roadway, generally light in tone, contrasts strongly with these dominant landscape colors, increasing its prominence in the visual landscape. This tonal contrast is for the most part eliminated in winter when snow covers the valley floor. The movement of vehicles along US 93 adds a dynamic visual element that also contrasts with the typically static character of the surrounding visual landscape.

4.17.5 Visual Character of the US 93 Corridor

The US 93 Ninepipe/Ronan project corridor and its immediate surroundings have a distinct visual character and relatively high visual quality. The US 93 Evaro to Polson FEIS described the visual resources in the Mission Valley as “outstanding aesthetically, especially in the undeveloped agricultural and wildlife management areas”. Areas of sensitive aesthetic resources within the study area are: Post Creek, Post Creek Hill, the Ninepipe Area core area, Crow Creek, and downtown Ronan. The landscape units used in this section to describe the visual character of the project corridor are described in this section and shown on Figure 4.17-1.

Post Creek Fan

The Post Creek Fan is an alluvial fan extending westward from the Mission Mountains. Post Creek and some of its tributaries support riparian vegetation corridors, which are important visual elements of the Post Creek Fan within the project area. The landscape character of the

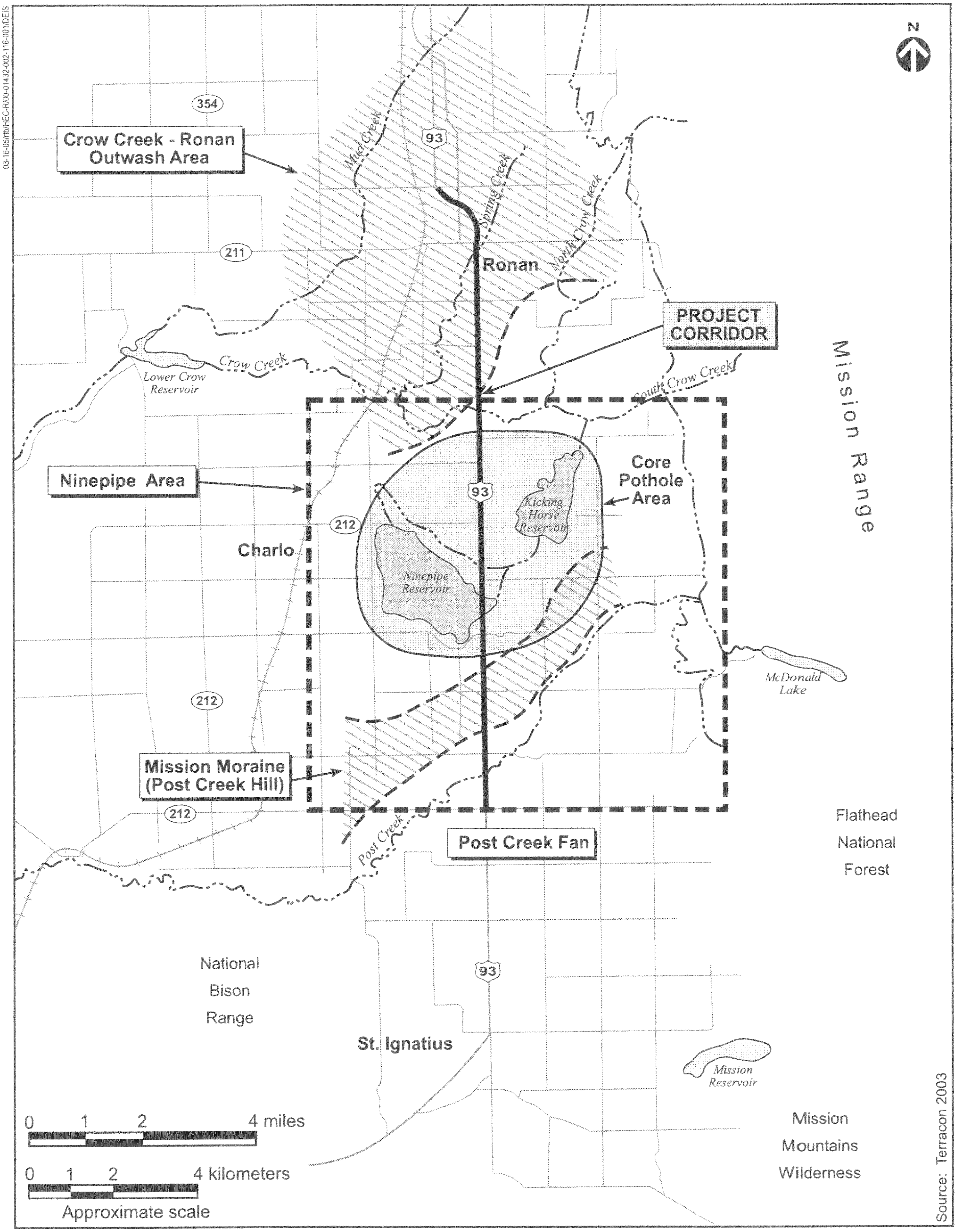

Figure 4.17-1. **Landscape units comprising the visual character of the US 93 Ninepipe/Ronan improvement project area.**

area is a combination of the natural and vernacular landscapes. From the northeast to the southwest, the sinuous lines of riparian vegetation follow the contours of the landforms, and contribute a natural element to the landscape character. Open agricultural fields, bounded by narrow, two-lane county farm roads laid out on a regular 1.6-kilometer (1-mile) grid, comprise the vernacular element of the landscape character.

Mission Moraine

The Mission Moraine has been identified as a lacustrine deposit of glacial Lake Missoula. This landform is referred to both locally and in this document as Post Creek Hill. The landscape character of Post Creek Hill has the same level of vernacular landscape character as the Post Creek Fan with a change in the natural character. The hill, and the rolling landform across the face of the hill, is the dominant natural elements of the landscape character. The undulation of the vernacular landscape grid across the natural landform highlights the complementary nature of these elements. The visibility of the hill from the south makes the existing US 93 (and the changes that would occur under the action alternatives) relatively apparent to viewers located to the south. The hill also provides a panoramic view for southbound travelers of the southern end of the Mission Valley, Post Creek, the town of Saint Ignatius, and the National Bison Range.

The Core Pothole Area in the Ninepipe Area

Compared to other landscape units in the US 93 Ninepipe/Ronan project corridor, a natural landscape character predominates in the core pothole area of the Ninepipe Area and vernacular visual elements are relatively subdued. The density of ponds in this area have reduced the vernacular character elements to a more irregular grid of county roads without the worked farm fields as an indicator of human presence and action on the land. The ground surface is permeated with ponds, which gives it the appearance of being less solid than the surrounding landscape. The visual character of the ponds with their ovoid forms and curvilinear edges is in distinct contrast with the straight lines of the highway. With the change in water bodies from linear to ovoid, there is a corresponding change in the appearance of riparian vegetation, which now occurs in clusters instead of linear ribbons, accentuating the highway’s visual contrast with its surroundings. The core wetland area is considered a visually sensitive resource because of its uniqueness and its vividness.

Crow Creek-Ronan Outwash Area

There is a change in landscape character at Crow Creek; the distinct natural character of the Ninepipe Area transitions to another series of drainages flowing from northeast to southwest across the landscape. This area is similar to the Post Creek Fan in that agriculture is the dominant land use overall. Crow Creek and Ronan Spring Creek are the two major natural elements in this area. Riparian corridors add foreground interest and occasionally frame distant views in this otherwise open landscape. Adjacent to the highway, the vernacular character is somewhat less intact due to the commercial and rural residential land use at the southern edge of

Ronan. Commercial development in the downtown core has shifted from Main Street to US 93, with minimal setbacks from the highway and a profusion of signage. Both north and south of the downtown core, commercial development has larger setbacks with large paved parking areas and billboard-sized signs located between the highway and businesses. There is a distinct difference between the visual character of downtown and the commercial areas to the north and south of downtown Ronan. At the north end of the downtown core, Ronan Spring Creek crosses under US 93 at Main Street, providing a well-defined natural element as open space through town.

4.18 Relocations

4.18.1 Analysis Methods and Assumptions

The following relocation information is based on the *Relocation Assistance Conceptual Study, US 93 Evaro to Polson EIS, SEIS Ronan/Ninepipe* (Skillings 2004c). The design plans for the proposed corridor alternatives and wildlife crossing structures were reviewed. In addition, the following documents were reviewed, the US 93 Evaro to Polson FEIS, the *Memorandum of Agreement-US 93 Evaro to Polson* (US 93 Corridor MOA) (MDT et al. 2000), the Re-evaluation of the US 93 Evaro to Polson FEIS (FHWA 2001a), and the Second Revised Record of Decision for the US 93 Evaro to Polson FEIS (FHWA 2001b).

Field surveys and parcel-by-parcel site inspections were made of all potentially impacted properties for each alternative. Information was requested from each business contacted including:

- The number of persons employed (full-time as well as part-time) at the impacted location
- Whether the business has other locations
- Would the business relocate if displaced and if so, where to (particularly outside the local or regional area)
- Would the employer relocate within the City of Ronan, or within either Lake or Missoula counties.

Residential and Tribal business sites that were not contacted were individually evaluated from aerial photos and field inspections.

Regional and local newspapers, and real estate listings were reviewed, and realtors and rental management agencies were contacted to determine present growth patterns and economic development trends. In addition, local realtors were contacted to obtain a pattern of the volume (number of listings) and neighborhood locations where there have been or would most likely be residential and commercial listings of comparable size, square footage, and cost of those properties which would be displaced under any of the proposed action alternatives.

A business or residence was considered displaced if the structures on the property fell within the construction limits of the proposed action, if the impacts resulted in a loss of access to the property, or if the proximity impacts were so extensive that they made the business or residence untenable.

4.18.2 Regulations and Standards

State and federal laws and regulations to protect both landowners and the taxpaying public govern the acquisition of land or improvements for highway construction. Landowners affected are entitled to receive fair market value for any land or buildings acquired and any damages as defined by law to remaining land due to the effects of highway construction. This action would be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646 as amended), (42 U.S.C. Section 4651 and 4652, et seq.), and the Uniform Relocations Act Amendments of 1987 (P.L. 100-17).

4.18.3 Rural Portion

The rural portion of the proposed project area extends from Dublin Gulch Road/Red Horn Road (approximate RP 37.1) north to the Ronan south city limits (approximate RP 46). The project area lies entirely within Lake County. The project is also within the Flathead Indian Reservation, home to the CSKT.

The Ninepipe Area is a wetland complex that includes thousands of pothole wetlands and has a diverse wildlife habitat located partially on the Ninepipe National Wildlife Refuge. The lands in this area are managed by federal, state, and Tribal agencies specifically for wildlife habitat. Prime farmland acreage is prevalent along the unincorporated project segments of US 93 to the north and south of Ronan. Land use in the rural portion includes cultivated lands and lands managed for livestock. Residential and commercial activity is primarily limited to single-family dwellings on multiple hectares (acres). Commercial activity is often single proprietorships operating from a residential dwelling or a separate building on the residential property. Log home manufacturers and other larger commercial entities are becoming more common along the rural portion.

4.18.4 Urban Portion

The urban portion of the project area extends from the Ronan south city limits (approximate RP 46) to the Baptiste Road/Spring Creek Road intersection north of Ronan (approximate RP 48.3). Retail and service-oriented businesses and Tribal land dominate the land use along US 93 within the urban portion and these areas are dominated by residential and commercial facilities. Throughout the urban portion of the project area, single-family dwellings are dominant where residential pockets occur. Duplexes and apartment complexes occur in varying density. Businesses along the project corridor include, but are not limited to, service stations, fast-food franchises, tire and auto parts stores, a hardware store, a bank, an auto dealership, farm equipment and home furnishings sales, and a privately owned RV park and campground. The economy within the City of Ronan is primarily retail sales and service oriented.

4.19 Geology and Soils

4.19.1 Analysis Methods and Assumptions

Preparation of this section included a site reconnaissance in Fall 2002 and a review of published maps and literature including a geology, geotechnical, and materials report (Terracon 2003) prepared specifically for the proposed project. The preparation of the Terracon report involved, in addition to site reconnaissance and a review of published maps and literature, a review of files in the MDT Geotechnical Section and an interview with the MDT Engineering Services Supervisor in the Missoula District.

4.19.2 Regulations and Standards

The proposed project must comply with MDT standards of practice and guidelines for construction activities.

4.19.3 Project Location and Topography

The project area lies in the Mission Valley, which is located south of Flathead Lake in northwestern Montana. The Mission Valley is flanked on the east by the Mission Mountain Range, which reaches a height of 2,853 meters (9,360 feet), and on the west by the lower Salish Mountains, which reach a height of 1,707 meters (5,600 feet). The project corridor lies in the central portion of the Mission Valley approximately 20 to 30 kilometers (12 to 18 miles) south of Flathead Lake and 5 to 6.5 kilometers (3 to 4 miles) west of the base of the Mission Range. Drainages flowing from the Mission Mountain Range cross the Mission Valley east to west and enter the Flathead River, which hugs the west edge of the valley floor. The project corridor crosses two drainages within the Mission Creek watershed, Post Creek and Crow Creek, and also traverses the slightly higher areas north and south of these streams.

The project corridor lies at elevations between about 832 and 933 meters (2,730 and 3,062 feet). The lowest point within the project corridor occurs in the south end of the corridor where US 93 crosses Post Creek. The highest point occurs at the north end of the corridor at Baptiste Road/Spring Creek Road.

4.19.4 Geology and Soils

Geologic units in the project area include Belt basin rocks, shallow alluvium, glacial till, and coarse- and fine-grained lake deposits (Figure 4.19-1). Within the project corridor, depth from

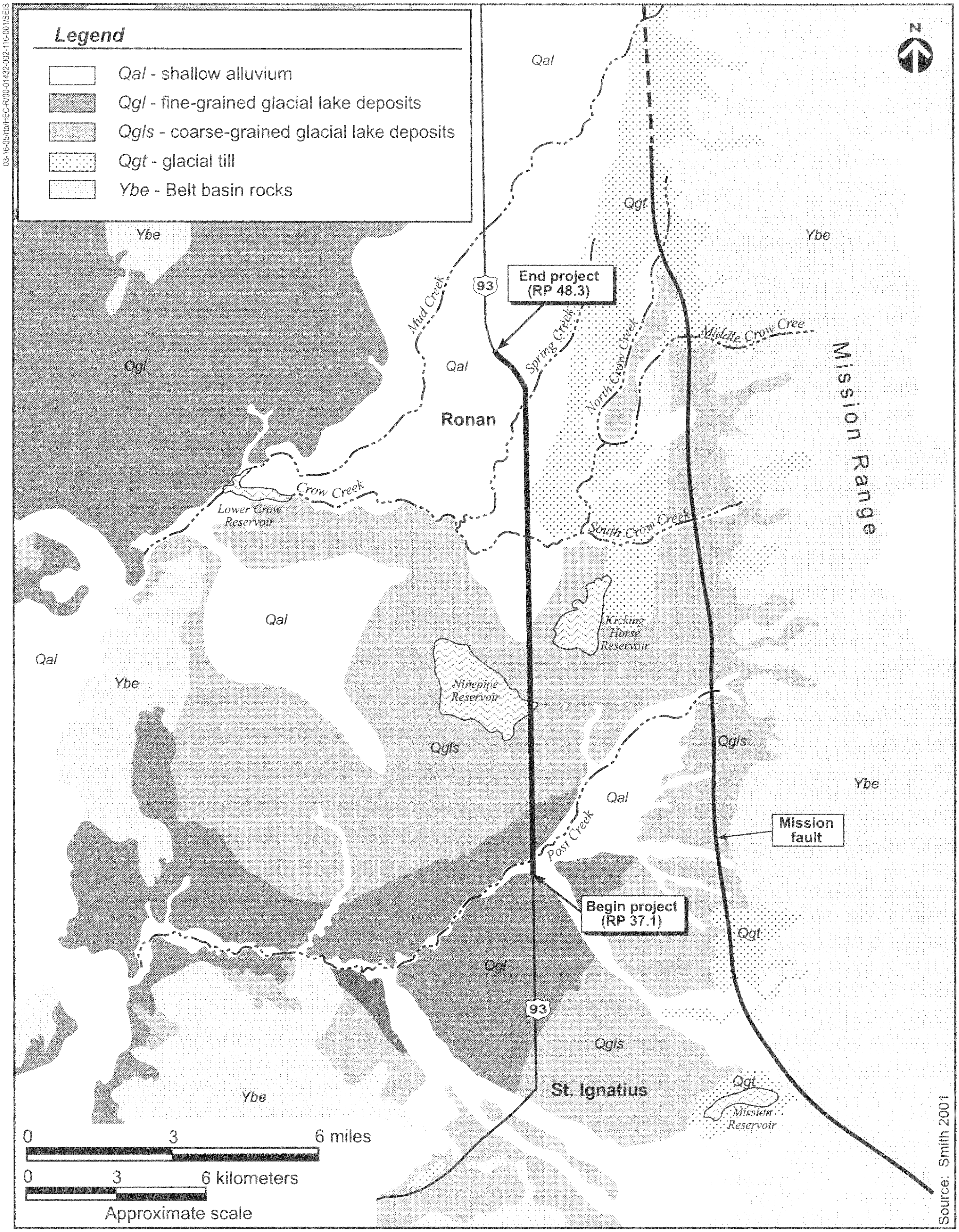

Figure 4.19-1. **Geologic units exposed at the surface (immediately beneath the soil layer) in the vicinity of the US 93 Ninepipe/Ronan improvement project corridor.**

the surface to bedrock (presumed to be composed of the same Belt basin rocks found in the uplands surrounding the Flathead Valley) varies from about 60 to 90 meters (200 to 300 feet). The 60 to 90 meters (200 to 300 feet) of unconsolidated sediments overlying the buried bedrock surface generally consist of sands and gravels overlain by coarse- and fine-grained lake deposits (mostly gravels, silts, and clays), which in turn are overlain at some locations by shallow alluvium (mostly sands and gravels) (Smith 2000a).

The deep sands and gravels are likely approximately 30 meters (100 feet) or less in thickness beneath the project corridor. The lake sediments overlying these sands and gravels are likely approximately 30 meters (100 feet) or more in thickness beneath the project corridor. In contrast to the sands and gravels and overlying lake sediments, which extend throughout the project corridor, shallow alluvium is found in two areas in the corridor: 1) along Post Creek and 2) from the intersection of US 93 and MT 212/Kicking Horse Road north to the northern end of the corridor. In the area between these two locations, lake sediments lie immediately beneath the surface soils. Thicknesses of shallow alluvium are (Smith 2000a and Smith 2000b):

- Within the Post Creek Valley (area 1) – less than 15.2 meters (50 feet)
- Between the US 93 intersection with MT 212/Kicking Horse Road and Crow Creek (portion of area 2) – less than 15.2 meters (50 feet)
- Between Crow Creek and the US 93 intersection with Little Marten Road/Timber Lane Road (portion of area 2) – between 15.2 and 30.5 meters (50 and 100 feet)
- Between the US 93 intersection with Little Marten Road/Timber Lane and south end of downtown Ronan (portion of area 2) – less than 15.2 meters (50 feet)
- Between the south end of downtown Ronan and the north end of the corridor (portion of area 2) – 15.2 and 30.5 meters (50 to 100 feet).

Soils in the project corridor consist primarily of silts and clays, with silts and clays predominating in the top 0.3 meter (1 foot) of the soil layer and clays predominating at greater depths. Within the project corridor south of Ronan, clays are predominant in the upper soil layer, with silts predominating north of Ronan (Terracon 2003). In the United States Department of Agriculture (USDA) classification system, soils in the project corridor are silt loams, silty clay loams, and loams of the Post, Ronan, Post-Ronan-Water Complex, Gird, Gird-Dryfork, and Lamoose soils series (Terracon 2003).

As described in the preceding paragraphs, the sequence of unconsolidated sediments overlying bedrock in the Mission Valley includes deep (basal) sands and gravels overlain by coarse- to fine-grained lake sediments, overlain in some areas by alluvial sands and gravels. Both the basal sands and gravels and the alluvial sands and gravels are water-bearing and the intervening lake sediments typically are water-poor. Depth to ground water varies throughout the project corridor, but ground water probably lies at shallow depths (less than 30 meters [100 feet]) in the vicinity of Post, Crow, and Spring creeks and may also be encountered at similarly shallow depths elsewhere (Smith 2000a; Smith 2001; Terracon 2003).

Three main Tribal groups reside on the Flathead Indian Reservation: the Bitterroot Salish, the Kootenai, and the Upper Pend d'Oreille. These groups' continuous interaction with the land has resulted in specific cultural values, traditions, practices, and resources that persist today. Traditional cultural resources comprise an ethnographic landscape, a cultural landscape that mirrors the systems of meanings, ideologies, beliefs, values, and worldviews shared by a group of people who have inhabited a particular place over a long period of time. The ethnographic landscape contains resources that may be in physical form, such as archaeological sites, as well as resources that may occur in less apparent form, e.g., geological landforms, cultural plants, and animals. Therefore, many geologic features within the project landscape are culturally significant to the Tribes of the Flathead Indian Reservation.

Seismicity and Other Geologic Hazards

The project corridor lies within the Intermountain Seismic Belt that extends from northwest Wyoming northwesterly to the vicinity of Kalispell, Montana (Figure 4.19-2). Except for one earthquake early in the century, all earthquakes of magnitude 5.5 or greater in Montana in the twentieth century occurred in the Intermountain Seismic Belt. The largest earthquakes that have occurred in the general vicinity of the Mission Valley in the last century occurred near Flathead Lake – a magnitude 5.5 event west of the lake in 1945 and magnitude 5.7 event east of the lake in the Swan Range in 1952. Three small (less than magnitude 4) earthquakes were recorded in the immediate vicinity of the project corridor in the last century – one centered near the south end of the corridor, one centered near Pablo, and one centered just east of Kicking Horse Reservoir (Stickney et al. 2000).

The U. S. Geologic Survey (USGS) conducts the National Seismic Hazard Mapping Project. USGS has mapped the project corridor in Earthquake Zone 2b. The Zone 2b designation indicates that geologists have estimated that earthquake motions equaling 20 to 30 percent of the acceleration of gravity have a 10 percent probability of occurring during any given 50-year period. Earthquake motions 20 percent to 30 percent of the acceleration of gravity are sufficiently strong to result in slight to moderate damage in ordinary well-built structures (USGS 2003).

The Mission fault is located along the west base of the Mission Mountain Range (Figure 4.19-1). The southern section of the fault (Mission Valley section) is located approximately 6.5 kilometers (4 miles) east of the project corridor (Terracon 2003). Estimated slip rates of 0.2 to 1 millimeters (0.007 to 0.04 inches) per year coupled with average recurrence intervals of at least several thousand years (Haller et al. 2000) suggest that the Mission Valley section of the Mission fault is the site of infrequent, but potentially strong earthquakes.

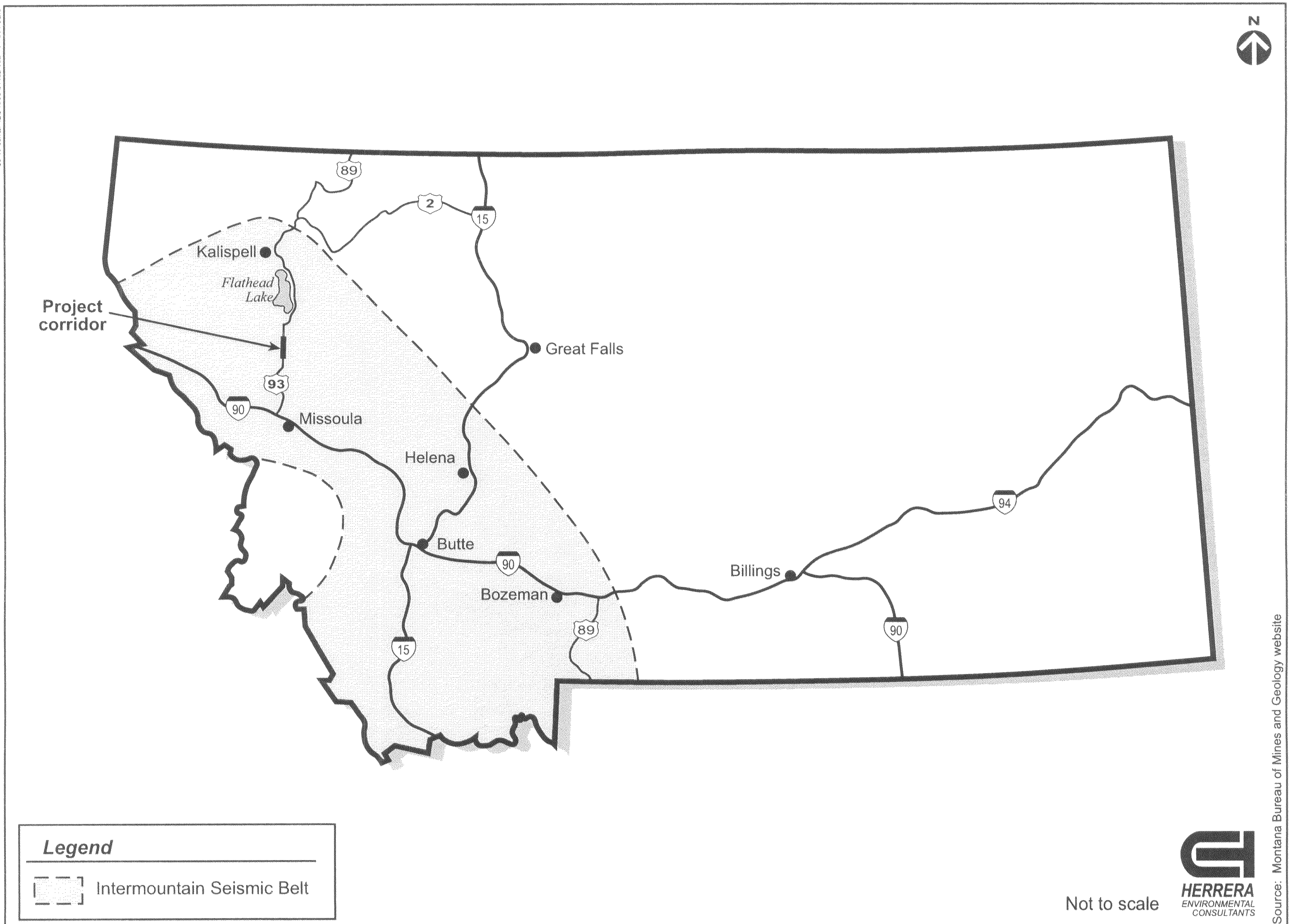

Figure 4.19-2. Location of Intermountain Seismic Belt.

When shaken by an earthquake, certain soils (e.g., loose, saturated, sandy alluvial material) are susceptible to liquefaction; that is, they lose strength and temporarily behave like liquids. Structures, including roadways, can sustain substantial damage during a large seismic event if they are supported in or on a soil susceptible to liquefaction. Liquefaction could be a concern in alluvial deposits associated with Post Creek, Crow Creek, and Spring Creek (Terracon 2003).

No evidence of landslides or unstable cut or fill slopes was observed in the US 93 Ninepipe/Ronan project corridor (Terracon 2003).

Part 5 Environmental Consequences

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5.1 Traffic Operation and Safety

5.1.1 Rural Portion

Direct Effects

No-Action Alternative

No short-term impacts to traffic operation or safety would result under the No-Action Alternative. Future levels of service for the No-Action Alternative are expected to decrease from the existing condition (level of service [LOS] D) to LOS E as traffic demand increases over time.

The No-Action Alternative would result in an increase in accidents associated with the increase in vehicle kilometers (miles) traveled. Accident rates should remain consistent with respect to traffic volume, but the number of accidents per 1.6 kilometers (1 mile) would likely increase due to increased congestion, increased following time, and reduced gaps for turns.

Action Alternatives

Potential impacts on traffic operations and safety during construction include traffic delays and limited access during construction. Under the action alternatives, travel times along the roadway are expected to increase, as reduced speeds would be required in the vicinity of construction activities. Access to properties adjacent to the construction zone would be less convenient during construction activities, which are anticipated to last two construction seasons, or 20 months.

Potential positive impacts on traffic operations and safety include improved operational levels of service and a reduction in accidents in the corridor. These positive impacts are summarized in Table 5.1-1 for the rural portion of the US 93 Ninepipe/Ronan project corridor.

The traffic operation and safety analysis is summarized from the *Final Environmental Impact Statement and Section 4(f) Evaluation; FHWA-MT-EIS-95-01-F; F 5-1(9)6, U.S. Highway 93, Evaro to Polson Missoula and Lake Counties, Montana* (referred to as the US 93 Evaro to Polson FEIS) (FHWA and MDT 1996), and from the *Traffic Operational and Safety Analyses Technical Report* (Skillings-Connolly 2004a), which summarizes the results of the following two studies:

- *Traffic Operational and Safety Analysis of Recommended Improvements for the US 93 Corridor from Evaro to Polson, Montana* (Skillings-Connolly and Midwest Research Institute 2000)
- *Traffic Operational and Safety Analysis of Recommended Improvements for the US 93 Corridor from Ninepipe to Ronan, Montana* (Midwest Research Institute 2003).

Table 5.1-1. Summary of potential impacts on traffic operation and safety in the rural portion of the US 93 Ninepipe/Ronan project corridor under all alternatives.

Alternative	2024 LOS	Accident Frequency Reduction (compared to No-Action)
No-Action	E	0 %
Rural 1	D-	16.0 %
Rural 2	D	17.2 %
Rural 3 (PA)	D+	20.4 %
Rural 4	C-	21.4 %
Rural 5	D+	20.1 %
Rural 6	C-	19.4 %
Rural 7	D+	18.6 %
Rural 8	B-	24.5 %
Rural 9	B-	37.1 %
Rural 10	D+	20.1 %

Traffic operational analyses were conducted for the rural and urban portions of the US 93 Ninepipe/Ronan project corridor by estimating the LOS provided under each alternative. Levels of service are defined in *Section 4.1 Traffic Operation and Safety*.

Traffic operational analysis was conducted for the rural portion of the proposed project with the following analytical procedure utilizing 2024 traffic volumes:

- The two lane rural sections were analyzed through the use of Midwest Research Institute's (MRI) TWOPASS computer simulation model. This model is comparable to the *2000 Highway Capacity Manual* (HCM) since the manual methods were developed from the TWOPASS model. (More information on the TWOPASS model can be found in *Traffic Operational and Safety Analysis of Recommended Improvements for the US 93 Corridor from Evaro to Polson, Montana*, Skillings-Connolly and Midwest Research Institute 2000.)

The level of service for the rural portion was analyzed as a two-lane highway and was defined by two parameters:

- *Percent time spent following*, which represents the percentage of the total travel time that drivers spend delayed in platoons behind slower vehicles on a section of two-lane highway

- *Average travel speed*, which represents the average speed of traffic on a section of two-lane highway.

Both the percent time spent following and average travel speed criteria must be met in order for a two-lane highway to be classified as operating at a given LOS. However, the average travel speeds in the rural portions of the project corridor always exceeded 90 kilometers per hour (km/h) (55 miles per hour [mi/h]) under the conditions analyzed (an average travel speed of 90 km/h (55 mi/h) is associated with free flowing conditions), so the level of service in two-lane highway portions of the corridor is essentially a function of just the percent time spent following.

Each level of service defined in TWOPASS has been divided into three sublevels to better illustrate the location of the projected operations within that level of service for analysis in the rural portion. For example, LOS C for a two-lane highway is defined to include the range of percent time spent following from 50 to 65 percent. For this analysis, the range from 50 to 55 is defined as C+, 56 to 60 percent is defined as C, and the range from 60 to 65 percent is defined as C-. While these sublevels do not appear in the HCM, they were included in this presentation of results because they were found to be useful by the project proponents in interpreting the analysis results.

The safety analysis developed quantitative estimates of safety performance for the rural portion of the corridor.

The estimated safety impacts of the alternatives considered are much less exact than the estimated traffic operational impacts. The traffic operational impacts of design alternatives can be determined with reasonable certainty, but safety impacts are known to be highly variable. The best available estimates of the average safety effects of these design alternatives were developed to predict the overall effect over a 20-year period; however, substantial year-to-year variations during that period can be expected.

The safety estimates developed include the benefits of proposed changes in shoulder width and the addition of passing lane and four-lane sections for each design alternative. In addition, the safety estimates for each design alternative assume that left-turn lanes would be added at the following major road intersections on US 93 where they do not currently exist: East Post Creek Road/West Post Creek Road, Leon Road/McDonald Lake Road, Olson Road/Gunlock Road, Eagle Pass Trail, Brooke Lane, Beaverhead Lane, Innovation Lane, and Bouchard Road.

The results of this analysis and expected changes in safety are compared in Table 5.1-1 for the rural portion of the corridor. There are no specific LOS requirements for the proposed project. It was agreed that these levels of service would be goals for achievement. It was further agreed that alternatives considered would not be screened out solely on LOS if the alternative nearly achieves these goals.

Estimated LOS for each of the action alternatives are presented in Table 5.1-2 for two traffic conditions: normal weekday volumes and summer weekend volumes. These LOS values represent the portion of US 93 between Saint Ignatius (approximate reference post [RP] 32.5) and the southern limit of the City of Ronan (approximate RP 46), which includes the rural portion of the US 93 Ninepipe/Ronan project corridor. The alternatives considered range in levels of service for 2004 from A- to D+ for normal weekdays and from B+ to D+ for summer weekends. For the 2024 design year the level of service for the various alternatives range from B to D- for normal weekdays and from B- to D- for summer weekends. Alternative Rural 3 (preferred alternative [PA]) would operate at level of service D+ both for normal weekdays and summer weekends. Of all of the alternatives evaluated, Rural 8 and Rural 9 would provide the best levels of service over time (LOS B, B- in 2024).

Table 5.1-2. Estimated traffic operational levels of service in the rural portion [a] of the US 93 Ninepipe/Ronan project corridor.

	Level of Service [b]					
Alternative	2004	2008	2012	2016	2020	2024
Normal Weekday Volumes						
No-Action Alternative	D	D	D	E	E	E
Rural 1	D+	D+	D	D	D	D-
Rural 2	C-	D+	D+	D+	D	D
Rural 3 (PA)	C	C	C-	C-	C-	D+
Rural 4	C+	C+	C	C	C-	C-
Rural 5	C	C	C	C-	C-	D+
Rural 6	C+	C+	C	C	C-	C-
Rural 7	C	C-	C-	C-	D+	D+
Rural 8	A-	B+	B+	B	B	B
Rural 9	A-	B+	B+	B	B	B
Rural 10	C	C	C	C-	C-	D+
Summer Weekend Volumes						
No-Action Alternative	D	D	E	E	E	E
Rural 1	D+	D+	D	D	D	D-
Rural 2	C-	D+	D+	D+	D	D
Rural 3 (PA)	C	C	C-	C-	C-	D+
Rural 4	C+	C	C	C	C-	C-
Rural 5	C	C	C-	C-	C-	D+
Rural 6	C+	C	C	C	C-	C-
Rural 7	C	C-	C-	D+	D+	D+
Rural 8	B+	B+	B	B	B	B-
Rural 9	B+	B+	B	B	B	B-
Rural 10	C+	C	C	C-	C-	D+

[a] Includes 4.6 kilometers (2.9 miles) of passing lanes south of the US 93 SEIS rural portion.
[b] LOS values are based on traffic volumes developed assuming an annual growth rate of 2.8 percent.

It is estimated that the number of accidents in the rural portion would be reduced under all action alternatives as compared to the No-Action Alternative. Table 5.1-3 presents the accident reduction estimates separated by accident severity (fatal, injury, property damage). The expected reduction in accidents is attributed to improved intersections, added lanes, and widened shoulders. Table 5.1-4 presents a breakdown of accident reduction attributed to each of these improvement types.

Table 5.1-3. Estimated safety effects of design alternatives for rural portion of the US 93 Ninepipe/Ronan project corridor.

	Number of Accidents Reduced (2004-2024)				Percent Reduction in Accident Frequency			
Alternatives	Fatal	Injury	PDO	Combined	Fatal	Injury	PDO	Combined
No-Action	0	0	0	0	0.0	0.0	0.0	0.0
Rural 1	15	59	78	152	23.5	14.0	16.9	16.0
Rural 2	17	65	81	162	26.0	15.4	17.6	17.2
Rural 3 (PA)	19	79	94	193	30.1	18.8	20.4	20.4
Rural 4	20	82	101	203	30.6	19.5	22.0	21.4
Rural 5	20	75	95	190	30.6	17.8	20.8	20.1
Rural 6	20	70	94	183	30.6	16.5	20.4	19.4
Rural 7	18	72	87	176	27.7	17.0	18.9	18.6
Rural 8	22	90	120	232	34.3	21.4	26.0	24.5
Rural 9	32	136	182	350	50.3	32.2	39.7	37.1
Rural 10	20	75	95	190	30.6	17.8	20.8	20.1

PDO: property damage only

Table 5.1-4. Accident reduction estimates for the rural alternatives of the US 93 Ninepipe/Ronan project by improvement type.

	Number of Accidents Reduced (2004-2024) by Improvement Type				Percent of Accidents Reduced by Improvement Type			
Alternative	Intersection	Added Lanes	Wider Shoulders	Total	Intersection	Added Lanes	Wider Shoulders	Total
No-Action	0	0	0	0	–	–	–	–
Rural 1	44	0	108	152	28.8	0.0	71.2	100.0
Rural 2	44	23	96	162	26.8	14.1	59.0	100.0
Rural 3 (PA)	44	68	81	193	22.6	35.1	42.3	100.0
Rural 4	44	96	63	203	21.5	47.6	30.9	100.0
Rural 5	44	85	62	190	22.9	44.4	32.7	100.0
Rural 6	44	63	76	183	23.8	34.5	41.7	100.0
Rural 7	44	63	70	176	24.7	35.6	39.6	100.0
Rural 8	44	186	2	232	18.8	80.2	1.0	100.0
Rural 9	44	304	3	350	12.4	86.8	0.7	100.0
Rural 10	44	85	62	190	22.9	44.4	32.7	100.0

Accident reduction was estimated between 16.0 and 37.1 percent under the action alternatives. The four-lane alternatives (Rural 8 and Rural 9) would provide the highest reductions (24.5 and 37.1 percent, respectively), with most of these reductions being associated with the added lanes. In addition to the four-lane alternatives, Alternatives Rural 3 (PA) and 4 would provide greater accident reduction than Rural 1, 2, 6, 7, and 10.

Indirect Effects

Because traffic operation and safety are expected to improve, no indirect effects are anticipated under any of the rural portion alternatives.

5.1.2 Urban Portion

Direct Effects

No-Action Alternative

No construction-related impacts on traffic operation or safety would result under the No-Action Alternative.

Under the No-Action Alternative, operational impacts would include a decrease in LOS and an increase in accidents associated with the increase in vehicle miles traveled. Accident rates should remain consistent with respect to traffic volumes, but the number of accidents per 1.6 kilometers (1 mile) would likely increase. Currently, severe right angle accidents are distributed throughout the US 93 Evaro to Polson corridor. As traffic increases, it is very likely that right angle accidents would cluster around unsignalized intersections. Future stop-and-go traffic conditions could increase the likelihood of rear-end accidents at signals.

Action Alternatives

Under the action alternatives, travel times along the roadway are expected to increase, as reduced speeds would be required in the vicinity of construction activities. Access to properties adjacent to the construction zone would be maintained during construction activities, but would be less convenient.

The traffic operation and safety analysis is summarized from the US 93 Evaro to Polson FEIS and from the *Traffic Operational and Safety Analyses: US 93 Evaro to Polson EIS, SEIS Ronan/Ninepipe* (Skillings-Connolly 2004a).

The traffic operational analysis was conducted for the urban portion through the City of Ronan with the following analytical procedures utilizing 2024 traffic volumes:

- The *Transportation Research Board 2000 Highway Capacity Manual* and *Strong Concepts Signal 2000* (a Highway Capacity Manual-based signalized intersection capacity analysis optimization software) procedures were utilized for multilane highways, unsignalized intersections, and signalized intersections.

Intersections in the urban portion were analyzed with and without signals, as signals would be added to intersections when signal warrants are met.

Level of Service for Two-Way Stop-Controlled Intersections is determined by the computed or measured control delay and is defined for each minor movement. Level of service is not defined for the intersection as a whole, but for main line left turns and side street approaches.

Level of Service for Signalized Intersections is evaluated on the basis of control delay per vehicle (in seconds per vehicle). Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The average control delay is estimated for each lane group and for the intersection as a whole. Level of service is directly related to the control delay value.

Urban Street Level of Service is based on average through-vehicle travel speed for the segment of the roadway under consideration. Travel speed is the basic service measure for urban streets. The average travel speed is computed from running times on the urban street and the control delay of through movements at signalized intersections. The control delay is the portion of the total delay for a vehicle approaching and entering a signalized intersection that is attributable to traffic signal operation. There are limitations in this analysis of urban street level of service. The methodology does not account for conditions between intersections. Conditions that can influence the average travel speed are:

- On-street parking
- Driveway density and access control
- Lane additions or reductions
- Grade
- Capacity constraints such as narrow bridges
- Mid-block medians or two-way, left-turn lanes
- High volume of turning movements
- Excessive queues blocking upstream intersections
- Cross-street congestion.

The number of signals per 1.6 kilometers (1 mile) also influences the LOS. A low concentration of signals operating poorly would have a better LOS than a high concentration of signals operating efficiently. Therefore, an urban street may have failing intersections but have a satisfactory urban street LOS.

No quantitative prediction of project effects on safety has been performed for the section within Ronan; however, an analysis of existing safety conditions within the towns in the Evaro to Polson corridor found a substantial number of accidents of types that are potentially correctable by the recommended intersection improvements.

The results of the analysis for traffic operation and expected changes in safety are summarized in Table 5.1-5 for the urban portion of the corridor.

Table 5.1-5. Impacts on traffic operation and safety for the urban alternatives of the US 93 Ninepipe/Ronan improvement project.

Alternative	2024 LOS	Accident Frequency (compared to No-Action)
No-Action	D, F	
Ronan 1	C	Reduced Accidents
Ronan 2	C	Reduced Accidents
Ronan 3	B, C	Reduced Accidents
Ronan 4 (PA)	B, C	Reduced Accidents
Ronan 5	D	Reduced Accidents

The analysis of traffic operation for intersections in the urban portion indicates that the one-way couplet alternatives – Ronan 3 and Ronan 4 (PA) would yield generally better levels of service when compared to the No-Action and other action alternatives. The couplet benefits side streets at intersections because the reduced number of turning options reduces yielding. Typically, the lowest performing movement is the side street left to mainline movement across opposing traffic. The couplet eliminates this movement leaving only a through movement and a right- or left-turn movement with mainline traffic flow. The through movement on the cross road no longer has to contend with finding gaps in two flow directions. With one-way flow there are more usable gaps leading to a better LOS.

Alternatives Ronan 1 and Ronan 2 generally provide intersection levels of service lower than Ronan 3 and Ronan 4 (PA), but greater than Ronan 5 and the No-Action Alternative. Alternative Ronan 5 generally provides a greater intersection LOS than the No-Action Alternative. With the exception of Ronan 5 in the northbound direction, all action alternatives would provide better urban street levels of service than the No-Action Alternative. Table 5.1-6 displays the urban street levels of service for each alternative in the year 2024. Alternative Ronan 5 would provide a level of service equal to the No-Action Alternative in the northbound direction. The one-way couplet Alternatives Ronan 3 and Ronan 4 (PA) would provide an urban street LOS better than all other alternatives in the northbound direction (LOS B), and better than No-Action Alternative and Ronan 5 in the southbound direction (LOS C). Alternatives Ronan 1 and Ronan 2 would provide better levels of service than the No-Action and Ronan 5 alternatives in both directions.

Table 5.1-6. Urban street levels of service for each alternative in the urban portion in 2024.

	No-Action	Ronan 1, 2	Ronan 3, 4	Ronan 5
Northbound				
Travel Speed in km/h (mi/h)	19 (11.9)	29 (18.1)	30.7 (19.2)	19.7 (12.3)
Level of Service	D	C	B	D
Southbound				
Travel Speed in km/h (mi/h)	6 (3.7)	23 (14.3)	25 (15.7)	19.2 (12)
Level of Service	F	C	C	D

km/h - kilometers per hour mi/h - miles per hour

Alternatives Ronan 1 and Ronan 2 may reduce angle and turning accidents at intersections. However, under the one-way couplet alternatives (Ronan 3 and Ronan 4 [PA]), the installation of traffic signals would be expected to reduce angle and turning accidents at intersections. Traffic flowing in one direction also allows drivers more gaps in the flow to enter or cross with less conflict. One-way traffic typically has a benefit to pedestrians as they only have to contend with one direction of traffic. While the couplet options reduce the likelihood of accidents such as head-on and right angle, the couplet options introduce an increase in turning vehicles on the side streets. It is unknown if this would have a negative effect on accident rates. Continuous parking on one side of the travel lane in each direction of the couplet would be a constant source of disruption. As parking maneuvers increase, so does the potential for rear-end, sideswipe, and pedestrian accidents.

Under Alternative Ronan 5, some accident reduction could occur if some of the north-south traffic was diverted to the parallel streets. Most likely, it would have the same effect as the No-Action Alternative and there would be no significant decrease in accidents. The installation of traffic signals with this option would at least provide controlled access for side streets and pedestrians.

Indirect Effects

Because traffic operation and safety are expected to improve, no indirect effects are anticipated under any of the urban portion alternatives.

5.1.3 Impacts of the Total Project

As stated in the previous sections, all action alternatives would have a beneficial impact on traffic operations and safety by improving roadway level of service and decreasing the frequency of accidents. The roadway LOS would range from B/B- (Alternatives Rural 8 and Rural 9) to D- (Alternative Rural 1) in the rural portion and from B/C (Alternatives Ronan 3 and Ronan 4 [PA]) to D (Alternative Ronan 5) in the urban portion (based on urban LOS). The Rural 3 alternative (PA) would provide LOS D+ in the rural portion and the Ronan 4 alternative (PA) would provide levels of service B in the northbound direction and C in the southbound direction in the urban portion. Frequency of accidents would be reduced by 16.0 percent (Alternative Rural 1) to 37.1 percent (Alternative Rural 9) in the rural portion, with a 20.4 percent reduction estimated for the Rural 3 alternative (PA). For the urban portion alternatives, accident rates are also expected to be reduced due to improved intersections and provisions for bicyclists and pedestrians.

5.1.4 Mitigation Measures

Avoidance and Minimization Included in Design

All of the action alternatives would improve operations, measured in the form of LOS, over the No-Action alternative. All of the action alternatives are projected to result in improved safety with a reduction in accidents and the severity of accidents. The following design features have been utilized for the action alternatives to improve traffic operations and safety:

- Shoulder rumble strips will be utilized to alert errant vehicles of potential land departure.

- Edge line and centerline stripes will be 15 centimeters (6 inches) wide compared to the typical statewide practice of 10 centimeter (4 inch) stripes. Wider stripes will aid drivers with day and night time navigation.

- Turn lanes will be installed at all public road intersections throughout the corridor. With a LOS of D+ in the design year, the turn lanes at intersections will improve operations along the corridor.

Additional Mitigation Measures Required

A public information plan would be prepared and implemented to inform motorists in advance of construction activity and possible alternate routes.

During construction, best management practices (BMPs) to reduce the generation and dispersion of particulates should be implemented. A variety of routine dust suppression and reduction methods is available and would be applied as appropriate.

Agreements would be drafted with jurisdictions whose adjacent roads or streets might be damaged when used as a designated detour route during construction. These agreements would specifically detail the limits of repair for any damage to these facilities.

Mitigation for increased travel times and general traveler inconvenience during construction would include:

- Preparation and implementation of a detailed traffic control plan by the contractor that describes methods for maintaining access to adjoining properties and minimizing traffic delays such as adhering to short-term, one-lane closures administered by flaggers, all in accordance with MDT specifications and plans and the version of the *Manual on Uniform Traffic Control Devices* current at the time of construction

- Installation of work zone signage to alert motorists of construction activity

- Removal of work zone signage when construction is complete.

5.2 Land Use

Impacts on culturally or historically important sites are discussed in *Section 5.14 Cultural Resources* of this document. Impacts on recreation facilities are discussed in *Section 5.15 Parks and Recreation* of this document. Displacement impacts on residences or businesses are discussed in *Section 5.18 Relocations* of this document. In addition, those impacts to historic and cultural sites and recreation facilities that fall under the purview of Section 4(f) of the 1966 United States Department of Transportation Act (Title 23 of the Code of Federal Regulations [23 CFR 771.135]) are also discussed in the *Part 6 Section 4(f) Evaluation.*

5.2.1 Rural Portion

Direct Effects

No-Action Alternative

Based on existing development trends, changes in land use are expected with or without improvement of the road corridor.

Action Alternatives

Under all action alternatives, land would be converted into right-of-way. The location and extent of those conversions are described in the *Preliminary Areas of Acquisition Report* (Skillings-Connolly 2004d) and *Relocation Assistance Conceptual Study* (Skillings-Connolly 2004c) and in *Section 5.18 Relocations* of this document. All action alternatives would result in at least some modifications of access to individual properties and/or to public or private side roads. After circulation of the final SEIS and approval of the Record of Decision, modifications to the access management plan will be developed cooperatively by the Confederated and Salish Kootenai Tribes (CSKT), MDT, the Federal Highway Administration (FHWA), Lake County, and the City of Ronan. This plan will then be implemented and administered by MDT in cooperation with CSKT, FHWA, Lake County, and the City of Ronan. These modifications to access could result in some direct transportation impacts, and these impacts are described in the *Traffic Operational and Safety Analyses Technical Report* (Skillings-Connolly 2004a).

There would be no direct conversion of non-acquired land uses adjoining the highway as a result of access modifications, and direct impacts on land use, apart from those described in the *Preliminary Areas of Acquisition Report* (Skillings Connolly 2004d) and *Relocation Assistance Conceptual Study* (Skillings Connolly 2004c), would be minimal. However, access modifications could result in long-term indirect impacts.

Indirect Effects

The ongoing long-term conversion of agricultural and forest land to residential and commercial/industrial uses would continue under all action alternatives as well as the No-Action Alternative. The proposed improvements to US 93 could influence the rate and pattern of land use development, and, in particular, could facilitate the conversion of existing land uses to highway-oriented commercial land uses. However, the extent of that influence is limited for three primary reasons:

- New accesses or changes in use of existing accesses will be regulated by the access management plan.
- The rate and nature of land use development is primarily determined by local, regional, and national economic conditions.
- Future traffic volumes along US 93 within the project corridor are the same among the action alternatives and the No-Action Alternative (i.e., the proposed improvements would not result in a change in future traffic volumes along US 93 compared to volumes that would occur in the absence of the proposed improvements). Correspondingly, changes in traffic volumes on side roads in the rural portion of the corridor would be minimal under the action alternatives (except for several roads under the Rural 7 alternative as described in the following paragraphs).

Despite these fundamental limitations, the proposed improvements are likely to have some influence on land use development in the corridor and that influence would vary among the alternatives under consideration.

Because future traffic volumes do not vary among alternatives (including the No-Action Alternative), impacts on future land use development would primarily be due to changes in intersection configuration control and individual property access. Under the Alternatives Rural 1 through 6, Rural 8, Rural 9, and Rural 10, all public road intersections would be improved with left-turn bays that would provide for easier and safer turning movements from US 93 onto side roads. These improvements could facilitate development of highway-oriented commercial activity at intersections (e.g., gas stations, food stores, restaurants, and other retail establishments oriented toward travelers). The Rural 7 alternative differs from the other nine alternatives by confining these intersection improvements to Olson Road/Gunlock Road (RP 40), Eagle Pass Trail (RP 41.2), MT 212/Kicking Horse Road (RP 42.1), and Mollman Pass Trail (RP 43.6) within the Olson Road/Gunlock Road to Crow Creek section and terminating all other roads in this section of the corridor. Traffic that would have used the terminated intersections would probably shift to other intersections retained under this alternative. As a result, fewer intersections would remain in the rural portion under Alternative Rural 7 as compared to the other action alternatives, and there would be a greater likelihood that land use conversions would occur at the retained intersections. However, this greater likelihood is marginal because the terminated intersections are few and currently handle little traffic.

The Rural 9 alternative, which proposes a four-lane divided highway, would eliminate direct access from individual parcels on the east side of the highway to southbound lanes and from individual parcels on the west side of the highway to the northbound lanes. These access limitations would probably reduce the likelihood of land use conversions on fronting properties that do not access directly onto a side road that has an intersection with US 93. Under this alternative, demand for highway-oriented uses would tend to be focused at intersections to a greater degree than with other alternatives.

The area in the vicinity of the project corridor is expected to experience continued development with or without the proposed project. While induced growth is often attributed to roadway projects, improvements to existing roadways are typically not the primary cause of growth in an area. Growth is the result of many factors, including local conditions such as proximity to good jobs; availability of affordable housing; tax rates; quality of schools; the presence of adequate infrastructure, including roads; and presence of aesthetic and recreational resources.

The traffic analysis conducted for the proposed project (described in Section 5.1) found that free flowing conditions occurred under any of the alternatives in the rural portion of the Ninepipe-Ronan project corridor. This indicates that the proposed improvements in the rural portion would not substantially lower the travel time through the project corridor compared to the No-Action Alternative. In the urban portion, by contrast, travel speeds under any of the action alternatives would be higher than travel speeds under the No-Action Alternative (see Table 5.1-6), indicating that the proposed improvements in the urban portion would lower the travel time through the project corridor.

The reduced time necessary to travel through the project corridor could increase the willingness of potential commuters to commute over long distances to employment centers outside of the project corridor (e.g., Missoula). This increased willingness to commute could facilitate conversion of land to residential uses in the Mission Valley area. In addition, the greater safety resulting from the action alternatives could increase the number of people willing to drive through the corridor on a daily basis therefore facilitating long-distance commuting. These effects are speculative, but to the extent they do occur as a result of this project, these effects are likely to occur to a greater extent under the Rural 8 and 9 alternatives than under the other rural action alternatives and under the Ronan 3 and 4 alternatives than under the other urban action alternatives.

Nonetheless, traffic volumes projected under the No-Action Alternative are the same as those projected under the action alternatives, which indicates that induced growth is likely to be minimal. Ultimately, growth is controlled by existing land use policies and plans as well as local, regional, and national economic conditions and the other factors listed previously. The uncertainty in future economic conditions, and the difficulty in assessing the degree to which the many factors listed would influence growth, result in considerable uncertainty regarding the rate and pattern of future growth. For this reason, conclusions regarding variations in future development patterns along the corridor under the various alternatives are speculative.

5.2.2 Urban Portion

Direct Effects

No-Action Alternative

No impacts on land use in the urban portion are expected under the No-Action Alternative.

Action Alternatives

Direct effects of any of the action alternatives in the urban portion of the project corridor would be limited to conversion of land into right-of-way (discussed in *Section 5.18 Relocations)*.

Indirect Effects

Indirect effects in the urban portion would be similar to those described for the rural portion of the corridor. The Ronan 1, Ronan 2, and Ronan 5 alternatives would maintain US 93 on the existing alignment, whereas the Alternatives Ronan 3 and Ronan 4 (PA) would create a couplet involving the existing US 93 (would be used by northbound traffic) and First Avenue SW (would be used by southbound traffic). The transfer of a portion of US 93 traffic onto First Avenue SW under the Alternatives Ronan 3 and Ronan 4 (PA) is likely to facilitate the long-term conversion of land uses from the existing predominantly residential pattern along First Avenue SW (see Table 4.2-4) to a predominantly non-residential pattern along that street similar to the pattern that currently exists along US 93 one block to the east (see Table 4.2-4). Within the City of Ronan, the city's zoning controls, in addition to regional and national economic conditions, would exercise considerable influence over the location and nature of land use development activity and thus constrain the influence of the proposed US 93 improvements on land use patterns.

5.2.3 Impacts of the Total Project

Under any of the rural or urban alternatives, existing access to properties adjoining US 93 could be modified in accordance with the access management plan developed cooperatively by the CSKT, MDT, FHWA, Lake County, and the City of Ronan and implemented and administered cooperatively by MDT. However, the Rural 9 alternative with any of the urban alternatives would result in slightly greater impacts to access than any other combinations of rural and urban alternatives, because under the four-lane divided alternative, most accesses would be changed to a right-in and right-out pattern.

The Rural 9 alternative together with either the Ronan 3 or Ronan 4 alternative would probably result in a greater likelihood of changes in land use patterns along the corridor than other rural-urban alternative combinations. Any of the rural alternatives other than Rural 7, Rural 8, and Rural 9 together with the Ronan 1, Ronan 2, or Ronan 5 alternatives would probably result in the lowest likelihood of land use changes along the corridor. Despite these differences, effects on land use patterns from any of the alternatives would be outweighed by the effects of land use regulations, the access control measures in the access management plan, and the local, regional, and national economy on the pace and location of land use conversions, so that the differences among the various potential combinations of rural and urban alternatives are insubstantial.

5.2.4 Mitigation Measures

Avoidance and Minimization Measures Included in Design

Primary potential land use impacts relate to changes in land use patterns and to land access. Substantial land use impacts have been avoided or minimized by avoiding large roadway realignments and major changes to existing primary intersections. In general, project land use impacts are minor and additional avoidance or minimization measures are unnecessary.

Additional Mitigation Measures Required

No additional mitigation measures are required. While the couplet alternatives in Ronan would result in new pressure for redevelopment along First Avenue SW, land use patterns are controlled by local jurisdictions and access from the highway throughout the corridor will be regulated by the access management plan. Modifications to the access management plan currently in place will be developed cooperatively by the CSKT, MDT, the Federal Highway Administration (FHWA), Lake County, and the City of Ronan. This plan will then be implemented and administered by MDT in cooperation with CSKT, FHWA, Lake County, and the City of Ronan.

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5.3 Prime and Unique Farmland

In accordance with the Farmland Protection Policy Act (FPPA) of 1981, the effects of the proposed action on FPPA farmland have been examined. Parts I, II, III, and IV of Farmland Conversion Impact Rating Form AD-1006 have been completed for the proposed project and are attached in Appendix G.

5.3.1 Rural Portion

Direct Effects

No-Action Alternative

No effects on farmlands are expected under the No-Action Alternative.

Action Alternatives

For all of the action alternatives construction-related effects on farmlands may include temporary construction easements for equipment access or staging areas. These effects are expected to be temporary and disturbed areas would be returned to their original use after construction is completed.

Table 5.3-1 summarizes FPPA farmland that would be converted to highway right-of-way with each of the rural alternatives under consideration. Farmland designations that are affected under at least some of the alternatives include prime farmland, farmland of statewide importance, and farmland of local importance. No areas of unique farmland are mapped within the rural portion of the project corridor.

Indirect Effects

Indirect impacts on designated farmland due to any of the alternatives are expected to be minimal. As discussed in *Section 5.2 Land Use*, intersection improvements and changes in access in the rural portion of the corridor could direct non-residential development toward parcels adjacent to existing and/or improved intersections. This indirect land use effect could marginally increase the likelihood that farmland in those locations would be converted to non-agricultural uses, but the extent of this effect on conversions would probably be slight and would have little effect on the overall availability of farmland in the region.

5.3.2 Urban Portion

Direct Effects

No-Action Alternative

No effects on farmlands are expected under the No-Action Alternative.

Table 5.3-1. Summary of estimated farmland conversion expected for the rural alternatives of the US 93 Ninepipe/Ronan improvement project.

	Prime Farmland		Farmland of Statewide Importance		Farmland of Local Importance		Total	
	Hectares	Acres	Hectares	Acres	Hectares	Acres	Hectares	Acres
Post Creek Segment (RP 37.1 to RP 40)								
Rural 1	0.3	0.8	0.0	0.0	8.5	21.1	8.8	21.9
Rural 2	0.3	0.8	0.0	0.0	9.2	22.8	9.5	23.6
Rural 3 (PA)	0.3	0.8	0.0	0.0	9.2	22.8	9.5	23.6
Rural 4	0.3	0.8	0.0	0.0	9.2	22.8	9.5	23.6
Rural 5	0.3	0.8	0.0	0.0	9.3	22.9	9.6	23.7
Rural 6	0.3	0.8	0.0	0.0	22.6	56	22.9	56.8
Rural 7	0.4	0.9	0.0	0.0	11.5	28.5	11.9	29.4
Rural 8	0.3	0.8	0.0	0.0	10.5	25.8	10.8	26.6
Rural 9	0.6	1.6	0.0	0.0	14.6	36.0	15.2	37.7
Rural 10	0.3	0.8	0.0	0.0	9.2	22.8	9.5	23.6
Ninepipe Segment (RP 40 to RP 46)								
Rural 1	0.1	0.3	0.0	0.0	3.0	7.3	3.1	7.6
Rural 2	0.1	0.3	0.0	0.0	3.1	7.5	3.2	7.8
Rural 3 (PA)	0.3	0.8	0.0	0.0	7.2	17.8	7.5	18.6
Rural 4	0.3	0.8	0.0	0.0	7.3	17.9	7.6	18.7
Rural 5	0.3	0.8	0.0	0.0	5.6	13.9	5.9	14.7
Rural 6	0.3	0.8	0.0	0.0	5.6	13.9	5.9	14.7
Rural 7	0.2	0.6	0.0	0.0	5.4	13.3	5.6	13.9
Rural 8	0.2	0.5	0.0	0.0	12.7	31.4	12.9	31.9
Rural 9	0.4	1.0	0.0	0.0	20.6	51.0	21.0	52.0
Rural 10	0.3	0.8	0.00	0.00	5.6	13.8	5.9	14.6

Action Alternatives

For all of the urban action alternatives construction-related effects on farmlands may include temporary construction easements for equipment access or staging areas. These effects are expected to be temporary and disturbed areas would be returned to their original use after construction is completed.

Table 5.3-2 summarizes the expected effects on prime farmland, farmland of statewide importance, and farmland of local importance for the urban action alternatives. No areas of unique farmland are mapped within the urban portion of the project corridor.

Table 5.3-2. Summary of farmland conversion expected for the urban action alternatives of the US 93 Ninepipe/Ronan improvement project.

	Prime Farmland		Farmland of Statewide Importance		Farmland of Local Importance		Total	
	Hectares	Acres	Hectares	Acres	Hectares	Acres	Hectares	Acres
Ronan								
Ronan 1	0.6	1.4	0.2	0.4	2.3	5.7	3.1	7.5
Ronan 2	0.5	1.3	0.1	0.2	2.2	5.5	2.8	7.1
Ronan 3	0.6	1.5	0.2	0.5	3.5	8.7	4.3	10.7
Ronan 4 (PA)	0.6	1.5	0.2	0.5	3.7	9.2	4.5	11.2
Ronan 5	0.3	0.8	0.0	0.0	0.8	1.9	1.1	2.7

Indirect Effects

Indirect effects on designated farmland within the urban portion of the project corridor would be the same as described for the rural portion of the project corridor.

5.3.3 Impacts of the Total Project

The maximum farmland conversion of approximately 40.7 hectares (100.9 acres) would occur with the combination of the Rural 9 alternative and the Ronan 4 alternative (PA), and the minimum conversion of approximately 13 hectares (32.2 acres) would occur with the combination of the Rural 1 alternative with the Ronan 5 alternative.

5.3.4 Mitigation Measures

Avoidance and Minimization Measures Included in Design

Because of the location of the existing roadway, some impact on prime farmland and farmland of statewide or local importance is unavoidable if the roadway is widened. The practicality of shifting the roadway alignment to avoid or minimize impacts is limited because the roadway crosses extensive east-west swaths of mapped farmland and avoiding these areas would require substantial alignment shifts that would result in other environmental impacts (e.g., property acquisition, filling of wetlands). The use of steeper side slopes on the roadway prism has been incorporated into the preliminary project designs at several locations where other environmentally sensitive areas, such as wetlands, occur adjacent to the roadway. The locations of these steeper road prism slopes coincide with some of the areas of mapped prime farmland and farmland of statewide or local importance, thereby reducing the overall impacts to farmland resources.

During final design, further opportunities to reduce the roadway prism and fine-tune the roadway alignment to reduce impacts to prime farmland and farmland of statewide or local importance would be investigated.

Additional Mitigation Measures Required

The Farmland Conversion Impact Rating form AD-1006 was completed (Appendix G) for the proposed project alternatives in accordance with the Farmland Protection Policy Act (FPPA – 7 U.S.C. 4201, et seq.). The total points in the site assessment criteria for each of the proposed project alternatives were less than 160; therefore, as stated under 7 CFR 658.4 (c), no additional consideration for farmland protection is necessary. Upon final decision on the proposed project, MDT would coordinate with the Natural Resources Conservation Service to complete the required documentation identifying measures taken to avoid impacts on farmlands and calculating the total expected impacts.

5.4 Social

The US 93 Ninepipe/Ronan improvement project is located in Lake County in western Montana, an area where population is expected to grow at a faster rate than for the state as a whole. More information on population projections can be found in *Section 4.4 Social* of this document, as well as in the US 93 Evaro to Polson FEIS.

Continued growth in the vicinity of the project area would generate increasing amounts of vehicle traffic along US 93. In addition, continued population growth in the area would result in an increased demand for public services such as roads, public utilities, and police and fire protection in the project area.

5.4.1 Rural Portion

Direct Effects

No-Action Alternative

There would be no construction impacts under the No-Action alternative.

The following impacts would occur under the No-Action Alternative:

Lifestyle—Under the No-Action Alternative, capacity improvements to US 93 would not be made and existing traffic congestion and safety issues would remain. Moreover, continued increases in population would result in increasing levels of congestion over time, and related increases in travel times, degraded air quality, and traffic-related difficulties accessing facilities along the project corridor.

Community Cohesion—Under the No-Action Alternative, community cohesion would be expected to degrade as US 93 becomes busier and more congested, making vehicular, bicycle, and pedestrian access more difficult. As stated in *An Economic Assessment for the U.S. Highways 93 Supplemental Environmental Impact Statement* (CBIR 2002), referred to as Ninepipe Economic Assessment, the local economy is expected to grow as more people move into the area. As congestion increases, US 93 is expected to become more of a barrier to social interaction.

Public Utilities and Services, Fire and Emergency Response Services and Law Enforcement—If roadway redevelopment does not occur, safety and capacity improvements would not be made. Traffic accidents, which demand the major portion of emergency response resources, would be expected to increase as more drivers encounter potentially unsafe conditions, such as congestion and difficulties making left turns off or onto the roadway. Additionally, emergency response, police, fire, and emergency medical support would deteriorate as congestion slows accident response times.

Other Elements—The other elements of the social environment, including population and demographics, housing and other public utilities and services such as electric and telecommunications services, would remain unaffected by the No-Action Alternative.

Environmental Justice—Environmental justice would not be affected by selection of the No-Action Alternative.

Action Alternatives

Residents and businesses that would be displaced by construction activities under the action alternatives are discussed in *Section 5.18 Relocations*.

Lifestyle and Community Cohesion—Construction of the proposed project would likely temporarily disrupt lifestyles and community cohesion due to the presence of construction equipment and staging areas in the project corridor. Also, residents would likely seek alternative travel routes for vehicles, bicyclists, and pedestrians around construction activities, which may disrupt community cohesion.

The US 93 Ninepipe/Ronan improvement project would have few long-term impacts on the rural lifestyle enjoyed by residents of the area. The components of this lifestyle, which include clean air, water, a lack of traffic congestion, and an enjoyment of outdoor recreational opportunities, are better served by any of the action alternatives, which improve safety and traffic capacity, as opposed to the No-Action Alternative.

As will be discussed in *Population and Demographics*, the effects of continued population growth include increased development pressures on agricultural land and open spaces. These impacts tend to favor denser development and lead to a more urban, as opposed to a rural, lifestyle. Although improving US 93 may induce business development to occur at intersections in the rural areas, improving US 93 would be, in itself, insufficient to induce measurable lifestyle changes, job or population growth in the area.

The rural alternatives that include restricted access (Rural 7 and Rural 9 alternatives) would require residents to alter their usual travel patterns, which in the short-term could be perceived as a major change to the character of the area. Over time, these impacts would lessen as people adjust to the new roadway configuration.

The US 93 Ninepipe/Ronan improvement project would result in social impacts regardless of the final design chosen. Improvements to US 93 would improve traffic flow and safety, and ease commuting times. The physical design of the highway and the entry and exit points, the width and number of lanes, and the volumes and patterns of traffic traversing the highway, would affect the ease with which area residents can access facilities, services, and recreational opportunities in their communities. This barrier effect is discussed in the US 93 Evaro to Polson FEIS, and although it would vary between action alternatives, it is present to some extent in all action alternatives.

Public Service and Utilities—The potential disruptions to utility services during construction would likely be minimal because temporary connections to customers typically are established before relocating utility conveyances and connections.

After construction is complete, response times for fire and emergency response services are expected to improve because of reduced congestion. There may also be a slight decrease in the accident rate along US 93 after roadway improvements are installed. Law enforcement would also benefit from improved response times after roadway redevelopment is complete.

Public and private schools situated along the project corridor would not be affected by selection of any of the action alternatives. Other services, such as school transportation or religious facilities, would not be affected by selection of any of the action alternatives.

The proposed rural alternatives would have minor effects on public services such as electrical, telecommunications, and other utilities. Relocation of telecommunications lines or vaults may be necessary under any of the alternatives in order to accommodate wider shoulders and in some cases, additional lanes. The exact extent of utility relocations will not be known until after the environmental documentation process is complete and a preliminary design document has been prepared. There would be no impacts to water utilities or solid waste collection under any of the action alternatives. Natural gas service is not currently provided along the project corridor.

Emergency response services such as police and fire would function more effectively with the higher-capacity alternatives. Alternative Rural 8 would allow emergency vehicles to pass other traffic more safely and with fewer delays than the other alternatives. Alternative Rural 9 would also accommodate easier movement of emergency vehicles, except that the center median would restrict turning movements to the major intersections. Alternatives Rural 5, Rural 6, and Rural 10 would follow Rural 8 and Rural 9 alternatives in terms of effectiveness for emergency vehicle response situations, followed by Rural 7, Rural 4, Rural 3 (PA), Rural 2, and Rural 1 alternatives in descending order.

Housing—As stated in *Section 5.18 Relocations*, construction of any of the action alternatives would require acquisition of one or two housing units in the project area. Given the availability of existing vacant residential units and undeveloped land in the area, residential displacements as a result of the action alternatives are not expected to cause a shortage of housing. Therefore, there would be no effect on housing in the rural portion of the project area.

Environmental Justice—Information on Environmental Justice is provided according to the requirements of Executive Order 12898, FHWA policy, and Title VI of the Civil Rights Act of 1964. As discussed in *Section 4.4 Social*, given the Native American population in the area and presence of low-income populations, environmental justice is addressed in this section.

As discussed in the US 93 Evaro to Polson FEIS, none of the alternatives, including the No-Action Alternative, would have a disproportionate effect on the Native American population or low-income populations. This is partly due to the fact that the Native American populations and low-income populations are not concentrated in specific areas of the project vicinity. No other social or minority groups would be isolated as a result of any of the lane configuration or structure alternatives considered for this project.

Indirect Effects

Population and Demographics—Population growth would continue under the No-Action Alternative and all action alternatives. Population growth in the project area would continue as a result of both natural population increases (more local births than deaths) and in-migration of people to the area, including retired or seasonal residents, persons who live and work in the area, and persons who commute to work outside the area. As stated in the US 93 Evaro to Polson FEIS, population growth would occur whether or not improvements are made to US 93. Factors such as the demand for and availability of employment, housing, and the availability of public services in the area, have a greater impact on population growth than do the proposed highway improvements. The US 93 Evaro to Polson FEIS estimated variations between action alternatives of 1 percent or less for the population growth rate through 2020, for the Saint Ignatius, Ronan, and Polson census subdivisions studied.

The differences in effects on population and demographics anticipated from any of the rural alternatives are slight. To the extent that some alternatives are expected to improve traffic flow and safety, they can be expected to ease the ability of commuters to travel longer distances to and from their workplaces and homes. This would be the case with the rural alternatives that are entirely four-lane configurations (Rural 8 and Rural 9 alternatives), to a lesser extent with those that make extensive use of interspersed four-lane configurations (Alternatives Rural 5, Rural 6, and Rural 10) and to a still lesser extent, with those that make extensive use of passing lanes (Rural 7 alternative). Alternatives Rural 1 through Rural 4, including Alternative Rural 3 (PA), with their reduced capacity compared to the other alternatives, would have a negligible effect on population and demographics.

Environmental Justice—Residents on the Flathead Indian Reservation would benefit from lessened congestion and improved safety on US 93. The US 93 Ninepipe/Ronan improvement project would not result in disproportionately high and adverse effects on minority or low-income populations, nor would it induce population growth.

5.4.2 Urban Portion

Direct Effects

No-Action Alternative

There would be no construction impacts under the No-Action Alternative.

The following impacts would occur under the No-Action Alternative:

Lifestyle—Under the No-Action Alternative, capacity improvements to US 93 would not be made, and existing traffic congestion and safety issues would remain. Continued increases in population would result in increasing levels of congestion over time, and related increases in travel times, degraded air quality, and traffic-related access difficulties along the project corridor.

Community Cohesion—Under the No-Action Alternative, community cohesion would degrade as US 93 becomes busier and more congested, making vehicular, bicycle, and pedestrian access more difficult. As stated in the Ninepipe Economic Assessment, the local economy is expected to grow as more people move into the area. As congestion increases, US 93 is expected to become a greater barrier to social interaction.

Public Utilities and Services, *Fire and Emergency Response Services and Law Enforcement*—If roadway redevelopment does not occur, limited safety and capacity improvements would be made. Traffic accidents, which demand the major portion of emergency response resources, would increase as more drivers encounter potentially unsafe conditions such as areas of congestion and difficulties making left turns off or onto the roadway. Emergency response, police, fire, and emergency medical support response times would deteriorate as congestion slows traffic.

Other Elements—The other elements of the social environment, including population and demographics, housing and other public utilities and services (such as electric and telecommunications services), would remain unaffected by the No-Action Alternative.

Environmental Justice—Environmental justice would not be affected by selection of the No-Action Alternative. The benefits of the action alternatives for the residents of the Flathead Indian Reservation would not be realized

Action Alternatives

Residents and businesses that would be displaced by construction activities under the action alternatives are discussed in *Section 5.18 Relocations*. The following impacts would occur under the action alternatives.

Lifestyle—The components of lifestyle enjoyed by residents along the US 93 project corridor, and the effects of continued population growth are the same as those discussed under the rural portion.

The urban alternatives that include a couplet (Alternatives Ronan 3 and Ronan 4 [PA]) or redirected traffic (Ronan 5 alternative) could also result in a perceived short-term change in the rural or small town lifestyle of the area, but would have beneficial impacts in the long-term:

- Redeveloping the roadway would allow more fluid movement of automobiles within the area, with fewer conflicts between vehicles
- Providing bike lanes and sidewalks in the urban area would enable people to take better advantage of outdoor activities.

Community Cohesion— Effects on public services and utilities for the urban portion would be similar to those described for the rural portion of the project area, with the following additional effects.

Impacts to community cohesion under any of the action alternatives would be composed of a mixture of both beneficial and adverse impacts, depending on the specific alternative. Urban alternatives that include a couplet (Alternatives Ronan 3 and Ronan 4 [PA]) or redirected traffic (Ronan 5 alternative) would eliminate some traffic movements and necessitate different, possibly more circuitous, routes to and from some locations.

Public Services and Utilities— Effects on public services and utilities for the urban portion would be similar to those described for the rural portion of the project area, with the following additional effects.

Public and private schools situated along the project corridor would not be affected by selection of the Ronan 1, Ronan 2, or Ronan 5 alternatives. Alternatives Ronan 3 and Ronan 4 (PA) with the couplet would include new lanes of traffic on the east side of the public school and the relocation of one Tribal facility. The Tribal facilities include, but are not limited to, the Tribal Head Start Program, the Ronan Tribal Health and Human Services Center; court appointed special advocate; Tribal Gaming Commission; Senior Citizens Center; and a Boys and Girls Club with an adjacent skate park. Other services, such as transportation or religious facilities, would not be affected by selection of any of the action alternatives.

Emergency response services such as police and fire would function more effectively with the higher-capacity alternatives. The Ronan 1 and Ronan 2 alternatives, with four-lane configurations, and Alternatives Ronan 3 and Ronan 4 (PA) with the couplet alternatives would allow emergency vehicles to pass other traffic more safely and with fewer delays than the Ronan 5 alternative.

Housing—Effects on housing for the urban portion would be similar to those described for the rural portion of the project area. Construction of the urban action alternatives would require acquisition of seven to nine housing units. Given the availability of existing vacant residential units and undeveloped land in the area, residential displacements as a result of the action alternatives are not expected to cause a shortage of housing.

Environmental Justice—Effects on environmental justice for the urban portion would be similar to those described for the rural portion of the project area. Residents on the Flathead Indian Reservation would benefit from lessened congestion and improved safety on US 93. As discussed under the rural action alternatives, none of the urban alternatives, including the No Action Alternative, would have a disproportionate effect on Native American or low-income populations. This is partly due to the fact that the Native American populations and low-income populations are not concentrated in specific areas of the project vicinity. No other social or minority groups would be isolated as a result of any of the lane configurations considered for this project.

Indirect Effects

Population and Demographics

Population growth would continue under all alternatives as a result of both natural population increases (more local births than deaths) and in-migration of people to the area, including retired or seasonal residents, persons who live and work in the area and persons who commute to work outside the area. As stated in the US 93 Evaro to Polson FEIS, population growth would occur whether or not improvements are made to US 93. Factors such as the demand for and availability of employment, housing, and the availability of public services in the area, have a greater impact on population growth than do the proposed highway improvements. The US 93 Evaro to Polson FEIS estimated variations between action alternatives of 1 percent or less for the population growth rate through 2020, for the Saint Ignatius, Ronan, and Polson census subdivisions studied.

5.4.3 Impacts of the Total Project

Impacts on the social environment for the rural and urban portions of the project area would include beneficial effects under all action alternatives, such as easier commuting between the Flathead Indian Reservation and the City of Missoula, a reduced accident rate, and improved emergency response times; and adverse effects such as restricted turning movements that would require residents to adjust to new travel patterns under Rural 7 and Rural 9 alternatives and relocation of the Tribal facility under the Alternatives Ronan 3 and Ronan 4 (PA).

5.4.4 Mitigation Measures

No mitigation measures are proposed for the No-Action Alternative, although MDT may pursue a northbound climbing lane at Post Creek Hill to improve safety if this reconstruction project does not occur. Other safety projects may be required as traffic volumes grow.

Avoidance and Minimization Measures Included in Design

The preliminary designs currently under consideration are intended to provide for efficient traffic flow in the area while minimizing disruption to the community. All alternatives would include passing lanes, left-turn bays, and left-turn center medians in high traffic areas. Each of these features represents an improvement over existing conditions or the No-Action Alternative. The southbound leg of the Alternative Ronan 4 (PA) couplet would include a 3.6-meter (12-foot) vegetative buffer and 3-meter (10-foot) planting area on the west side of the street, and a 1.8-meter (6-foot) buffer and 3-meter (10-foot) planting area on the east side. Moreover, limitations on the project scope and preliminary design imposed by other factors, such as environmental considerations and the minimization of acquiring additional property, also serve to minimize adverse social impacts. Noise effects that disrupt community cohesion and lifestyle and potential mitigation for these effects are discussed in *Section 5.8 Noise*.

Additional Mitigation Measures Required

Residential and commercial displacements would occur under all of the action alternatives, and a Tribal facility would be displaced under the Ronan 3 and Ronan 4 alternatives. If either the Ronan 3 or Ronan 4 alternative is selected, the relocation of the Tribal Health facility would be coordinated with CSKT to minimize disruption to providing health services. State and federal laws and regulations to protect both landowners and the tax paying public govern the acquisition of land or improvements for highway construction. Landowners affected are entitled to receive fair market value for any land or buildings acquired and any damages as defined by law to remaining land due to the effects of highway construction. The MDT would purchase properties or acquire an easement and provide relocation assistance for properties negatively affected by the proposed project. These actions would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law [P.L.] 91-636 as amended), 42 United States Code (U.S.C.) Section 4651 and 4652, et seq., and the Uniform Relocations Act Amendments of 1987 (P.L. 100-17).

During construction, the contractor would be required to implement the following measures:

- Place adequate signage in the project area informing travelers and residents of revised traffic patterns

- Coordinate the construction schedule with fire departments and police service in the area to ensure that reliable emergency access is maintained and alternative plans or reroutes (where possible) are developed to avoid substantial delays in response times

- Coordinate with utility companies to minimize potential utility service disruptions

- Maintain reasonable access to businesses and residences during construction.

5.5 Economics

5.5.1 Rural Portion

Direct Effects

No-Action Alternative

There would be no construction impacts under the No-Action Alternative. The following impacts would occur under the No-Action Alternative:

Economic Base—The general economic base would remain unchanged under the No-Action Alternative. The local economy is based on tourism, manufacturing, and sales.

Flathead Indian Reservation—There would be no direct impacts to the economy of the Flathead Indian Reservation from the No-Action Alternative.

Economic Character of the Rural Community—The economic character of the rural portion of the project area is a function of the general economic characteristics (employment, income, and population) of the area. These factors would not change substantially under the No-Action Alternative.

Tourism—Tourism in Ronan and Lake County is based on the area's natural beauty and resources, as well as proximity to other tourist destinations such as Glacier National Park and Yellowstone National Park. In the future, tourism in the area can be expected to fluctuate as the health of the national economy fluctuates. Selection of the No-Action Alternative is not expected to affect tourism in the area.

Action Alternatives

During construction of any of the action alternatives, the local economy would benefit from an infusion of construction dollars and increased demand for goods and services by construction workers. Economic benefits from construction would end shortly after work is complete when no additional construction materials are purchased and construction workers move on to other jobs.

During construction of any of the action alternatives, temporary delays or loss of access to businesses may occur.

Long-term effects from the project are expected to be minor because operation of the proposed project would not generate employment. Also, traffic volumes would not increase as a result of the proposed project and, as stated in *Section 4.5 Economics*, retail sales to tourists and local residents traveling along US 93 are a major component of the local economy. The only long-term impact to the local economy from the US 93 Ninepipe/Ronan improvement project could be a change in retail sales if access to retail destinations is either improved or reduced. If access to retail destinations is improved by improving traffic conditions along the corridor, potential customers are more likely to frequent these businesses and this could be expected to have a minor positive effect on the local economy. Conversely, businesses that rely on traffic, particularly impulse shopping traffic, may suffer an adverse impact to sales if access is reduced.

Economic Base—The general economic base would remain unchanged under any of the action alternatives currently considered. The local economy is based on tourism, manufacturing, and sales. These factors would not be affected by the proposed project.

Under any of the alternatives currently being considered, long-term operation of US 93 is not expected to cause any substantial effect on the economy of the area. Because only 2.2 percent of Lake County businesses are located in the rural portion of the project area (19 businesses out of 849 businesses [MDLI 2003]), the vast majority of area businesses would not be directly affected by operation of the rural portion of the proposed project.

The majority of businesses currently operating in the rural portion of the project area are manufacturing or construction businesses (basic industries), such as the Jore Company or the log home construction businesses, and would not be affected by changes to access. Other businesses, such as the nursery, mini-storage, and recreational vehicle storage businesses, are retail destinations (secondary industries) that would also be unaffected by changes to access. One of the five convenience-oriented businesses along the route is located at an intersection, so access would not be reduced as a result of any of the action alternatives. Two of the five convenience-oriented businesses would be displaced by any of the action alternatives but would probably relocate on adjacent property. The other two convenience-oriented businesses (Ninepipes Lodge and Ninepipes Museum) may experience reduced patronage as a result of reduced access under Alternative Rural 9. Reduced access to two businesses would not result in a measurable effect to employment or personal income in Lake County.

Flathead Indian Reservation—There would be no direct impacts to the economy of the Flathead Indian Reservation from any of the action alternatives. Native American owned businesses in the project area, as well as all other businesses along the project corridor, might experience minor positive or negative economic benefits as a result of improved or reduced access.

Economic Character of the Rural Community—The economic character of the rural portion of the project area is a function of the general economic characteristics (employment, income, and population) of the area. These factors would not change substantially under any of the proposed alternatives. Project improvements, including road widening and restricted access, would not change the economic character of the project area.

Tourism—Tourism in Ronan and Lake County is based on the area's natural beauty and resources, as well as proximity to other tourist destinations such as Glacier National Park and Yellowstone National Park. These factors would not change as a result of the proposed project. In the future, tourism in the area can be expected to fluctuate as the health of the national economy fluctuates. Selection of any of the action alternatives is not expected to affect tourism in the area. Construction activities may cause traffic delays and affect a tourist's experience while accessing tourist destinations, such as Flathead Lake or Glacier National Park. If suitable alternate routes are available to these destinations, tourists may temporarily abandon the corridor to seek a faster and more aesthetic drive.

Indirect Effects

Although redevelopment of US 93 may induce business to locate at intersections in the rural areas, redevelopment of US 93 would be, in itself, insufficient to induce measurable business development or economic growth in the rural portion of the proposed project area.

5.5.2 Urban Portion

Direct Effects

No-Action Alternative

There would be no construction impacts under the No-Action Alternative.

The following impacts would occur under the No-Action Alternative:

Economic Base—The general economic base would remain unchanged under the No-Action Alternative. The local economy is based on tourism, manufacturing, and sales. These factors would not be affected by the proposed project.

Flathead Indian Reservation—There would be no direct impacts to the economy of the Flathead Indian Reservation from the No-Action Alternative.

Economic Character of the Urban (Ronan) Community—The economic character of Ronan and the rural areas within the project area is a function of the general economic characteristics (employment, income, and population) of the area. These factors would not change substantially under the No-Action Alternative.

Tourism—Tourism in Ronan and Lake County is based on the area's natural beauty and resources, as well as proximity to other tourist destinations such as Glacier National Park and Yellowstone National Park. In the future, tourism in the area can be expected to fluctuate as the health of the national economy fluctuates. Selection of the No-Action Alternative is not expected to affect tourism in the area.

Action Alternatives

During construction of any of the action alternatives, the local economy would benefit from an infusion of construction dollars and increased demand for goods and services by construction workers. Economic benefits from construction would end shortly after work is complete when no additional construction materials are purchased and construction workers move on to other jobs.

During construction of any of the action alternatives, temporary delays or loss of access to businesses may occur.

Long-term effects from the proposed project are expected to be minor because operation of the proposed project would not generate employment. Also, traffic volumes would not increase as a result of the proposed project and, as stated in *Section 4.5 Economics*, retail sales to tourists and local non-residents traveling along US 93 is a major component of the local economy.

One long-term impact to the local economy from the US 93 roadway improvement project could be a change in retail sales if access to retail destinations is either improved or reduced. If access to retail destinations is improved by improving traffic conditions along the corridor, potential customers are more likely to frequent these businesses and this could be expected to have a minor positive effect on the local economy. As stated in *Section 4.5 Economics*, traffic congestion during the summer months currently impedes access to businesses along US 93.

Conversely, businesses that rely on traffic, particularly impulse shopping traffic, may suffer an initial adverse impact to sales under the couplet alternatives (Ronan 3 and Ronan 4 [PA]). Under Alternatives Ronan 3 and 4 (PA), a portion of the traffic currently traveling along US 93 would be rerouted to 1st Avenue SW leg of the couplet and this would divert a number of potential customers from businesses currently located along US 93 onto the new couplet route. Businesses that rely on impulse shopping are likely to suffer the most, at least initially. Retail trade along existing US 93 would be expected to decrease in the short term as a result of Alternatives Ronan 3 and 4 (PA). Implementing the couplet alternatives (Ronan 3 or 4 [PA]) may also induce new businesses to locate along the couplet or existing businesses to relocate along the couplet, which could create additional competition for the businesses on US 93. In the long-term, overall business activity in Ronan would be unaffected, because traffic congestion would be reduced and access to businesses would be improved. Local businesses would be expected to gain sales that they would have lost to congestion and as traffic levels in the corridor increase.

Economic Base—The general economic base would remain unchanged under any of the action alternatives currently considered. The local economy is based on tourism, manufacturing, and sales. These factors would not be affected by the proposed project.

All of the potentially displaced businesses in the urban portion of the corridor are secondary industries. Most of these businesses would seek new locations within Ronan to re-open. Most area businesses would not be directly affected by operation of the urban portion of the proposed project.

Flathead Indian Reservation—There would be no direct impacts to the economy of the Flathead Indian Reservation from any of the action alternatives. Native American owned businesses in the project area, as well as all other businesses along the project corridor, might experience minor positive or negative economic benefits as a result of improved or reduced to access.

Economic Character of the Urban (Ronan) Community—The economic character of Ronan and the rural areas within the project area is a function of the general economic characteristics (employment, income, and population) of the area. These factors would not change substantially under any of the proposed alternatives. Project improvements, including road widening and restricted access, would reduce the economic focus of Ronan on US 93 and increase the economic activity in the downtown area. Ronan 3 and Ronan 4 (PA) alternatives include a couplet that would divert traffic from US 93 to the downtown area of Ronan. These alternatives would shift economic activity from the US 93 corridor to the downtown area. This would expand the areas of economic activities within the community and revise the economic character of Ronan to include more of the downtown area.

Tourism—Tourism in Ronan and Lake County is based on the area's natural beauty and resources, as well as proximity to other tourist destinations such as Glacier National Park and Yellowstone National Park. These factors would not change as a result of the proposed project. In the future, tourism in the area can be expected to fluctuate as the health of the national economy fluctuates. Selection of any of the action alternatives is not expected to affect tourism in the area.

The economic benefits of tourism to the local Ronan/Lake County community may be slightly affected by construction activities if traffic delays cause tourists to seek alternate routes while accessing tourist destinations, such as Flathead Lake or Glacier National Park. However, few suitable alternate routes are available to these destinations, and therefore no substantial impact on tourism is expected from construction.

Indirect Effects

Although redevelopment of US 93 may induce business development to occur along the couplet in Ronan (Alternatives Ronan 3 and Ronan 4 (PA), redevelopment of US 93 would be insufficient to induce measurable economic growth in the area. Traffic changes associated with Alternatives Ronan 3 and Ronan 4 (PA) would shift economic activity away from the US 93 corridor into downtown Ronan. However, because the proposed project would not increase traffic in the area, it would not affect, either positively or negatively, the overall economy of the area.

5.5.3 Impacts of the Total Project

Under all action alternatives in the rural and the urban portions of the project area construction impacts would include the local economy benefiting from an infusion of construction dollars and an increased demand for goods and services by construction workers.

Impacts of the improved roadway on retail sales are dependent on changes in traffic volume and access. Retail businesses along the project corridor might experience minor positive or negative economic benefits as a result of improved or reduced access.

Construction of the US 93 Ninepipe/Ronan improvement project would bring additional dollars into the local community in the form of labor income and materials purchases, and this would generate increased economic activity.

5.5.4 Mitigation Measures

Avoidance and Minimization Measures Included in Design

The preliminary designs currently under consideration are intended to provide for efficient traffic flow in the area while minimizing property acquisitions and the associated economic disruption. Selecting the most efficient and effective alternative would minimize economic disruptions. Signage, left-turn lanes, and U-turn lanes are incorporated into the alternatives and would minimize economic impacts on businesses.

Additional Mitigation Measures Required

As a means to ensure that local residents are hired for construction jobs, the Confederated Salish and Kootenai Tribes have implemented an Indian Preference Ordinance that requires that Indians be given hiring preference for construction work that occurs on Tribal lands. The Montana Department of Transportation and the Confederated Salish and Kootenai Tribes have agreed to develop a Memorandum of Agreement that would guide construction contracting activities.

In order to maximize the value of materials purchased locally, business organizations will be informed of impending contracts through the standard state policy for advertising contracts, whereby local suppliers may have the opportunity to submit bids.

Implementation of the Uniform Relocation Act of 1970 would mitigate the economic impact caused by acquiring residential or commercial/industrial properties. The Uniform Relocation Act of 1970 is described in detail in *Section 5.18 Relocations*.

During construction, the contractor would be required to maintain reasonable access to businesses and provide appropriate signing to inform the traveling public that local businesses are open.

5.6 Pedestrians and Bicyclists

5.6.1 Rural Portion

Direct Effects

No-Action Alternative

There would be no construction-related effects on pedestrian and bicycle facilities under the No-Action Alternative.

The No-Action Alternative would perpetuate the lack of adequate pedestrian and bicycle facilities through the US 93 Ninepipe/Ronan project corridor that cause safety concerns and traffic backups. The existing 0.6-meter (2-foot) shoulders in the rural portion discourage bicycle use, and the 1.2-meter (4-foot) shoulders in Ronan are only slightly better. Intermittent sidewalks and parking areas in Ronan would provide the only adequate pedestrian facilities there. Increasing vehicle volumes would result in a corresponding increase in difficulty for pedestrians and bicyclists to safely cross or travel along the highway. Opportunities for substantial improvements in bicycle and pedestrian facilities would not be realized. The pedestrian and bicycle quality of service would remain at rating F under the No-Action Alternative.

Action Alternatives

Construction-related impacts on pedestrians and bicyclists may include lane and shoulder closures, dust and debris, noise, and air quality concerns. Users may have to travel closer to vehicle traffic or construction equipment, or be required to seek alternate routes or postpone trips through construction zones at times. Advance notice of construction activities would be available through local media.

All of the rural action alternatives except Alternative Rural 7 would have 2.4-meter (8-foot) wide paved shoulders on each side of the roadway, while Alternative Rural 7 would have 3.0-meter (10-foot) paved shoulders on each side. These shoulders would provide a greater separation for bicyclists and the occasional pedestrian users. A narrow 0.3 meter (1-foot) rumble strip with regular gaps for bicyclists would separate highway traffic from bicyclists, in accordance with MDT's rumble strip policy. The structure options do not affect the improvements planned for pedestrians and bicyclists.

As a result of comments received from circulation of the draft SEIS, the project proponents have added a 3.0-meter (10-foot) wide separated bicycle/pedestrian path to the rural portion of the project as part of Alternative Rural 3 (PA).

The pedestrian and bicycle quality of service modeling results for No-Action and all rural action alternatives are presented in Table 5.6-1. Pedestrian quality of service with a separated bicycle/pedestrian path would be very good, in the B to C range. Without out a separated path it would range from E to F because shoulders do not provide quality pedestrian facilities. For bicyclists, the lower the speed and volume and the wider the shoulder, the higher the model rated the quality of service. For the rural action alternatives the highest value is A for the separated path while the lowest value for bicycle quality of service without the path was D. Volume of traffic and lateral separation are the key factors in quality of service values. The impact of higher speed in the rural section is offset by the additional lateral separation with 2.4-meter (8-foot) and 3.0-meter (10-foot) shoulders.

Table 5.6-1. Summary of pedestrian and bicycle quality of service modeling results for the rural portion of the US 93 Ninepipe/Ronan project corridor.

	Quality of Service			
	Pedestrian		Bicycle	
Alternative	Northbound	Southbound	Northbound	Southbound
Rural No-Action	F	F	F	F
Rural 1	F	F	C	D
Rural 2	E	F	C	D
Rural 3 (PA) [a]	B	C	A	A
Rural 4	E	F	C	C
Rural 5	E	F	C	C
Rural 6	E	F	C	C
Rural 7	E	F	A	B
Rural 8	E	E	C	C
Rural 9	E	E	C	C
Rural 10	F	F	C	C

Note: The model calculates a numerical score that corresponds to a letter value (A “best case scenario” through F “worst case scenario”) representing the pedestrian and bicycle quality of service.
[a] Alternative Rural 3 (PA) includes a separated bike/pedestrian path that was not part of this alternative in the draft SEIS.

Indirect Effects

No indirect effects on pedestrian and bicycle traffic have been identified.

5.6.2 Urban Portion

Direct Effects

No-Action Alternative

There would be no construction-related effects on pedestrian and bicycle facilities under the No-Action Alternative. Long-term impacts are the same as those discussed under the rural portion.

Action Alternatives

As with the rural section, construction impacts may include lane and shoulder closures, dust and debris, noise, and air quality concerns. Unlike the rural section, in Ronan there is more opportunity to bypass construction activities by using side streets and parking areas. Any hardship on users from construction would soon be offset by improved facilities after completion of the proposed project.

As a result of comments received from circulation of the draft SEIS, the project proponents have added to the Ronan 4 (PA) alternative a 3.0-meter (10-foot) wide separated bicycle/pedestrian path from the Ronan City Park east to the northbound lanes, then south on the east side of the roadway to Timber Lane Road, where it will connect to the CSKT Timber Lane path. This addition will be accomplished by moving the previously planned bicycle path on the shoulder to the buffer area and combining it with the pedestrian path. The project previously provided a separated bicycle/pedestrian path for the north portion of the project from Baptiste Road/Spring Creek Road (where it would connect to the path extending south from Polson and Pablo) following old US 93 down Third Street and terminating in Ronan at the City Park at the junction of US 93 and Buchanan Street. The added section would extend the separated bicycle/pedestrian through Ronan.

The pedestrian and bicycle quality of service in the urban portion of the US 93 Ninepipe/Ronan project corridor ranges from B down to E for the action alternatives. Results of the quality of service model for the urban action alternatives are shown in Table 5.6-2. The best quality of service is found in alternatives with the following conditions:

- *More than one travel lane* – The model is sensitive to flow rates of the lane adjacent to the shoulder or curb. One lane concentrates all the traffic whereas with two lanes the traffic flow rate is decreased. Alternatives Ronan 1, Ronan 2, Ronan 3, and Ronan 4 (PA) provide two lanes of travel in each direction.

- *Presence of on-street parking* – On-street parking creates a physical barrier between vehicles and pedestrians that provides a sense of pedestrian comfort and security. Alternatives Ronan 3 and Ronan 4 (PA) provide parking on the left side of the roadway for both the northbound and southbound legs of the couplet.

- *Buffer between edge of paving and sidewalk* – The model is sensitive to lateral separation between bicycle and pedestrian facilities and the edge of the traveled way. The presence of landscaping between the curb and sidewalk improves the quality of service. This is best seen in Alternative Ronan 4 (PA), which has a 2.7-meter (9-foot) wide planting area creating separation between the traveled way and sidewalk, improving both the pedestrian and bicycle quality of service.

Table 5.6-2. Summary of pedestrian and bicycle quality of service modeling results for the urban portion of the US 93 Ninepipe/Ronan project corridor.

Alternative	Quality of Service: Pedestrian Northbound	Quality of Service: Pedestrian Southbound	Quality of Service: Bicycle Northbound	Quality of Service: Bicycle Southbound
Ronan No-Action	F	F	F	F
Ronan 1	C	C	E	E
Ronan 2	C	C	D	E
Ronan 3 (roadside with bike lane)	C	C	D	E
Ronan 3 (roadside with parking)	B	B		
Ronan 4 – PA (roadside with bike lane)	B	C	D	E
Ronan 4 – PA (with separated bike/pedestrian path)	B	B	C	C
Ronan 4 – PA (roadside with parking)	B	B		
Ronan 5	E	E	D	E

Note: The model calculates a numerical score that corresponds to a letter value (A "best case scenario" through F "worst case scenario") representing the pedestrian and bicycle quality of service.

Signalized intersections may confer additional benefits for pedestrian safety and comfort.

Indirect Effects

No indirect effects on pedestrian and bicycle traffic in the urban portion have been identified.

5.6.3 Impacts of the Total Project

Short-term construction impacts would occur during construction under all rural action Alternatives. These may include lane and shoulder closures, dust and debris, noise and air quality concerns. Users may have to travel closer to vehicle traffic or construction equipment, or be required to seek alternate routes or postpone trips through construction zones at times. All of the action alternatives would provide 2.4- to 3.0-meter (8- to 10-foot) wide paved shoulders. In accordance with MDT's rumble strip policy, all of the rural action alternatives would include a 0.5-meter (1-foot) wide rumble strip that would separate highway traffic from bicyclists.

As with the rural section, impacts would occur during construction under all urban action alternatives. Construction impacts may include lane and shoulder closures, dust and debris, noise and air quality concerns. Unlike the rural action, in Ronan there is more opportunity to bypass construction activities by using side streets and parking areas. All of the urban action alternatives would include 0.6- to 1.5-meter (2- to 5-foot) outside shoulders/bike lanes and 1.6- to 1.8-meter (5.25- to 6-foot) sidewalks on each side. See Appendix J, Response #25-1 about pedestrian signals on First Avenue SW.

5.6.4 Mitigation Measures

Avoidance and Minimization Measures Included in Design

The addition of a separated bicycle/pedestrian path in both the rural and urban portions of the project as part of the preferred alternatives will provide a high quality of service for both bicyclists and pedestrians.

To provide additional safety for pedestrian crossings of US 93 within Ronan, pedestrian signal heads will be provided at all signalized intersections.

Additional Mitigation Measures Required

Development of a Transportation Management Plan (TMP) for the project. The TMP will consider project and corridor impacts and will include components for traffic operations, public information and project-related construction traffic control.

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5.7 Air Quality

5.7.1 Rural Portion

Direct Effects

No-Action Alternatives

The No-Action Alternative would result in a slight decrease in air quality associated with the increase in vehicle miles traveled (VMT) and emissions.

Action Alternatives

As stated in Appendix F of the US 93 Evaro to Polson FEIS, construction activities under any of the action alternatives would generate some dust and result in equipment emissions that would temporarily diminish air quality in the immediate vicinity of construction. Also during construction, highway traffic would experience some congestion and may have wait times, during which time many vehicles would be idling and producing emissions. Due to the relatively short duration of these delays, it is anticipated that no NAAQS would be exceeded. Any increases in pollutant levels would be temporary in nature and would not be expected to have any short-term or long-term impacts on air quality. Some phases of construction would cause odors that could be detectable to people located at or near the construction site, particularly during any required paving operations using asphalt. Odors could also result from diesel-powered equipment. These odors are typically insubstantial in nature; no adverse construction-related air quality impacts would be expected to result from construction. Construction of alternatives with wider cross-sections would result in marginally greater impacts than construction of narrower alternatives because of the greater area of disturbance. Therefore, of the action alternatives, the Rural 8 and Rural 9 alternatives would have the greatest construction air quality impacts while the Rural 1 alternative would result in the least air quality impact during construction.

The air quality assessment reported in Appendix F of the US 93 Evaro to Polson FEIS contains the conclusion that operational carbon monoxide and PM_{10} concentrations would fall well within the NAAQS (National Ambient Air Quality Standards). The expected rate of traffic growth along US 93 is somewhat less than that anticipated when the US 93 Evaro to Polson FEIS was prepared, so that the above conclusion remains valid, and operational air quality impacts in the rural area would be minor under any of the alternatives. As with the No-Action Alternative, increases in VMT over time would also lead to an increase in emissions.

Indirect Effects

Gravel excavation and crushing operations as well as asphalt manufacturing operations that would occur to provide material for the US 93 project could result in air quality impacts, and these impacts would be considered indirect impacts of the roadway project. Traffic to and from material sources sites, in addition to the heavy machinery required to extract materials, will have fugitive dust and emissions impacts similar to those described for direct construction-related impacts.

5.7.2 Urban Portion

Direct Effects

No-Action Alternatives

The No-Action Alternative would result in a slight decrease in air quality associated with the increase in vehicle miles traveled (VMT) and emissions.

Action Alternatives

Additional air quality analysis requirements apply in the urban portion of the study area. A mobile source air toxics analysis was performed for this portion of the study area. Also, since Ronan is a nonattainment area for PM_{10}, the Clean Air Act's transportation conformity requirements apply to this project. The transportation conformity analysis consists of a regional emissions analysis, a qualitative PM_{10} hotspot analysis, and a conformity determination. These analyses are detailed in Appendix H of the document and summarized below.

Impacts on air quality from construction activities would be similar to those described for the rural portion of the corridor. However, the increase in dust as a result of construction could be noticeable in the urban portion of the corridor because there are more potential receptors and because Ronan is a nonattainment area for PM_{10}. Impacts would be somewhat greater for Alternatives Ronan 3 and Ronan 4 (PA) because construction would occur along both existing US 93 and First Avenue SW.

Mobile Source Air Toxics

In 2006, FHWA released its *Interim Guidance on Air Toxic Analysis in NEPA Documents.* This guidance spells out procedures for analysis of mobile source air toxics (MSAT) pollutants. Under the guidance, a qualitative analysis of likely MSAT impacts is conducted for non-exempt roadway projects such as this project where the design year traffic volumes are lower than 140,000 vehicles per day.

MSATs are compounds in both gaseous and ultra fine particle form emitted from vehicles that travel on highways and non-road equipment like bull dozers, loaders, and diesel generators. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline. The primary pollutants that FHWA is concerned with are benzene, formaldehyde, 1,3-butadiene, acrolein, acetaldehyde and diesel particulate matter.

This project is designed to provide additional roadway capacity to address future growth in traffic volumes. Because most of the project corridor is rural in nature and serves travel between different locations in Montana, the project improvements are not expected to result in a difference in total traffic volumes between the No-Action Alternative and preferred alternatives.

MSAT emissions are generally sensitive to vehicle speed, with higher emissions rates associated with low speeds. The congestion relief benefits of this project (Table 5.1-6**)** significantly improve future speeds in Ronan, resulting in lower MSAT emissions. Traffic signals will be installed in up to four locations in the future as traffic signal warrants are met; these signals will create some vehicle idling, which would increase MSAT emissions compared to unsignalized intersections. However, signals would likely be needed in the future under the No-Action Alternative as well.

The couplet design, because it divides the total traffic volume onto two separate roadways, will tend to increase emissions along First Avenue SW and decrease emissions along the existing Highway US 93 corridor relative to the No-Action Alternative. The one-way street design associated with the couplet will also reduce idling time associated with vehicles waiting for opportunities to make left turns. Finally, the wide buffers associated with Ronan Alternative 4 (PA) will result in lower concentrations of MSATs and other pollutants on the sidewalks, reducing exposure to these pollutants.

Regardless of which alternative is chosen, FHWA expects lower MSAT emissions in the future due to EPA's national vehicle and fuel control programs. Between 1990 and 2020 EPA projects that national control programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, acrolein, and acetaldehyde by 67 to 87 percent, and will reduce on-highway diesel particulate matter (DPM) emissions by 90 percent. These reductions are due to the benefits of national mobile source control programs, including requirements for reformulated gasoline program, a new cap on the toxics content of gasoline, the national low emission vehicle standards, the Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and the heavy-duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. These are net emission reductions, that is, the reductions that will be experienced even after growth in vehicle miles traveled is taken into account. While these projections are based on somewhat lower VMT growth rates than those expected in the project corridor, the Ronan area should still experience significant MSAT emissions reductions in the future.

Transportation Conformity

Ronan is a nonattainment area for PM_{10} with the boundaries of the nonattainment area coinciding with Ronan's municipal boundaries. Consequently, the Clean Air Act's transportation conformity requirements apply to this project.

Transportation conformity is required under Clean Air Act section 176(c) (42 U.S.C. 7506(c)) to ensure that federally supported highway and transit project activities are consistent with ("conform to") the purpose of the state air quality implementation plan (SIP). Conformity to the purpose of the SIP means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant national ambient air quality standards (NAAQS or "standards"). EPA's transportation conformity rule (40 CFR 51.390 and Part 93) establishes the criteria and procedures for determining whether transportation activities conform to the SIP.

Regional Emissions Analysis—One of the requirements for projects in isolated rural areas is a regional emissions analysis. This analysis must include the proposed project, all existing roadways in the nonattainment area, and any other new roadways anticipated in the future (e.g., in the next 20 years). In areas like Ronan that do not have state implementation plans with emissions budgets for conformity, the analysis must document that total emissions associated with building the project are no greater than emissions associated with not building the project (e.g., the No-Action alternative) or emissions in calendar year 1990. The first option was chosen for this analysis.

The analysis years include 2030 (the horizon year of the recently-updated statewide transportation plan, 2012 (a near-term year), and 2020 (interim year). The analysis methodology and assumptions are detailed in Appendix H, and the results are summarized in Table 5.7-1 below.

Table 5.7-1. Summary of regional emissions analysis results for the urban portion of the US 93 Ninepipe/Ronan Improvement project.

Source	2012		2020		2030	
	No Action	Build	No Action	Build	No Action	Build
US 93 emissions	590.1	304.9	713.6	365.8	812.7	419.9
Collectors	637.6	637.6	743.8	743.8	877.3	877.3
Locals	612.4	612.4	714.7	714.7	842.9	842.9
Unpaved Roads	229.4	229.4	261.8	261.8	302.3	302.3
Total	2069.5	1784.3	2433.9	2086.1	2835.2	2442.4

For each analysis year, emissions associated with building the project are lower than emissions associated with the No-Action Alternative, satisfying this conformity test.

PM_{10} Hotspot Analysis—Another requirement for project-level conformity determinations in PM_{10} nonattainment areas is a hotspot analysis. A hotspot analysis must demonstrate that the project will not lead to localized violations of the PM_{10} standard, or worsen existing violations. Under the conformity rule, until the U.S. EPA issues quantitative PM_{10} modeling guidance, a qualitative analysis is required. FHWA employed a monitor comparison approach for the hotspot analysis, comparing worst-case (2030) traffic volumes on US93 in Ronan to existing traffic volumes and air quality data in nearby communities. The hotspot analysis is documented in Appendix H.

FHWA concludes that the preferred alternative will not cause or contribute to a localized violation of the PM_{10} standard for the following reasons:

1. Monitors in other communities near Ronan are impacted by much higher traffic volumes than those associated with the peak year of the US 93 project in Ronan, and are not violating the PM_{10} standard.

2. Current PM_{10} values in Ronan are approximately one-third of the PM_{10} standard, and emissions are not expected to increase enough to lead to a violation.

3. The preferred alternative includes design features that will reduce dust trackout and emissions compared to the No-Action Alternative.

Transportation Conformity Determination

The requirements of the transportation conformity rule apply for project-level conformity determinations in isolated rural areas for PM_{10} are listed in Table 5.7-2 below.

Table 5.7-2. Transportation conformity rule requirement for determinations in rural areas for PM_{10}

Section Number	Section Content
§93.110	Latest planning assumptions.
§93.111	Latest emissions model.
§93.112	Consultation
§93.113(d)	TCMs
§93.116	PM_{10} hot spots
§93.117	PM_{10} control measures.
§§93.118 and/or 93.119	Emissions budget and/or interim emissions

FHWA concludes that the project complies with all applicable transportation conformity requirements of the Clean Air Act, and that the preferred alternative will not cause new air quality violations, worsen existing violations, or delay timely attainment of the PM_{10} national ambient air quality standard for the following reasons:

- The requirements for use of the latest planning assumptions and latest emissions model have been met, as outlined in Appendix H.
- The applicable interagency consultation requirements of the Montana conformity SIP have been carried out.
- As Ronan does not have a SIP, there are no TCMs as defined by the conformity rule and this requirement does not apply.
- The PM_{10} qualitative hotspot analysis demonstrates that the project will not cause or contribute to a localized violation of the PM_{10} standard.
- As Ronan does not have a SIP, there are no PM_{10} control measures with which the project to must comply.

- The regional emissions analysis complies with the applicable interim emissions tests for areas without approved or adequate SIPs.

Indirect Effects

Indirect impacts would be similar to those described for the rural portion of the corridor.

5.7.3 Impacts of the Total Project

The combination of either the Rural 8 or Rural 9 alternative with either Alternative Ronan 3 or Ronan 4 (PA) would result in marginally the greatest air quality impacts during construction. The Rural 2 alternative with either the Ronan 1, Ronan 2, or Ronan 5 alternative would result in marginally the least air quality impact during construction.

All action alternatives would result in minimal operational air quality impacts.

5.7.4 Mitigation Measures

Avoidance and Minimization Measures Included in Design

The primary measure included in roadway design to avoid or minimize air quality impacts is providing adequate roadway capacity including appropriate turn lanes and control at major intersections so that traffic congestion is minimized. Paving approaches within the US 93 right-of-way in Ronan; surfacing gravel and dirt shoulders and installing curbs and gutters in Ronan; and providing new surfacing on US 93 in the rural and urban portion are measures included in the preliminary design that would reduce potential PM_{10} concentrations.

Additional Mitigation Measures Required

Controlling and minimizing the tracking of offsite sediment as required by the stormwater pollution prevention plan (SWPPP) would help control dust produced by construction. Implementation of a traffic control plan will follow MDT's Work Zone Safety and Mobility Guidelines to minimize traffic delay to the extent feasible.

During construction, best management practices (BMPs) to reduce the generation and dispersion of particulates should be implemented. A variety of routine dust suppression and reduction methods is available and would be applied as appropriate. If roadway construction activities result in PM10 levels that exceed standards, construction activities will be stopped or modified to reduce levels to acceptable levels.

As noted above, the preferred alternative is not expected to cause or contribute to violations of the PM_{10} NAAQS. Part of this conclusion is based on the mitigating effects of dust trackout controls. The project includes commitments for design elements that will reduce PM_{10} emissions, including surfacing shoulders, adding curbs and gutters, and consolidating and surfacing gravel and dirt approaches. The PA will pave First Avenue SW, currently with minimal pavement, as the southbound couplet. These commitments for design improvements are enforceable under section 93.125 of the conformity rule and the Administrative Rules of Montana (ARM 17.8.1402).

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5.8 Noise

Traffic noise level predictions for the proposed project were used to determine if traffic noise impacts would occur at noise-sensitive receptor locations within the project limits in the project design year (2024). Noise-sensitive receptors were identified within approximately 150 meters (492 feet) of the existing US 93 centerline using United States Geological Survey aerial photos, site observations, and plan drawings.

The Traffic Noise Study for the US 93 Ninepipe/Ronan improvement project (Big Sky Acoustics 2004) summarizes how the FHWA Traffic Noise Model (TNM) computer program was created and used to predict the traffic noise levels. The model was used to compare the measured L_{eq}(h) levels and the predicted L_{eq}(h) levels for the traffic volumes that were tallied during the measurements. The traffic volumes for the rural and urban portions listed in the report titled *Traffic Operational and Safety Analyses* (Skillings-Connolly 2004a) were input into the TNM model so that the traffic noise levels for the No-Action Alternative and action alternatives could be estimated at the receptor locations. For the analysis of the action alternatives, it was assumed that the existing US 93 posted speed limit of 65 mi/h would remain the same in the rural portion, and the existing US 93 posted speed limits in the urban portion would remain the same, and would also be used on First Avenue SW for the southbound couplet alternatives.

5.8.1 Rural Portion

Traffic noise level impacts were evaluated for the urban No-Action Alternative and for the proposed rural portion action alternatives (Big Sky Acoustics 2004). Table 5.8-1 summarizes the receptors analyzed for the rural portion and the predicted traffic noise levels at each receptor location for each alternative. The 38 rural receptors include single-family residences, mobile homes, a lodge and museum, wildlife viewing areas, and a scenic pullout/picnic area along US 93.

Direct Effects

No-Action Alternative

There would be no construction impacts under the No-Action Alternative.

The traffic noise impact criteria were predicted to be met or exceeded by each alternative, including the No-Action Alternative (Table 5.8-1). For the No-Action Alternative, the predicted traffic noise levels meet the traffic noise impact criteria (66 dBA) in the present year (2000) of the project at three receptors (representing the Ninepipes motel and museum, and two single-family residences), and in the design year (2024) at nine receptors (representing two mobile homes, three single-family residences, two wildlife viewing areas, the Ninepipes motel and museum, and a scenic pullout/picnic area). Therefore, the noise impact criteria would be exceeded even if the highway is not reconstructed.

Table 5.8-1. Receptors and predicted traffic noise levels by alternative in the rural portion of the US 93 Ninepipe/Ronan project corridor.

Receptor	Description of Receptor	Approx. Distance to Existing US 93 Centerline in meters (feet)	Approx. Distance to Action Alternatives Centerline in meters (feet)	No-Action L_{eq}(h) in 2000 (dBA)	Predicted L_{eq} (h) for 2024 measured in dBA										
					No-Action	Rural 1	Rural 2	Rural 3 (PA)	Rural 4	Rural 5	Rural 6	Rural 7	Rural 8	Rural 9	Rural 10
RU-MH1	Mobile home	48.3 (158.5)	48.3 (158.5)	64	**67**[a]	**66**	**66**	**66**	**66**	**66**	**66**	**66**	**67**	**69**	**66**
RU-R1	Single-family residence	158.3 (519.4)	156.7 (514.1)	51	54	54	54	54	54	54	54	54	54	54	54
RU-R2	Single-family residence	76.9 (252.3)	75.2 (246.7)	58	61	61	61	61	61	61	61	61	61	61	61
RU-R3	Single-family residence	168.3 (552.2)	166.7 (546.9)	51	54	53	53	53	53	53	53	53	54	54	53
RU-R4	Single-family residence	38.3 (125.7)	40 (131.2)	65	**68**	**67**	**67**	**67**	**68**	**68**	**68**	**68**	**68**	**69**	**67**
RU-R5	Single-family residence	178.3 (548.9)	176.3 (578.4)	50	53	53	53	53	53	53	53	53	53	53	53
RU-MH2	Mobile home	45 (147.6)	41.7 (136.8)	64	**67**	**66**	**66**	**66**	**66**	**66**	**66**	**67**	**67**	**67**	**66**
RU-R6	Single-family residence	81.7 (268.0)	83.3 (273.3)	58	60	61	61	61	61	61	61	61	61	61	61
RU-R7	Single-family residence	68.3 (224.1)	55 (180.4)	59	62	64	64	64	64	64	64	64	64	64	64
RU-MH3	Mobile home	75 (246.1)	83 (272.3)	58	61	60	60	60	60	60	60	60	61	61	60
RU-R8	Single-family residence	71.7 (235.2)	76.7 (251.6)	59	62	61	61	61	61	61	61	61	61	61	61
RU-R9	Single-family residence	148.3 (486.5)	151.7 (497.7)	52	55	55	55	55	55	55	55	55	55	55	55
RU-R10	Single-family residence	71.7 (235.2)	85 (278.8)	59	62	60	60	60	60	60	61	60	60	61	60
RU-R11	Single-family residence	185 (606.9)	173.3 (568.5)	50	53	53	53	53	53	53	54	53	53	54	53
RU-R12	Single-family residence	105 (344.5)	143.3 (470.1)	55	58	55	55	55	55	55	56	55	56	56	55
RU-R13	Single-family residence	108 (354.3)	107 (351.0)	55	58	58	58	58	58	58	58	58	58	58	58
RU-WV1	Wildlife Viewing Area	38.3 (125.6)	45 (147.6)	64	**67**	**66**	**66**	**66**	**66**	**66**	**66**	**66**	**67**	**67**	**66**
RU-M1	Ninepipes lodge/museum	35 (114.8)	33.3 (109.3)	**66**	**69**	**68**	**68**	**68**	**68**	**68**	**68**	**68**	**69**	**70**	**69**
RU-WV2	Wildlife Viewing Area	73.3 (240.5)	73.3 (240.5)	58	61	61	61	61	61	61	61	61	62	61	61
RU-WV3	Wildlife Viewing Area	43.3 (142.1)	43.3 (142.1)	63	**67**	**66**	**66**	**66**	**66**	**66**	**66**	**66**	**67**	**67**	**66**
RU-WV4	Wildlife Viewing Area	53.3 (174.8)	53.3 (174.8)	61	64	64	64	64	64	64	64	64	65	**66**	64

Table 5.8-1. (continued) Receptors and predicted traffic noise levels by alternative in the rural portion of the US 93 Ninepipe/Ronan project corridor.

Receptor	Description of Receptor	Approx. Distance to Existing US 93 Centerline in meters (feet)	Approx. Distance to Action Alternatives Centerline in meters (feet)	No-Action L_{eq}(h) in 2000 (dBA)	Predicted L_{eq} (h) for 2024 measured in dBA										
					No-Action	Rural 1	Rural 2	Rural 3 (PA)	Rural 4	Rural 5	Rural 6	Rural 7	Rural 8	Rural 9	Rural 10
RU-MH4	Mobile home	108.3 (355.3)	105 (344.5)	56	59	59	59	59	59	59	59	59	59	59	59
RU-R14	Single-family residence	110.0 (360.9)	106.7 (350.1)	56	58	58	58	58	58	58	58	58	59	60	58
RU-R15	Single-family residence	83.3 (273.3)	85 (278.8)	58	61	60	60	60	60	60	60	60	61	61	60
RU-MH5	Mobile home	85 (278.8)	83.3 (273.3)	58	61	61	61	61	61	61	61	61	61	61	61
RU-P1	Scenic pullout/picnic area	41.7 (136.8)	38.3 (125.6)	65	**68**	**67**	**67**	**67**	**68**	**67**	**67**	**67**	**68**	**68**	**67**
RU-R16	Single-family residence	113.3 (137.7)	110 (360.8)	55	58	58	58	58	59	58	58	58	59	59	58
RU-R17	Single-family residence	100 (328.1)	96.3 (315.9)	56	59	60	60	60	60	60	60	60	60	60	60
RU-R18	Single-family residence	37.1 (121.7)	41.7 (136.8)	**68**	**68**	**67**	**67**	**67**	**68**	**67**	**67**	**68**	**68**	**67**	**67**
RU-R19	Single-family residence	53.3 (174.8)	60 (196.9)	62	65	64	64	64	64	64	64	64	65	64	64
RU-R20	Single-family residence	133.3 (437.3)	133.3 (437.3)	54	57	57	57	57	57	57	57	57	57	57	57
RU-R21	Single-family residence	33.3 (109.3)	40 (131.2)	**68**	**71**	**67**	**67**	**68**	**68**	**68**	**67**	**68**	**68**	**68**	**68**
RU-R22	Single-family residence	153.3 (502.9)	148.3 (486.5)	53	55	56	56	56	56	56	56	56	56	56	56
RU-R23	Single-family residence	83.3 (273.3)	80 (262.5)	58	61	61	61	62	62	62	62	61	62	62	62
RU-R24	Single-family residence	170 (557.7)	166.7 (546.9)	52	54	54	54	55	55	55	55	54	55	55	55
RU-R25	Single-family residence	153.3 (502.9)	151.7 (497.7)	53	55	55	55	56	56	56	56	55	56	56	56
RU-R26	Single-family residence	140 (459.3)	138.3 (453.7)	53	56	56	56	57	57	57	57	56	57	57	57
RU-R27	Single-family residence	153.3 (502.9)	151.7 (497.7)	52	55	55	55	56	56	56	56	55	56	56	56
Number of Rural Receptors: 38		Number that Meet or Exceed Criteria:		3	9	9	9	9	9	9	9	9	9	10	9

[a] Numbers with bold text approach or exceed the noise impact criteria.
L_{eq}(h) – the equivalent noise level during a 1-hour period.
dBA – A-weighted decibels.
ROW – right-of-way.

Action Alternatives

Construction activities would generate noise. Construction noise sources would include earth-moving equipment, generators, compressors, trucks, and impact equipment. Construction noise would be short-term and limited to the length of the construction period. Construction noise impacts would depend on the type, amount, and location of construction activities and the presence of adjacent sensitive receptors.

During construction, noise levels would increase at sensitive receptors near construction sites. More receptors would be exposed to construction noise in Ronan, while fewer receptors would be exposed in the rural portion of the project area. Maximum noise levels from construction activities at 15 meters (50 feet) would range from 69 to 106 dBA and at 61 meters (200 feet) would range from 57 to 94 dBA (U.S. EPA 1971). Because various equipment would be turned off, idling, or operating at full power at any time, average Leq noise levels during the day would be less than maximum noise levels.

For the action alternatives, the same nine noise-sensitive receptors that exceed the impact criteria for the No-Action Alternative in the design year (2024) are predicted to be affected by all rural section action alternatives, including Alternative Rural 3 (PA). Therefore, the impact criteria (66 dBA) is predicted to be met or exceeded at the same nine receptors whether any of the rural action alternatives are constructed or not, and would be met or exceeded at a tenth receptor if Rural 9 alternative is constructed (Table 5.8-1).

Indirect Effects

There would be no indirect effects from noise under any of the action alternatives.

5.8.2 Urban Portion

Traffic noise level impacts were evaluated for the No-Action Alternative and for the proposed urban action alternatives (Big Sky Acoustics 2004). Table 5.8-2 summarizes the receptors analyzed for the urban portion and the predicted traffic noise levels at each receptor location for each alternative. Sixteen receptors are located along US 93 and 22 receptors are located along First Avenue SW. The urban portion noise-sensitive receptors represent single-family residences, mobile homes, apartments, churches, parks, and a recreational vehicle (RV) campground.

Direct Effects

No-Action Alternative

Traffic noise impact criteria were predicted to be met or exceeded by each alternative, including the No-Action Alternative in the design year (2024) (Table 5.8-2). For the No-Action Alternative, the predicted traffic noise levels meet or exceed the traffic noise impact criteria

Table 5.8-2. Receptors and predicted traffic noise levels by alternative in the urban portion of the US 93 Ninepipe/Ronan project corridor.

Receptor	Description of Receptor	Distance to Existing US 93 Centerline in meters (feet)	No-Action L_{eq} (h) in 2000 (dBA)	Predicted L_{eq} (h) for 2024 measured in dBA					
				No-Action	Ronan 1	Ronan 2	Ronan 3	Ronan 4 (PA)	Ronan 5
US 93 Receptors									
93-R1	Single-family residence	105 (344.5)	56	58	58	58	61	61	58
93-CH1[a]	Ronan Church of Christ	29 (95.1)	64	**67[d]**	**68**	**68**	65	65	**69**
93-R2	Single-family residence	21 (68.9)	65	**68**	**69**	**69**	64	64	**68**
93-CH2[a]	Assembly of God	57 (187.0)	58	61	62	62	58	58	61
93-R3	Single-family residence	23 (75.5)	64	**67**	**68**	**68**	64	64	**67**
93-R4	Single-family residence	21 (68.9)	65	**68**	**68**	**68**	64	64	**68**
93-R5	Single-family residence	24 (78.7)	64	**67**	**68**	**68**	63	63	**67**
93-R6	2nd row single-family residence (on Buchanan Street)	55 (180.4)	56	59	59	59	60	60	59
93-R7	2nd row single-family residence (on Buchanan Street)	45 (147.6)	59	62	62	62	61	61	62
93-P1	Visitor's Center/Park	35 (114.8)	61	64	64	64	61	61	63
93-P2	Track/football field (East stands)	95 (311.7)	55	58	57	57	59	59	57
93-P3	Baseball fields	53 (173.8)	60	63	63	63	63	63	63
93-R8	Single-family residence	40 (131.2)	65	**68**	**67**	**67**	**67**	**67**	**68**
93-R9	Single-family residence	76 (249.3)	57	60	60	60	60	60	60
93-CG1	RV Campground	43 (141.1)	65	**68**	**67**	**67**	**67**	**67**	**68**
93-R10	Single-family residence	84 (276.6)	59	62	63	63	63	63	62
First Avenue SW Receptors									
1st-R1	Single-family residence	133 (436.4)	52	55	56	56	**66**	**66**	55
1st-MH1[b]	Mobile home	101 (331.4)	55	57	58	58	**70**	**70[b]**	56
1st-MH2	2nd row mobile home	93 (305.1)	56	58	58	58	**67**	**67[b]**	57
1st-R2	Single-family residence	133 (436.4)	52	55	56	56	**66**	**66**	55
1st-R3	Single-family residence	129 (423.2)	52	55	56	56	**66**	**66**	55
1st-R4	Single-family residence	85 (278.8)	56	58	58	58	**66**	**66**	57
1st-R5	Single-family residence	129 (423.2)	52	55	56	56	**67**	**67**	55
1st-R6	Single-family residence	93 (305.1)	56	58	58	58	**66**	**66[b]**	57

Table 5.8-2. (continued) Receptors and predicted traffic noise levels by alternative in the urban portion of the US 93 Ninepipe/Ronan project corridor.

Receptor	Description of Receptor	Distance to Existing US 93 Centerline in meters (feet)	No-Action L_{eq} (h) in 2000 (dBA)	Predicted L_{eq} (h) for 2024 measured in dBA					
				No-Action	Ronan 1	Ronan 2	Ronan 3	Ronan 4 (PA)	Ronan 5
First Avenue SW Receptors (continued)									
1st-R7	Single-family residence	137 (449.5)	52	55	55	55	**65**[c]	**65**[c]	55
1st-R8	Single-family residence	137 (449.5)	52	55	55	55	**65**[c]	**65**[c]	55
1st-R9[b]	Single-family residence	99 (324.8)	55	57	58	58	**69**	**69**[b]	57
1st-R10[b]	Single-family residence	103 (337.9)	55	57	57	57	**71**	**71**[b]	57
1st-CH1 [a]	Seventh Day Adventist Church	135 (442.9)	52	55	55	55	**66**	**66**	55
1st-A1	Senior apartment building	129 (423.2)	52	55	55	55	**67**	**67**	55
1st-R11	Single-family residence	93 (305.1)	55	57	57	57	**66**	**66**	57
1st-A2	Apartment building	127 (416.7)	52	55	55	55	**68**	**68**	55
1st-R12	Single-family residence	101 (331.4)	54	57	57	57	**70**	**70**[b]	57
1st-R13	2nd row single-family residence	85 (278.8)	55	57	57	57	64	64	57
1st-R14[b]	Single-family residence	101 (331.4)	54	57	57	57	**68**	**68**[b]	57
1st-R15	Single-family residence	141 (462.6)	52	54	55	55	62	62	54
1st-P1	City park	95 (311.7)	55	57	57	57	65	65	57
1st-P2	City park	131 (429.8)	52	55	55	55	63	63	55
Number of Ronan Receptors: 22	Number that Meet or Exceed Criteria:		0	7	7	7	20	20	7
Number of Ronan Section receptors that may be removed due to ROW acquisition:			0	0	0	0	4	4	0
Total impacted Ronan Section receptors (minus relocated receptors):			0	7	7	7	16	16	7

Notes:
[a] Estimated interior L_{eq}(h) = calculated exterior traffic L_{eq}(h) – 20 dBA reduction due to structure (FHWA 1995b).
[b] Receptor may be relocated due to possible ROW acquisition.
[c] Impact due to 13 dBA increase from the No-Action Alternative in present year (2000).
[d] Numbers with **bold** text approach or exceed the noise impact criteria.
L_{eq}(h) – the equivalent noise level during a 1-hour period.
dBA – A-weighted decibels.
ROW – right-of-way.

(66 dBA) in the design year (2024) at seven receptors (six single-family residences and the Ronan Church of Christ), indicating that the impact criteria would be exceeded whether the action alternatives are constructed or not.

Action Alternatives

Construction impacts are the same as those discussed under the rural portion.

For the Ronan 1, Ronan 2, and Ronan 5 alternatives, the noise impact criteria is predicted to be exceeded at the same seven noise-sensitive receptors as the No-Action Alternative in the design year (2024) (Table 5.8-2). Each noise-impacted receptor is located adjacent to US 93. Therefore, the impact criteria would be met or exceeded at the same seven receptors whether the Ronan 1, Ronan 2, or Ronan 5 alternatives are constructed or not.

For the First Avenue SW couplet alternatives, Alternatives Ronan 3 and 4 (PA), the noise impact criterion is predicted to be exceeded at a total of 20 receptors (fourteen single-family residences, two mobile homes, two apartment buildings, the Seventh Day Adventist Church, and an RV campground) (Table 5.8-2). Of the 20 noise-impacted receptors, two are adjacent to US 93 and the impact criteria would be exceeded whether the alternatives are constructed or not, because they are also impacted by the No Action Alternative in the Design Year. The remaining 18 are adjacent to First Avenue SW, but four may be relocated for right-of-way acquisition, which would eliminate the impacted receptors. Therefore, the 14 remaining impacts along First Avenue SW, plus the two impacts along US 93, would result in a total of 16 noise impacts due to Alternatives Ronan 3 and 4 (PA) (Table 5.8-2).

Indirect Effects

There would be no indirect effects from noise under any of the action alternatives.

5.8.3 Impacts of the Total Project

Construction-related impacts would be similar for all combinations of rural and urban alternatives, with increase noise levels near sensitive rural receptors and more receptors in the urban portion. Average L_{eq} noise levels during the day would be less than maximum levels.

Operational impacts are measured by noise-impacted receptors. Depending on the combination of rural and urban alternative, as few as 16 receptors and as many as 30 receptors could be impacted by the proposed project. Alternatives Rural 3 (PA) and Ronan 4 (PA) would affect a total of 29 sensitive noise receptors.

5.8.4 Mitigation Measures

When traffic noise impacts are predicted, possible abatement measures for the mitigation of highway traffic noise need to be considered, and the measures need to be assessed to determine if they are reasonable and feasible. Possible abatement measures include considering alternate pavement materials to reduce tire noise, modifying the proposed action alternative preliminary designs, the construction of noise barriers or berms, improving public-use buildings to control the interior noise levels, and traffic management measures such as reducing the speed limit on the highway or restricting the access of certain vehicle types. Barriers typically provide the highest level of noise reduction of these mitigation measures.

According to the *Traffic Noise Analysis and Abatement: Policy and Procedure Manual* (MDT 2001), any abatement measure used to reduce the traffic noise at a receptor must first be considered reasonable and feasible, and the Noise Abatement Checklist included in Appendix B of MDT's Policy helps determine if an abatement measure would be considered reasonable and feasible. The policy does not account for changes in property values in its assessment of reasonable and feasible abatement measures.

To determine if a mitigation measure is feasible, the measure must provide a minimum 6-dBA reduction in noise levels at residences located closest to the highway, and must not represent a safety hazard to vehicles traveling on the highway or to the residents of the homes. For example, a 6-dBA reduction can be provided by a barrier, but the addition of a barrier near a road can restrict sight distances, create shadows that cause excessive icing over travel lanes, or cause drainage problems that would make the barrier infeasible.

To determine if a mitigation measure is reasonable involves more subjective factors, including the comparison of the noise levels associated with the No-Action Alternative to those associated with the action alternatives, the cost of the abatement per residence, the timing of development, and the opinion and acceptance of impacted residents regarding the noise abatement measure. MDT uses a Cost-Effectiveness Index (CEI) to determine if the cost of an abatement measure is reasonable, and the CEI incorporates the number of impacted residences, the total noise reduction provided by the measure, and the total cost of the materials and construction of the measure. The CEI = (cost of materials and construction) ÷ (noise reduction in dBA) ÷ (number of benefited receptors). The CEI is expressed in dollars. Because of considerable geotechnical work, material costs, construction costs, maintenance costs, etc., barriers, for example, can be very expensive to install and maintain, and benefit only several residences, which oftentimes make them unreasonable.

Another factor in determining if an abatement measure is reasonable is the comparison of design year noise levels. MDT has determined that if the predicted noise levels for the action alternatives in the design year of a project exceed the noise levels in the design year for the No-Action Alternative by 3 dBA or more at an impacted receptor, the abatement would be considered reasonable. As shown in Tables 5.8-1 and 5.8-2, the design year noise levels due to all of the rural action alternatives and alternatives Ronan 1, Ronan 2, and Ronan 5 would equal or exceed those due to the No-Action Alternative by 0 to 2 dBA at most impacted receptors, therefore, most of the project action alternatives do not meet this section of MDT's reasonableness criteria.

The opinions of the affected residents are also considered when determining if an abatement measure is reasonable. Since an abatement measure such as a barrier typically needs to be high enough to block the line of sight between the residences and the road, there can be a considerable change in the visual environment near the residences associated with barrier construction. Some residents prefer to leave the view of the surrounding area unchanged even if traffic noise levels exceed the impact criteria, because they subjectively feel that their view is worth more to them than a reduction in traffic noise. For the residents that are impacted by the US 93 project, their ground story views across the road would be blocked if a barrier were constructed. A noise abatement measure, such as a barrier, will not be provided if more than 50 percent of the affected residents do not want it (MDT 2001). MDT would conduct a survey of residents if a barrier were considered..

Possible abatement measures for US 93 Ninepipe/Ronan improvement project are presented in the following discussion.

Avoidance and Minimization Measures Included in Design

The following mitigation measures would be considered during development of the final designs for the proposed project.

Alternate Paving Materials

Where impacts on sensitive noise receptors are expected, alternate pavement materials that would reduce noise would be considered during development of the final designs for the proposed project.

Shifting Alignments

Shifting the alignment of a proposed action alternative may be a feasible abatement measure for some noise impacts. If a minimum distance of approximately 55 meters (180 feet) could be provided between the centerline of an action alternative and a noise-sensitive receptor, then traffic noise impacts would be avoided. However, alignment shifts were not considered for the proposed project because they were not reasonable or feasible due to other factors such as impacts to wetlands, the additional cost of right-of-way acquisition, and acquisition and removal of structures including existing residential and commercial buildings.

Traffic Management

Restricting certain vehicle types, like heavy trucks, from US 93, or limiting the time of day that certain vehicles may use the highway are not feasible mitigation measures. US 93 is classified as a National Highway System (NHS) non-interstate highway. One of NHS's main functions is to provide efficient transportation routes for commercial transport. Travel by domestic and international freight carriers might be inhibited through restrictions on vehicle types on the highway.

Reducing the speed limit on US 93 was examined as a mitigation measure for both the rural and urban portions of the proposed project. The existing US 93 rural posted speed limit is 65 mi/h, and was used to develop the traffic noise model (Big Sky Acoustics 2004). The resulting predicted traffic noise impacts are listed in Table 5.8-1, and include 7 to 9 noise-impacted receptors per rural alternative. As noted in Table 5.8-3, the number of noise-impacted receptors would be reduced if posted speed limits were lowered (5 to 10 mi/h) in the rural portion of the proposed project. Speed limits are set by the legislature and cited in 61-8-303 of the Montana Code Annotated. Changes in speeds can be accomplished by the Transportation Commission, but only based on safety concerns, therefore no changes for noise impacts are expected to be implemented by the respective project proponents.

Table 5.8-3. Number of noise-impacted receptors in the rural portion of the US 93 Ninepipe/Ronan project corridor, compared by posted speed limit in the design year (2024).

Posted Speed Limit	Rural 1	Rural 2	Rural 3 (PA)	Rural 4	Rural 5	Rural 6	Rural 7	Rural 8	Rural 9	Rural 10
65 mi/h (existing)	9	9	9	9	9	9	9	9	10	9
60 mi/h	5	5	5	5	5	5	5	9	9	5
55 mi/h	1	1	2	5	3	2	4	5	5	2

The existing US 93 posted speed limits through the City of Ronan vary from 25 to 35 mi/h and were used to develop the traffic noise model (Big Sky Acoustics 2004) for the urban portion. The resulting predicted traffic noise impacts are listed in Table 5.8-2. As noted in Table 5.8-4, the number of noise-impacted receptors can be reduced if the posted speed limit through the City of Ronan is set at 25 mi/h everywhere on US 93 and/or First Avenue SW, which would be a 10 mi/h reduction in those areas now posted at 35 mi/h. Speed limits are set by the legislature and cited in 61-8-303 of the Montana Code Annotated. Changes in speeds can be accomplished by the Transportation Commission or by the City of Ronan, but only based on safety concerns, therefore no changes for noise impacts are expected to be implemented by the respective project proponents.

Table 5.8-4. Number of noise-impacted receptors in the urban portion compared by posted speed limit in the design year (2024).

Posted Speed Limit	Ronan 1 [a]	Ronan 2 [a]	Ronan 3	Ronan 4 (PA)	Ronan 5 [a]
Existing (varies between 25 and 35 mi/h) on US 93 and 1st Avenue SW	7	7	20 [b]	20 [b]	7
25 mi/h on US 93 and 1st Avenue SW	7	7	8 [b]	8 [b]	5

Notes:
[a] No changes to the existing First Avenue SW roadway for these alternatives.
[b] 20 receptors (including those displaced) are listed as impacted in both this table and in Table 5.8-2.

Insulation of Public Buildings

Because an interior impact is predicted for the Seventh Day Adventist Church (Receptor 1st-CH1) for Alternatives Ronan 3 and Ronan 4 (PA), improvements to the building exterior were considered for abatement. Typically, improvements to a public-use building focus on the windows because sound passes more readily through windows than exterior walls. Potential abatement measures could include the addition of storm windows and the installation of an air-conditioning system, to prevent the need to open windows in the summer. For the analysis, it was assumed that the church does not already have storm windows or an air-conditioning system, but if the church does have these features, then there would not be an impact predicted at this receptor due to the additional attenuation the features provide.

The predicted traffic noise levels inside the existing building due to Alternatives Ronan 3 and Ronan 4 (PA) are 47 and 45 dBA, respectively, which are 15 and 13 dBA greater than the present year (2004) noise levels. However, these noise levels would usually be considered moderate noise levels that typically would not interfere with speech communication (Egan 1988). Therefore, MDT does not consider building improvements as a reasonable abatement measure.

Barriers and Berms

A barrier is most effective when it is continuous and solid, and it blocks the direct line-of-sight between the roadway and a receptor. Barriers can be constructed using built up dirt to create a berm, or by building a wall using concrete, concrete block, wood, or metal panels. Although it may be used for visual screening, vegetation, such as trees and shrubs, are not considered effective barrier material since sound passes readily through vegetation. An earthen berm typically has a very large base for support and may also require additional right-of-way to accommodate construction. To be effective, the barrier wall must be continuous and solid with no gaps, holes or openings in it, including between the bottom edge of the barrier wall and the ground surface. Due to the cost effectiveness index, barriers would not be reasonable along the project corridor.

As discussed previously in this mitigation section, MDT uses a CEI to determine if a barrier is reasonable, and the CEI incorporates the number of residences that would be benefited by the barrier, the total noise reduction provided by the barrier, and the total cost of barrier materials and construction. MDT defines a benefited residence as a residence located in the row of homes located closest to the highway (i.e., first row homes) that would experience a minimum 6-dBA reduction in traffic noise levels. According to MDT, a CEI that exceeds $4,200 is not considered reasonable for barrier construction.

Barriers were considered as abatement measures for the rural portion of the proposed project. The impacted receptors are not generally located in close proximity to another, and tend to be on opposite sides of US 93 (Figures 4.8-1 and 4.8-2). To achieve the minimum 6-dBA reduction required by MDT, a barrier located within the right-of-way between the impacted receptor and US 93 would need to be a minimum of 200 meters (656 feet) long and 2.4 meters (8 feet) high, and located such that the receptor is situated near the center of the barrier length. The cost of noise barriers are summarized by state in an April 2000 report entitled *Summary of Noise Barriers Constructed by December 31, 1998* (FHWA 2000). Based on this document, the average barrier cost for western states is $164 per square meter ($15.24 per square foot) in 1998 dollars. Using this data, an approximate cost in 2003 dollars for a barrier along US 93 would be $221 per square meter ($20.54 per square foot), and the CEI for a 480-square-meter (5,167-square-foot) barrier would be $17,680, which exceeds MDT's criteria. Therefore, barriers along the rural portion would not be reasonable.

Barriers were also considered as mitigation measures for the urban portion of the proposed project along US 93 and First Avenue SW. In general, an effective barrier has to be four times as far in each direction from a receptor as the distance from the receptor to the barrier. The driveways and intersecting streets along US 93 in Ronan and First Avenue SW prohibit the construction of a barrier that would be long enough to be effective. In addition, two noise-impacted receptors (93-R8 and 93-CG1) are located north of the City of Ronan (Table 5.8-4, Figure 4.8-2), and a barrier for these two receptors would not be reasonable for the same reasons discussed for the rural portion of the proposed project.

Additional Mitigation Measures Required

Construction noise is not covered specifically by the *MDT Noise Policies and Procedures Abatement Manual*. Contractors would follow the general steps outlined in 23 CFR 772.19 and *Analysis of Highway Construction Noise, Technical Advisory T6160.2* (FHWA 1984). Contractors would abide by all local noise ordinances and restrictions on construction timing.

5.9 Water Quality

5.9.1 Rural Portion

Direct Effects

No-Action Alternative

Because no construction activities would be conducted under the No-Action Alternative, no short-term impacts to water quality would result in the rural portion of the proposed project.

Because no additional roadway area would be created under the No-Action Alternative, existing pollutant levels in roadway runoff would be maintained in the rural portion of the project corridor. Future increases in traffic volumes may lead to incremental increases in pollutant loads due to the greater number of pollutant sources (vehicles). No quantitative estimates of future pollutant load increases due to changes in traffic volumes were calculated.

Action Alternatives

Potential construction-related water quality impacts of the US 93 Ninepipe/Ronan improvement project would primarily be associated with accidental leaks and spills of hazardous materials from construction vehicles and equipment, and discharge of eroded soils from areas disturbed by construction.

Potential construction-related water quality impacts are analyzed by estimating sediment discharge from construction areas. This is assumed to be directly related to the total area of disturbance. To analyze these impacts, the area of construction disturbance (assumed to be the total area within the right-of-way) is compared between alternatives. A net sediment delivery coefficient of 0.19 metric tons per acre (0.21 tons per acre) for a 10-year, 24-hour storm was developed and used in the US 93 Evaro to Polson FEIS. This coefficient is still valid because the underlying variables (i.e., soil type, time of soil exposure, precipitation, topography, and erosion control measures) will not be substantially changed between the FEIS and the SEIS alternatives. This delivery coefficient was applied to the total area of construction disturbance in the US 93 Evaro to Polson project area for the alternatives considered in the US 93 Evaro to Polson FEIS, providing a comparative estimate of sediment discharge during this storm event. This sedimentation rate, which assumes constant discharge of sediment from all portions of the construction site, was also applied to the areas of construction disturbance in this updated analysis in the US 93 Ninepipe/Ronan project corridor to compare water quality impacts between the SEIS action alternatives. The discharge coefficient assumes that erosion and sediment control measures would be implemented on the site, as discussed in *Mitigation Measures*.

Table 5.9-1 summarizes the potential direct and indirect impacts for all alternatives in the rural portion.

Table 5.9-1. Estimated impacts on water quality in the rural portion of the US 93 Ninepipe/Ronan project corridor for all alternatives.

Alternative	Direct Construction-related Sediment Discharge during 10-year, 24-hour storm			Indirect Pollutant Loading to Surface Waters	
	Post Creek Hill Segment metric tons (tons)	Ninepipe Segment metric tons (tons)	Total for Rural Portion metric tons (tons)	Post Creek Hill Segment (compared to No-Action)	Ninepipe Segment (compared to No-Action)
No-Action	NA	NA	NA	Pollutant loads to surface waters would remain unchanged from existing condition	Pollutant loads to surface waters would remain unchanged from existing condition
Rural 1	12.6 (13.9)	25.0 (27.5)	37.6 (41.4)	57 percent reduction [a]	58 percent reduction [a]
Rural 2	12.9 (14.2)	25.0 (27.5)	37.9 (41.7)	49 percent reduction [a]	58 percent reduction [a]
Rural 3 (PA)	12.9 (14.2)	26.6 (29.4)	39.5 (43.6)	49 percent reduction [a]	50 percent reduction [a]
Rural 4	12.9 (14.2)	26.6 (29.4)	39.5 (43.6)	49 percent reduction [a]	49 percent reduction [a]
Rural 5	13.0 (14.4)	26.0 (28.7)	39.0 (43.1)	45 percent reduction [a]	54 percent reduction [a]
Rural 6	19.3 (21)	25.9 (28.5)	45.2 (49.5)	34 percent reduction [a]	55 percent reduction [a]
Rural 7	14.2 (15.5)	25.9 (28.5)	40.1 (44)	53 percent reduction [a]	55 percent reduction [a]
Rural 8	13.7 (15)	29.0 (32)	42.7 (44)	53 percent reduction [a]	55 percent reduction [a]
Rural 9	16.4 (18)	34.0 (37.5)	50.4 (55.5)	25 percent reduction [a]	28 percent reduction [a]
Rural 10	12.8 (14)	26.2 (28.8)	39.0 (42.8)	45 percent reduction [a]	53 percent reduction [a]

[a] The anticipated reduction in pollutant loading would result from implementation of proposed stormwater treatment facilities.

Potential water quality impacts associated with accidental leaks and spills of hazardous materials during construction are similar between all action alternatives because similar construction activities would occur and similar equipment would be used.

Potential water quality impacts due to discharge of sediment from disturbed construction areas would vary with the total amount of area to be disturbed during construction. Based on the sediment load estimates displayed in Table 5.9-1, alternative Rural 9 would have the greatest impact, followed by Alternatives Rural 6, Rural 8, and Rural 7, and then Rural 3 (PA), Rural 4, Rural 5, and Rural 10, which would have similar impacts. Alternatives Rural 1 and Rural 2 would have the least impacts of the action alternatives.

Wildlife Crossing Structures

Potential water quality impacts due to accidental leaks and spills of hazardous materials, and due to sediment discharge from disturbed areas, are not expected to vary substantially under the various structure options at the Post Creek, Ninepipe Reservoir, Kettle Ponds 1 and 2, and Crow Creek crossings. This is due to similar construction methods to be implemented under each of the structure options.

Indirect Effects

The primary potential indirect impact to water quality in the US 93 Ninepipe/Ronan project area is an increase in pollutants in roadway runoff discharging to adjacent sensitive water bodies. Pollutants typically associated with highway runoff include solids, oil and grease and related petroleum hydrocarbons, and metals such as copper and zinc. Increased impervious roadway areas provide greater surface areas for these pollutants to be deposited and carried off in stormwater. Increased impervious areas also provide a greater area upon which atmospheric pollutants can be deposited and entrained in stormwater.

Greater pollutant loads in stormwater can degrade receiving waters and impair designated uses. Fish-bearing streams are sensitive to elevated pollutant loads, as pollutants in the system can lead to siltation of the channel, depressed oxygen levels in the water, and toxicity to fish and other aquatic life. Wetlands receiving highway runoff can also be degraded by elevated pollutant loads. These systems are generally flushed more slowly than streams, leading to deposition and concentration of some pollutants.

Estimates of annual pollutant loads delivered to surface water bodies adjacent to the roadway were developed for three pollutants (total suspended solids, copper, and zinc) based on FHWA (1995a) guidance. These pollutant load estimates are approximate and intended to demonstrate relative impacts to water quality between the project alternatives. It was assumed for the purposes of the water quality impact analysis that water quality treatment of all highway runoff would be required. The actual areas where runoff would be treated are discussed in *Mitigation Measures*. In practice, runoff from some portions of the roadway would naturally infiltrate into roadside soils, and this infiltration would be encouraged under the action alternatives as described in *Mitigation Measures*. Treatment of all stormwater runoff was assumed because the portion of the roadway draining to surface waters and those portions draining to areas where infiltration occurs is not delineated for the US 93 Ninepipe/Ronan project corridor. While some infiltration would likely occur, the water quality analysis provides a comparative estimate of the relative impact between all alternatives. The pollutant load estimates reflect predicted pollutant removal effectiveness of these treatment facilities. The load estimates may be conservative, as they do not account for the infiltration of stormwater before discharge to wetlands or streams. On the other hand, the assumed effectiveness of runoff treatment facilities does not take into account the limiting effects of snow and ice on their performance, and thus the estimated amounts of pollutants removed in the required treatment facilities may be high.

Table 5.9-1 summarizes the potential direct construction-related and indirect impacts for all alternatives in the rural portion.

Average annual loadings of suspended solids, copper, and zinc to surface waters in the project area were estimated for each alternative. Suspended solids loadings are generally indicative of loadings of other pollutants in stormwater because many roadway runoff pollutants are in particulate form. Thus, total suspended solids is the primary parameter of comparison in this analysis.

In general, pollutant loads discharged to surface waters from roadway runoff would be reduced in the rural portion under the action alternatives as compared to the No-Action Alternative due to the implementation of stormwater treatment measures (see the *Mitigation Measures* section). Copper loads, however, may increase in roadway runoff discharged to surface waters under some of the action alternatives. Suspended solids loads are estimated to decrease by 27 to 58 percent compared to those estimated for the No-Action Alternative in the rural portion of the proposed project. Based on the estimated suspended solids loads, the greatest benefit would occur under Alternative Rural 1. Alternatives Rural 2, Rural 7, and Rural 8 would provide slightly less benefit, followed by alternatives Rural 3 (PA), Rural 4, Rural 5, Rural 6, and Rural 10. The least beneficial alternative is Alternative Rural 9.

The relative impacts between action alternatives are the same when comparing copper and zinc load estimates. It is estimated that copper loads discharged from the rural portion of the proposed project would be between 13 percent less and 52 percent greater under the action alternatives than under the No-Action Alternative, and zinc loads would be between 23 and 56 percent less.

Pollutant loads discharged to ground water could increase under the action alternatives due to infiltration of greater volumes of stormwater containing roadway pollutants in roadside ditches and stormwater treatment facilities. Infiltration through soil would provide a degree of incidental pollutant removal through filtration and chemical and microbiological processes. The degree of potential pollutant removal is uncertain, and pollutant loads discharged to ground water were not estimated for this analysis.

If material source sites were located within an active channel or floodplain area, it would present additional indirect impacts for water resources (both water quality and quantity). Gravel removal in floodplains not only can alter the quantity of gravel within a river system, but can also affect gravel transport and deposition processes, alter flow conditions and habitat (surface and subsurface), and introduce petroleum based contaminants and fine sediments into a river system as a result of machinery working within or in close proximity to water resources or sediment laden run-off. Material extraction may cause lowering of alluvial water tables, channel destabilization and widening, and loss of aquatic and riparian habitat (Kondolf 2002).

Post Creek Hill Segment

In the Post Creek Hill segment of the proposed project, it is estimated that suspended solids loads would decrease by 25 to 57 percent for the action alternatives below those estimated for the No-Action Alternative. Based on the estimated suspended solids loads, the greatest benefit would occur under alternative Rural 1. Alternatives Rural 7 and Rural 8 would provide less benefit, followed by alternatives Rural 2, Rural 3 (PA), and Rural 4. Alternatives Rural 5 and Rural 10 would provide less benefit than these alternatives, followed by Alternative Rural 6. The least benefit would occur under Alternative Rural 9.

The relative impacts between action alternatives are the same when comparing copper and zinc load estimates. It is estimated that copper loads discharged from the Post Creek Hill segment of the proposed project would be between 10 percent less and 55 percent greater under the action alternatives than under the No-Action Alternative, and that zinc loads would be between 21 and 54 percent less.

Ninepipe Segment

In the Ninepipe segment of the proposed project, it is estimated that suspended solids loads in roadway runoff would decrease by 28 to 58 percent for the action alternatives compared to the No-Action Alternative. Based on the estimated suspended solids loads, the greatest beneficial impact would occur under alternatives Rural 1 and Rural 2. Alternatives Rural 5, Rural 6, Rural 7, Rural 8, and Rural 10 would provide slightly less of a beneficial impact, followed by Alternatives Rural 3 (PA) and Rural 4. The least beneficial impact would occur under Alternative Rural 9.

The relative impacts between action alternatives are the same when comparing copper and zinc load estimates. It is estimated that copper loads discharged from the Ninepipe segment of the proposed project would be between 14 percent less and 50 percent greater under the action alternatives than under the No-Action Alternative, and that zinc loads would be between 24 percent and 56 percent less than under the No-Action Alternative.

5.9.2 Urban Portion

Direct Effects

No-Action Alternative

Because no construction activities would be conducted under the No-Action Alternative, no short-term impacts to water quality would result in the urban portion of the project area.

Because no additional roadway area would be created under the No-Action Alternative, existing pollutant levels in roadway runoff would be maintained in the urban portion of the project corridor. Future increases in traffic volumes may lead to incremental increases in pollutant loads due to the greater number of pollutant sources (vehicles). No quantitative estimates of future pollutant load increases due to changes in traffic volumes were calculated.

Action Alternatives

Potential impacts due to accidental leaks and spills of hazardous materials during construction are similar between all action alternatives because similar construction activities would occur and similar equipment would be used.

Potential water quality impacts associated with discharge of sediment-laden runoff from disturbed construction areas varies with the total amount of area to be disturbed during construction. Based on the sediment load estimates displayed in Table 5.9-2, Alternative Ronan 4 (PA) would have the greatest impact on receiving water quality, followed by Alternatives Ronan 3, Ronan 1, Ronan 2, and Ronan 5, which would have similar impacts.

Table 5.9-2. Impacts on water quality in the urban portion of the US 93 Ninepipe/Ronan project corridor for all alternatives.

Alternative	Direct Construction-related Sediment Discharge during 10-year, 24-hour storm metric tons (tons)	Indirect Pollutant Loading to Surface Waters (compared to No-Action)
No-Action	NA	Pollutant loads to surface waters would remain unchanged from existing condition
Ronan 1	9.9 (11)	58 percent reduction [a]
Ronan 2	9.7 (11)	58 percent reduction [a]
Ronan 3	11.4 (12.5)	59 percent reduction [a]
Ronan 4 (PA)	11.7 (13)	59 percent reduction [a]
Ronan 5	8.4 (9)	66 percent reduction [a]

NA – Not Applicable.
[a] The anticipated reduction in pollutant loading would result from implementation of proposed stormwater treatment facilities.

Indirect Effects

Pollutant loads in roadway runoff would be reduced in the urban portion of the project corridor under the action alternatives as compared to the No-Action Alternative due to the implementation of stormwater treatment measures at sensitive receiving waters (see *Mitigation Measures*). It is estimated that suspended solids loads in roadway runoff would decrease by 58 to 66 percent compared to the No-Action Alternative in the urban portion of the proposed project. Based on the estimated suspended solids loads, the greatest benefit would occur under Alternative Ronan 5. Beneficial impacts under Alternatives Ronan 1 through 3, and Ronan 4 (PA) would be similar and slightly less than under Ronan 5. Table 5.9-2 summarizes the potential construction-related and indirect impacts on water quality for the urban portion of the US 93 Ninepipe/Ronan project.

The relative impacts between action alternatives are the same when comparing copper and zinc load estimates. It is estimated that copper loads discharged from the highway surface in the urban portion of the proposed project would be between 13 to 29 percent less under the action alternatives than under the No-Action Alternative, and that zinc loads would be between 56 and 64 percent less.

No impacts on ground water quality are anticipated because runoff that occurs during operation in the urban portion would be collected in stormwater conveyance systems and discharged to surface waters.

If material source sites were located within an active channel or floodplain area, it would present additional indirect impacts for water resources (both water quality and quantity). Gravel removal in floodplains not only can alter the quantity of gravel within a river system, but can also affect gravel transport and deposition processes, alter flow conditions and habitat (surface and subsurface), and introduce petroleum based contaminants and fine sediments into a river system as a result of machinery working within or in close proximity to water resources or sediment laden run-off. Material extraction may cause lowering of alluvial water tables, channel destabilization and widening, and loss of aquatic and riparian habitat (Kondolf 2002).

5.9.3 Impacts of the Total Project

Construction-related impacts are measured primarily as estimated sediment loads during a 10-year rainfall event. These loads are estimated to range between 46 metric tons (50 tons) (Alternatives Rural 1 and Ronan 5) and 62 metric tons (69 tons) (Alternatives Rural 9 and Ronan 4) under the action alternatives. Under Alternatives Rural 3 (PA) and Ronan 4 (PA), a sediment load of 51 metric tons (56 tons) is estimated.

Indirect impacts are measured primarily as estimated annual suspended solids loads relative to the No-Action Alternative. Under the action alternatives, solids loads would be reduced by between 27 (Alternative Rural 9) and 58 percent (Alternatives Rural 1 and Rural 2) in the rural portion, and between 58 (Alternatives Ronan 1 and 2) and 66 percent (Alternative Ronan 5) in the urban portion. Under the Alternatives Rural 3 (PA) and Ronan 4 (PA), suspended solids loads would be reduced by 50 percent in the rural portion and 59 percent in the urban portion.

5.9.4 Mitigation Measures

Avoidance and Minimization Measures Included in Design

During development of the final designs for the proposed project, mitigation measures would be implemented to reduce the impact during construction of roadway runoff pollutants on sensitive receiving waters. Based on stormwater criteria developed for the US 93 Evaro to Polson reconstruction project (DMSC 2003), water quality treatment facilities would be designed to reduce suspended solids from stormwater generated by this roadway improvement project on roadway surfaces in areas that drain directly to sensitive receiving waters (category I and II wetlands and associated streams).

Infiltration of stormwater would be encouraged where conditions are favorable to prevent pollutant discharge to surface waters. New or reconfigured stormwater outfalls and drainage ditches would be designed to accommodate increased flow rates and to prevent erosion over the long term. Where stormwater would discharge to category I and II wetlands and associated streams, treatment facilities would be constructed. These sites include Post Creek, Crow Creek, and several pothole wetlands in the Ninepipe segment. Two common facility types that generally meet this requirement are wet ponds and biofiltration swales. Biofiltration swales may be a convenient facility for highway runoff, as existing roadside ditches can be regraded to meet this treatment function. However, due to snow cover during the winter, the vegetation that performs the biofiltration function may not be well established during important periods of runoff, such as during periods of snow melt. Wet ponds may perform their settling function better throughout the year; however, they typically require more land area for their construction. Where space is available within the existing right-of-way, wet ponds would be constructed for stormwater treatment. Biofiltration swales would be constructed where right-of-way is limited.

Additional Mitigation Measures Required

In order to comply with the requirements of the Clean Water Act, MDT and the contractor would obtain an NPDES General Permit for Discharge from Large and Small Construction Activities to control sediment discharge and erosion during construction projects. This permit is required to protect water quality and requires the completion of a SWPPP. The SWPPP requires a description of BMPs and stormwater management controls appropriate for the construction site including measures to reduce soil erosion, reduce site sediment loss, and manage some of the more common construction-generated wastes and construction-related toxic materials. Appropriate BMPs for the project site would be selected from the current version of *Erosion and Sediment Control Best Management Practices: Field Manual*, prepared for MDT.

As stated previously, stormwater facilities would be included in the final design for the proposed project to reduce the long-term impact of roadway runoff pollutants on sensitive receiving waters. Stormwater facilities would be maintained to ensure their continued intended function.

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5.10 Wetlands

Impacts on wetlands for the proposed project are estimated with the assumption that the entire area within the proposed right-of-way boundary for each action alternative would sustain impacts due to roadway construction and operation of the improved roadway. Expected impacts on individual wetlands are listed in Appendix F. This methodology estimates the maximum area of wetland impacts and may overstate the extent of permanent wetland impacts at some locations. Actual wetland impact areas would be determined during final design after all measures to avoid and minimize impacts have been applied to the proposed project. Wetlands within the right-of-way that are temporarily affected by construction but not permanently filled may re-establish themselves after completion of construction activities and would not require mitigation. Temporary impacts can include mowing or cutting brush to ground level or placement of geotextile fabric below temporary fill. In the draft SEIS all wetland impacts within the proposed right-of-way boundary for each action alternative were assumed to be permanent; however, in response to a comment on the draft SEIS by the Department of the Army Corps of Engineers, the short-term construction related impacts have been separated from the permanent impacts in this final SEIS.

5.10.1 Rural Portion

Direct Effects

No-Action Alternative

Under the No-Action Alternative, no construction-related impacts on wetlands are expected.

Wetlands in the project corridor currently exist in a degraded state due to impacts from past actions including construction of the existing roadway. The current roadway bisects and fragments the large pothole wetland complex at the center of the project corridor and disconnects hydrology at many wetland systems. Many bridges and culverts are undersized, limiting the natural hydrologic regime of floodplains and wetlands in the project corridor. Ongoing maintenance of the existing roadway would continue under the No-Action Alternative. Stormwater, sediments, organic matter, and metals runoff into sensitive wetland systems that receive roadside drainage would increase slightly over time as traffic volumes in the corridor increase. Leaving the roadway in its current state would perpetuate the lack of connectivity of wetland systems in the project area. These conditions have, over time, decreased the functions and values of wetland systems in the project area. Under the No-Action Alternative, these impacts would remain, but no new disturbances of wetlands habitat would occur. However, wetland functions would continue to decrease.

Action Alternatives

Construction impacts on wetlands in the US 93 Ninepipe/Ronan project corridor and project area include:

- Temporary clearing of wetland vegetation
- Temporary fill placement for construction access
- Temporary increases in sediment delivery to wetlands due to vegetation removal, site grading, and fill removal
- Temporary loss or decrease in wetland functions and values
- Temporary modification of wetland hydrologic regime
- Temporary soil compaction and alteration of soil permeability in highway right-of-way
- Potential for accidental spills of contaminants or hazardous materials.

The severity of the temporary impacts on wetlands would vary somewhat between the alternatives, depending on the type of wetlands affected, the type of vegetation affected, the extent of vegetation clearing and construction limit disturbance, and the length of the construction period.

At this stage of project development, it is difficult to determine the extent of temporary impacts on wetlands. While it would appear that Alternative Rural 1, which has the smallest right-of-way and roadway surface would have the fewest temporary impacts compared to all of the action alternatives, this may not be true. Because Alternative Rural 1 would retain the two-lane configuration, temporary fill in wetlands may be placed to accommodate temporary detour routes and construction equipment in order to reconstruct the other lanes. These temporary detour routes would be removed and wetlands affected by their placement would be restored. In contrast, traffic could be maintained on the existing alignment during construction of the additional lanes required for a passing lane or four-lane configuration. Therefore, most impacts required to construct alternatives with three- or four-lane configurations become permanent impacts attributed to the wider roadway surface. The temporary impacts on wetlands from increased deposition of eroded sediments would likely be greatest for Alternative Rural 7 in the Ninepipe segment because of the large amount of proposed fill removal through the Ninepipe Area and core pothole area, which may increase sediment inputs to wetlands. In the long term, Alternative Rural 7 would provide the greatest benefit to wetlands by increasing hydrologic and ecologic connectivity.

Longer construction periods, required for wider roads and longer wildlife crossing structures, increase the length of time before exposed soil is stabilized, which could increase deposition of eroded sediments in wetlands and the potential for invasive weed establishment. Longer construction periods also increase the risk for potential accidental spills to wetlands during construction. Greater amounts of earthwork and ground disturbance increase the risk of deposition of eroded sediments in wetlands, which may affect water quality and vegetation growth. These impacts could affect wetlands in the project corridor as well as wetlands that extend outside the area of disturbance. Temporary fill placed during construction would be removed after completion of construction and sites would be regraded and revegetated. It is presumed that most wetlands would revert to their original condition over time, depending on the degree of soil compaction at the site and the original complexity of the vegetation.

Impacts on wetlands from operation of the reconstructed roadway in the US 93 Ninepipe/Ronan project area include:

- Permanent loss of wetland acreage
- Alteration of wetland vegetation structure, such as the loss of scrub shrub or forested wetlands from structure shading or changes in hydrology
- Decreased acreage of category I and II wetlands
- Increased pollutant input to wetland systems from larger roadway surfaces
- Permanent changes in soil compaction and alteration of soil permeability in roadway right-of-way
- Loss of wetland functions and values where wetlands are completely filled
- Decrease of wetland functions and values resulting from partially filling or changing the vegetation composition or hydrology of a wetland.

Table 5.10-1 provides the preliminary estimates of impacts on wetlands for each of the proposed alternatives. Among the alternatives, it is estimated that Alternatives Rural 1 and 2 would impact the least amount of wetlands (approximately 6.0 hectares ([14.8 acres] permanent and 6.9 hectares [17.0 acres] temporary). Alternative Rural 7 would have less permanent impact (4.7 hectares [11.7 acres]) because the roadway would be elevated through most of the Ninepipe segment, where there is an abundance of wetlands. Temporary impacts would be greater (8.7 hectares [21.4 acres]) due to the need for more extensive temporary road fill during structure construction. Wetland areas underneath the elevated structure would be shaded, which could affect vegetation reestablishment and composition in these systems. Wetlands underneath the structure may have a reduced function as wildlife habitat due to the associated noise and vibratory levels along the roadway. However, Alternative Rural 7 would yield the greatest benefit to wetlands by restoring hydrologic and ecologic connectivity in the area. It is estimated that Alternative Rural 9 would result in the greatest amount of wetland impact (approximately 12.1 hectares [29.8 acres] permanent and 6.3 hectares [15.6 acres] temporary). The estimated impacts associated with the rural action alternatives, except Alternative Rural 7, range from approximately 6.0 to 12.1 hectares (14.8 to 29.8 acres) permanent and 6.2 to 7.1 hectares (15.4 to 17.6 acres) temporary. Alternative Rural 3 (PA) would result in approximately 6.3 hectares (15.5 acres) of permanent wetland impact and 6.8 hectares (16.8 acres) of temporary impact. The passing lane in the Ninepipe National Wildlife Refuge proposed for the Rural 10 alternative would be located within the existing right-of-way and a portion would be located on the proposed expanded bridge at this location. Therefore, it would have similar impacts on wetlands as the Rural 1 through 6 alternatives.

Table 5.10-1. Estimated areas of direct effects on wetlands in hectares (acres) for the rural action alternatives of the US 93 Ninepipe/Ronan improvement project.

	Wetland Impacts hectares (acres)		
Alternative	Permanent	Temporary	Total (Permanent and Temporary)
No-Action	0	0	0
Rural 1	6.0 (14.8)	6.9 (17.0)	12.9 (31.8)
Rural 2	6.0 (14.9)	6.8 (16.9)	12.9 (31.8)
Rural 3 (PA) [a]	6.3 (15.5)	6.8 (16.8)	13.1 (32.3)
Rural 4	6.5 (16.1)	6.6 (16.2)	13.1 (32.3)
Rural 5	6.4 (15.8)	6.8 (16.8)	13.2 (32.6)
Rural 6	7.4 (18.2)	6.2 (15.4)	13.6 (33.6)
Rural 7	4.7 (11.7)	8.7 (21.4)	13.4 (33.1)
Rural 8	7.6 (18.8)	7.1 (17.6)	14.7 (36.4)
Rural 9	12.1 (29.8)	6.3 (15.6)	18.4 (45.4)
Rural 10	6.1 (15.1)	6.9 (17.0)	13.0 (32.1)

Note: Calculations were conducted in English units (acres) and then converted to metric units (hectares). Differences in conversions to hectares are due to rounding. Direct effects include all wetland areas within the proposed project right-of-way that would be temporarily affected by construction or permanently filled. Temporarily affected wetlands may re-establish themselves after construction and would not require mitigation.

[a] The inclusion of a separate bicycle/pedestrian path as part of Alternative 3 (PA) would convert up to 1.7 hectares (4.1 acres) of temporary impacts to permanent. This conversion from temporary to permanent is not reflected in this table.

Tables 5.10-2 and 5.10-3 present the estimated areas of permanent and temporary impacts on wetlands by wetland type for the rural action alternatives. Overall, the differences in impacts by wetland type between the alternatives are minimal. However, there are a few exceptions. Impacts on the group 1 pothole wetlands would be similar for the Rural 1 through 6 alternatives and Alternative Rural 10. The Rural 8 alternative would have more impacts on group 1 pothole wetlands than the other alternatives and Rural 9 would have more impacts than Alternative Rural 8.

It should be noted that the revised impact areas include additional temporary impacts adjacent to the structures which were not included in the draft SEIS. At the structure crossing sites and at the Kettle Ponds where permanent impacts were eliminated either by proposed new and/or longer structures or by using walls to keep fills within existing footprints (all alternatives except Alternatives Rural 7 and Rural 9), it was previously concluded there would be an overall benefit to the wetlands by providing increased hydrologic and ecologic connectivity. This would offset the likelihood of temporary impacts, so the areas were shown as no impact in the draft SEIS. Now, since temporary impacts will be listed separately, and on reconsideration there will be construction activity to remove existing fills and to construct temporary roadways to facilitate new structure construction, it seems more consistent that these temporary impacts be included in

Table 5.10-2. Estimated permanent wetland impacts in hectares (acres) by wetland type in the US 93 Ninepipe/Ronan project corridor.

Alternative	Permanent Impacts by Wetland Type						
	Riparian	Pothole Wetlands			Irrigation Features	Roadside Ditches	Ninepipe Reservoir
		Group 1	Group 2	Group 3			
Rural 1	1.5 (3.6)	0.8 (1.9)	0.3 (0.7)	0.1 (0.4)	0.7 (1.8)	1.5 (3.80)	1.0 (2.6)
Rural 2	1.5 (3.6)	0.8 (1.9)	0.3 (0.7)	0.1 (0.4)	0.8 (1.9)	1.5 (3.8)	1.0 (2.6)
Rural 3 (PA) [a]	1.5 (3.6)	0.8 (1.9)	0.3 (0.7)	0.1 (0.4)	0.8 (2.1)	1.7 (4.3)	1.0 (2.6)
Rural 4	1.7 (4.2)	0.8 (1.9)	0.3 (0.7)	0.1 (0.4)	0.8 (2.1)	1.8 (4.4)	1.0 (2.6)
Rural 5	1.8 (4.3)	0.8 (1.9)	0.3 (0.7)	0.1 (0.4)	10.8 (2.1)	1.5 (3.80)	1.0 (2.6)
Rural 6	1.7 (4.2)	0.8 (1.9)	0.6 (1.4)	0.1 (0.4)	1.2 (3.0)	1.9 (4.8)	1.0 (2.6)
Rural 7	1.4 (3.5)	0.2 (0.6)	0.6 (1.4)	0.0 (0.1)	0.8 (2.0)	1.6 (4.0)	0
Rural 8	2.0 (4.9)	1.1 (2.8)	0.4 (1.1)	0.2 (0.4)	0.8 (2.0)	1.8 (4.4)	1.3 (3.2)
Rural 9	3.0 (7.4)	2.9 (7.2)	0.8 (1.9)	0.2 (0.5)	1.1 (2.7)	2.2 (5.3)	1.9 (4.7)
Rural 10	1.5 (3.6)	0.8 (1.9)	0.3 (0.7)	0.1 (0.4)	0.8 (2.1)	1.5 (3.8)	1.0 (2.6)

Note. Calculations were conducted in English units (acres) and then converted to metric units (hectares). Differences in conversions to hectares are due to rounding. Estimated wetland impacts include all wetland areas within the proposed project right-of-way that would be permanently filled.

[a] The inclusion of a separate bicycle/pedestrian path as part of Alternative 3 (PA) would convert up to 1.7 hectares (4.1 acres) of temporary impacts to permanent impacts. This conversion from temporary to permanent is not reflected in this table.

Table 5.10-3. Estimated temporary wetland impacts in hectares (acres) by wetland type in the US 93 Ninepipe/Ronan project corridor.

Alternative	Temporary Impacts by Wetland Type						
	Riparian	Pothole Wetlands			Irrigation Features	Roadside Ditches	Ninepipe Reservoir
		Group 1	Group 2	Group 3			
Rural 1	1.6 (4.0)	3.0 (7.5)	0.3 (0.7)	0.0 (0.1)	0.3 (0.7)	0.6 (1.6)	1.0 (2.4)
Rural 2	1.6 (4.0)	3.0 (7.5)	0.3 (0.7)	0.0 (0.1)	0.3 (0.7)	0.6 (1.6)	1.0 (2.4)
Rural 3 (PA) [a]	1.6 (4.0)	3.0 (7.5)	0.3 (0.7)	0.0 (0.1)	0.3 (0.7)	0.6 (1.4)	1.0 (2.4)
Rural 4	1.4 (3.5)	3.0 (7.5)	0.3 (0.7)	0.0 (0.1)	0.3 (0.7)	0.5 (1.3)	1.0 (2.4)
Rural 5	1.6 (3.9)	3.0 (7.5)	0.3 (0.7)	0.0 (0.1)	0.3 (0.7)	0.6 (1.6)	1.0 (2.4)
Rural 6	1.4 (3.5)	3.0 (7.5)	0.3 (0.7)	0.0 (0.1)	0.3 (0.7)	0.3 (0.7)	1.0 (2.4)
Rural 7	1.6 (4.0)	3.8 (9.5)	0.4 (0.9)	0.0 (0.1)	0.2 (0.6)	0.5 (1.3)	2.1 (5.2)
Rural 8	1.4 (3.4)	3.5 (8.6)	0.4 (1.0)	0.0 (0.1)	0.3 (0.7)	0.5 (1.2)	1.0 (2.6)
Rural 9	1.2 (2.9)	3.0 (7.5)	0.4 (1.1)	0.0 (0.1)	0.3 (0.8)	0.2 (0.5)	1.1 (2.8)
Rural 10	1.6 (4.0)	3.0 (7.5)	0.3 (0.7)	0.0 (0.1)	0.3 (0.7)	0.6 (1.6)	1.0 (2.5)

Note. Calculations were conducted in English units (acres) and then converted to metric units (hectares). Differences in conversions to hectares are due to rounding. Estimated wetland impacts include all wetland areas within the proposed project right-of-way that would be temporarily affected by construction. Temporarily affected wetlands may re-establish themselves after construction and would not require mitigation.

[a] The inclusion of a separate bicycle/pedestrian path as part of Alternative 3 (PA) would convert up to 1.7 hectares (4.1 acres) of temporary impacts to permanent impacts. This conversion from temporary to permanent is not reflected in this table.

the impact listings. The tables above reflect an increase in total wetland impact from those included in the draft SEIS of about 3.2 hectares (8 acres) for Rural Alternatives 1-6, 8, and 10. For Alternative Rural 7 the increase in temporary impacts causes a more dramatic increase in total wetland impact of about 7 hectares (17 acres). Alternate Rural 9 does not increase proportionately as much because the 4-lane divided roadway in the Kettle Ponds could not be contained within the existing footprint utilizing walls, so these impacts (approximately 1.7 hectares [4 acres]) were previously included as wetland impacts in the draft SEIS.

In response to numerous comments on the draft SEIS, the project proponents have agreed to include a separate bicycle/pedestrian path. For additional information on the path location, impacts, and alternative termini, please see *Section 3.2 Alternatives Considered in Detail* and *Section 5.6 Pedestrians and Bicyclists*. Construction of this path would convert up to 1.7 hectares (4.1 acres) of temporary impacts already addressed herein to permanent impacts.

In addition to loss of wetland area, a wetland can be affected by altered hydrology when the placement of fill impounds a portion of the wetland or redirects water flow. As a result, partially filled wetlands may suffer a decrease in some wetland functions such as wildlife habitat value, flood storage capacity, and ground water recharge capacity. For small areas of fill at the edges of wetlands, the impacts would likely be modest and no changes in the functional rating would occur. Large areas of fill in small wetlands would have the greatest effect, likely contributing to a lower functional rating for the system. Where wetlands are completely filled, the entire function and value of that system would be lost.

Roadway encroachment at the edge of a wetland boundary may alter wetland function and hydrology, even without fill placement in the wetland. Direct sediment input may increase at these wetlands causing partial filling of the wetland over time. The roadway may also disrupt the soil layers that support hydrologic function causing partial or complete draining of the wetland feature. This is especially true of pothole wetlands in the project corridor. Landscape disturbances can affect pothole wetland systems on different levels. For example, changes in adjacent upland soil infiltration rates or storage capacity might affect the range of annual variations in water depths in pothole wetlands. Minor changes in landscape-scale hydrologic regimes might result in changes in wetland functions involving short-term and long-term water storage capacity, sediment retention and removal, and wetland vegetation structure.

Short-term construction activities involving vegetation clearing may result in long-term impacts on wetlands. Clearing of mature woody vegetation with construction activities may result in a long-term decrease of palustrine scrub-shrub or palustrine forested wetland. Few palustrine scrub-shrub and forested wetlands are currently present in the project corridor. These areas have a greater structural diversity and therefore provide higher value wildlife habitat.

The increased impervious surface area of the proposed alternatives may also increase stormwater runoff levels to wetlands. If stormwater is not treated, runoff may contribute increased pollutants to wetlands adjacent to the roadway. This impact would be greatest for Alternatives Rural 8 and Rural 9 and for sections of the other alternatives that propose areas of four-lane divided configurations (Alternatives Rural 3 through 6).

Wildlife Crossing Structures

Impacts from construction of wildlife crossing structures would be similar to the impacts described previously. Construction of elevated structures would require removal of existing roadbed fill, which increases the risk of construction-related deposition of eroded sediments in wetlands. While most wetlands systems can handle some increased unwanted deposition of eroded sediments, extensive sedimentation could result in decreased functions in a system, such as loss of flood storage capacity, changes in plant communities, and loss of wildlife habitat. Implementation of BMP's would reduce deposition of eroded sediments in wetlands during construction and in the long-term, the proposed structures are expected to increase hydrological and ecological connectivity in adjacent wetlands.

The proposed project incorporates five wildlife crossing structures (bridges and enlarged culverts) as well as 12 smaller crossings (culverts) throughout the corridor. These wildlife crossing structures would yield many benefits to wetlands including the following:

- Improved cross-highway hydrologic connectivity of wetlands
- Improved ecological connectivity of wetlands
- Increased wetland acreage in some areas with implementation of longer wildlife crossing structures and associated fill removal
- Improved wetland function and value at some existing wetlands
- Increased acreage of category I and II wetlands with implementation of longer wildlife crossing structure options.

These structures and culverts would benefit wetlands by improving hydrologic and ecological connectivity of these systems. This may allow for greater water, energy, nutrient, seed, and propagule movement throughout the project area. Removing fill at wildlife crossing structures would also create opportunities to restore category I and II wetlands. For other wetlands with reduced functions, improving connectivity or removing fill may yield an increase in functions at that site.

Structure replacement would result in a wider opening for flows to pass through, which may result in effects on riparian wetlands downstream of the crossing structure. These effects include increased area and duration of flooding and areas of local scour and erosion. These effects are expected to be localized and mostly beneficial.

The proposed structure option at Post Creek for all rural action alternatives except Alternative Rural 7 would span 39 percent of the floodplain and would restore approximately 0.2 hectares (0.6 acres). The Post Creek wildlife crossing structure would increase the span of the floodplain compared to the No-Action Alternative and would improve hydrologic connectivity for the associated systems. However, the Alternative Rural 7 structure at Post Creek would yield a greater benefit to wetlands than the other rural action alternatives because it would span 92 percent of floodplain, impact fewer wetlands, and restore more wetland area (0.6 hectare [1.5 acres]).

At Ninepipe Reservoir, the proposed wildlife crossing structure for all rural action alternatives except Alternative Rural 7 and the elevated parkway included in Alternative Rural 7 would span the mapped floodplain of this system. All rural action alternatives would improve the connectivity in adjacent wetlands and generate 0.4 hectare (0.9 acre) of wetland restoration. However, the elevated parkway included in Alternative Rural 7 would yield a greater benefit to wetlands because it would span the greatest area of floodplain, impact fewer wetlands, and restore more wetland area (approximately 1.4 hectares [3.5 acres]) than the other rural action alternatives.

The elevated parkway would also yield the greatest benefit to wetlands at the Kettle Pond sites because it would span the greatest area of floodplain, impact the fewest wetlands, and restore the most wetland area. Alternative Rural 7 would restore 1.3 hectare (3.1 acres) of wetland compared to 0.2 hectare (0.4 acre) of restoration for the other rural alternatives.

The impacts and benefits of the wildlife crossing structures at Crow Creek are similar for all of the action alternatives. Alternatives Rural 1 through Rural 6 and Rural 8 through Rural 10 would each provide 0.3 hectare (0.7 acre) of restoration. As noted for other key wildlife crossing locations, the elevated parkway for Alternative Rural 7 would impact the fewest wetlands, restore the most wetland area (0.7 hectare [1.8 acre]), and span the entire floodplain of the Crow Creek system.

Indirect Effects

Development of material source sites could result in additional impacts on wetlands, if the site or access roads to the site are located in wetlands. Material source sites could include asphalt production facilities, concrete facilities, and sources for fill. The effect on wetlands would be similar to those described previously. Development of material source sites on Tribal-owned properties would undergo environmental review through the National Environmental Policy Act (NEPA) process. Development of material source sites on non-Tribal properties would undergo environmental review through the Montana Department of Environmental Quality (MDEQ) permitting system.

Long-term road maintenance activities necessary to maintain the newly reconstructed US 93 have the potential to indirectly affect water quality in wetlands through herbicide spraying for weed control, mowing, snow-removal, use of chemicals to remove or prevent ice formation, asphalt repair, striping, culvert and bridge repair and cleaning and any other activity required to maintain the highway. Herbicides would be applied by a licensed applicator and effects from herbicide spraying and maintenance activities would be minimal as long as the materials are applied in accordance with U.S. EPA safety data sheets and the manufacturer's recommendations. These activities already occur in the corridor and are not likely to result in any new impacts on wetlands unless there was an accidental spill of chemicals or other materials. The proposed project is expected to improve highway safety, thereby reducing the potential for accidents and related chemical spills to wetlands. Currently, MDT contracts with local county weed districts to perform weed control along state-owned right-of-way. This practice would continue regardless of which alternative is selected.

Colonization of newly disturbed wetlands in the project corridor by invasive weeds would decrease the vegetation structure and complexity of the wetland, displace native plants that are more beneficial to wildlife, and require follow up treatments, such as chemical application. All of these factors would contribute to decreased functions and values of wetlands. However, MDT in conjunction with CSKT and the county weed management coordinator would develop pre-construction weed management plans and special provisions to contracts that aid in preventing the spread of noxious weed species to the project area.

Indirect effects of the proposed project include an influence on the rate and pattern of land use development. The proposed project may influence where development takes place because access to the highway would be improved at a few key intersections; however, the proposed project is not expected to increase the rate of development in the corridor (see *Section 5.2 Land Use*). Indirect effects on wetlands would be regulated through Section 404 of the Clean Water Act, administered by the United States Army Corps of Engineers (USACE), and through the Aquatic Lands Conservation Ordinance (ALCO) 87A, administered by CSKT.

5.10.2 Urban Portion

Direct Effects

No-Action Alternative

Under the No-Action Alternative, in the urban portion of the proposed project, existing impacts on wetlands would remain, but no new disturbances of wetlands habitat would occur.

Action Alternatives

The nature of the short-term construction impacts for the urban portion would be similar to those described for the rural portion.

At the north end of Ronan, under Alternative Ronan 1, the proposed four-lane roadway would require a construction limit that extends beyond the existing roadway and may result in temporary impacts on riparian zone wetlands at Ronan Spring Creek (wetland J2C), on an irrigation feature wetland (wetland J2B), on a group 1 pothole wetland (wetland J4B), and on a group 3 pothole wetland (wetland J4A).

Under Alternative Ronan 2 fewer impacts would occur on riparian zone wetlands at Ronan Spring Creek (wetland J2C) than for Alternative Ronan 1.

The construction limits for the couplet under Alternative Ronan 3 and Ronan 4 (PA) would disturb more wetland area through Ronan and would create additional temporary impacts at the group 2 pothole wetland (wetland J2A) at the north end of Ronan than for the other urban alternatives.

Alternative Ronan 5 would have minimal impacts on wetlands immediately north of Ronan. Farther north of Ronan where the roadway would transition to a four-lane configuration, short-term construction impacts would be similar to those described for Alternative Ronan 1.

In the urban portion of the proposed project, the nature of the impacts on wetlands would be similar to those described for the rural portion. Wetland impacts for the urban portion alternatives are summarized in Tables 5.10-4 and 5.10-5.

Table 5.10-4. Estimated permanent wetland impacts from urban alternatives in hectares (acres).

	Alternative Ronan 1	Alternative Ronan 2	Alternative Ronan 3	Alternative Ronan 4 (PA)	Alternative Ronan 5
Ronan Spring Creek	0	0	0 (0)	0 (0)	0 (0)
Group 2 Pothole Wetlands	0 (0)	0 (0)	0.004 (0.01)	0.004 (0.01)	0 (0)
Irrigation Features	0.004 (0.01)	0.004 (0.01)	0.004 (0.01)	0.004 (0.01)	0 (0)
Total	0.004 (0.01)	0.004 (0.01)	0.008 (0.02)	0.008 (0.02)	0 (0)

Note: areas expressed to 2-3 decimal places indicate the small size of the wetland, not the precision of delineation.

Table 5.10-5. Estimated temporary wetland impacts from urban alternatives in hectares (acres).

	Alternative Ronan 1	Alternative Ronan 2	Alternative Ronan 3	Alternative Ronan 4 (PA)	Alternative Ronan 5
Ronan Spring Creek	0.004 (0.01)	0.008 (0.02)	0 (0)	0 (0)	0 (0)
Group 2 Pothole Wetlands	0 (0)	0 (0)	0.004 (0.01)	0.004 (0.01)	0 (0)
Irrigation Features	0	0	0	0	0 (0)
Total	0.004 (0.01)	0.008 (0.02)	0.004 (0.01)	0.004 (0.01)	0 (0)

Note: areas expressed to 2-3 decimal places indicate the small size of the wetland, not the precision of delineation.

Alternative Ronan 1 would impact approximately 0.008 hectares (0.02 acres) of wetland. These impacts would occur on riparian zone wetlands associated with Ronan Spring Creek (wetland J2D) and an irrigation feature wetland at the north end of Ronan (wetland J2B). Wetland impacts resulting from Alternative Ronan 2 would be similar to those described for Alternative Ronan 1, although more area of wetland would be affected, approximately 0.012 hectares (0.03 acres).

Under Alternatives Ronan 3 and Ronan 4, no impacts would occur at Ronan Spring Creek (wetland J2D) but the southbound couplet would pass through a group 2 pothole wetland north of Ronan (wetland J2A).

Alternative Ronan 5 would not impact wetlands.

Indirect Effects

Indirect effects in the urban portion of the proposed project would be similar to those described for the rural portion. Two exceptions are Alternatives Ronan 3 and Ronan 4, which would construct a southbound couplet on First Avenue SW. These alternatives would likely induce commercial development along the southbound couplet. However, there are no wetlands in this area, and no additional impacts on wetlands are expected.

5.10.3 Impacts of the Total Project

Wetland impacts estimated for the proposed alternatives within the Ninepipe Segment in the US 93 Evaro to Polson FEIS ranged from approximately 5.1 to 8.2 hectares (2.06 to 20.3 acres). Wetland impacts estimated for the proposed action alternatives range from 12.9 to 18.4 hectares (31.8 to 45.4 acres). The estimates for the proposed action alternatives include all wetland areas within the road right-of-way that would be temporarily affected by construction or permanently filled. Depending on the alternative selected, the proposed project could result in the restoration of between approximately 1.1 and 4.0 hectares (2.7 and 9.8 acres) of wetlands. While all of the alternatives would result in adverse impacts on wetlands through placement of wetland fill, the proposed project would also improve the hydrologic connectivity of riparian and other types of wetlands in the corridor.

5.10.4 Mitigation Measures

Avoidance and Minimization Measures Included in Design

The following proposed mitigation measures were developed in coordination with MDT, FHWA, and CSKT. Proposed mitigation for wetland impacts follows a staged approach beginning with avoidance and minimization of impacts through roadway design and ending with compensation for unavoidable impacts. Numerous measures have been incorporated into the preliminary roadway design to minimize impacts on wetland habitats in the project corridor. These measures include:

- The proposed preliminary design reviewed the possibility for steepened roadway slopes to minimize impacts on key features in the project corridor. Proposed approximate locations are shown in Appendix A. During final design, the areas will be further investigated to determine if the proposed preliminary design is practicable and feasible. If during final design there are areas that slopes can be safely steepened, they would be incorporated into the proposed project's plans. (Note: Slope steepening would require approval from the MDT Highways Engineer and FHWA through the design exceptions process). These steeper slopes would reduce the width of the roadway footprint and consequently reduce impacts on wetlands.
- The proposed project would add culverts and increase bridge lengths and culvert sizes at major wetland and stream crossings to improve hydrologic connections.
- Retaining walls are used as appropriate through the two kettle ponds to minimize impacts.
- The proposed project would implement wetland and stream restoration at wildlife crossing structures where appropriate.

Additional Mitigation Measures Required

To achieve mitigation sequencing for temporary construction impacts on wetlands, MDT requires that all construction activities within and adjacent to wetlands adhere to the BMPs outlined in the MDT standard specifications and described in the SWPPP, which is prepared for all projects disturbing more than 0.4 hectares (1 acre) of land area.

The MDT standard specifications place restrictions on the contractor's activities in an attempt to avoid and minimize impacts on aquatic resources. For example, avoidance is achieved by limiting certain activities to upland areas rather than wetlands when feasible.

Minimization of impacts is achieved in many ways including limiting the total area that may be disturbed at any one time and seeding exposed soils as soon as practicable after work is complete, which minimizes the potential for increased deposition of eroded sediments in wetlands.

MDT and their contractor are required to prepare a SWPPP to be implemented during construction. This plan requires a description of BMPs to reduce soil erosion, to reduce site sediment loss, and to manage construction generated wastes, thereby reducing the risk to water quality in project area wetlands.

Additional mitigation measures will be added to the special provisions for the contractor to minimize project impacts on wetlands including the following:

- Install preservation fencing to prevent unnecessary vegetation clearing and minimize intrusion into surrounding habitats
- Follow the Evaro to Polson Integrated Invasive Weed Management Plan
- Where appropriate, salvage wetland vegetation from construction areas and store for use in revegetation activities.

Permits for unavoidable placement of fill in wetlands would be required from CSKT under the Aquatic Lands Conservation Ordinance 87A and from the USACE, under Section 404 of the federal Clean Water Act. As part of the permitting process, compensatory mitigation is required to compensate for unavoidable impacts. Where impacts are unavoidable, mitigation could be provided by creating, enhancing, and/or restoring wetland habitat of a similar type and function to what was lost. The USACE requires that impacts on jurisdictional wetlands be compensated at a minimum ratio of 1:1 for restoration and creation of wetlands. The USACE does not regulate impacts on isolated wetlands (i.e., those wetlands that are hydrologically isolated from waters of the United States). The CSKT Shoreline Protection Office regulates activities that have the potential to impact surface waters and wetlands of the Flathead Indian Reservation. The CSKT Shoreline Protection Office requires unavoidable impacts on all wetlands to be compensated at a greater than 1:1 ratio by preserving, restoring, creating, or enhancing wetlands. Minimum compensation ratios required by CSKT for unavoidable impacts are shown in Table 5.10-6. Regardless of jurisdiction, Executive Order 11990 requires MDT to account for all wetland losses. Therefore, MDT would ultimately seek to replace all wetlands affected by the proposed project. Precise wetland impact quantities and final wetland mitigation strategy will be determined in the final design phase of this project.

Table 5.10-6. Minimum compensation ratios required by CSKT for unavoidable wetland impacts.

Impacted Wetland Type	Preservation	Restoration	Enhancement	Creation
Forested and Shrub	Pre-project 3:1 Post-project 4:1	Pre-project 2.5:1 Post-project 3.5:1	Pre-project 4:1 Post-project 5:1	Pre-project 4:1 Post-project 5:1
Emergent and Open Water	Pre-project 2:1 Post-project 3:1	Pre-project 1.5:1 Post-project 2.5:1	Pre-project 3:1 Post-project 4:1	Pre-project 3:1 Post-project 4:1

Source: CSKT 1999

Compensation for unavoidable impacts on wetlands would involve mitigation activities to develop replacement wetlands to offset the impacts. A wetland mitigation effort is underway for the remainder of the US 93 Evaro to Polson reconstruction project, which encompasses the remainder of the corridor and it could be used as a model for the proposed project. Onsite opportunities for wetland mitigation, such as those associated with the proposed wildlife crossing structures, could be pursued first to increase permeability across the roadway corridor, restore wetland systems, and restore overall wetland connectivity in the project area. CSKT planting plans for areas at wildlife crossings would include appropriate (shade-tolerant) species for planting near the bridge. Offsite wetland mitigation opportunities could be pursued if additional replacement wetlands are needed after all onsite mitigation opportunities are considered. Offsite wetland mitigation sites established through wetland mitigation reserve agreements between CSKT and MDT for the US 93 Evaro to Polson reconstruction project may provide suitable offsite mitigation for the proposed project as well.

Only Practicable Alternative Finding

Protection of Wetlands, Executive Order 11990 of 1977 (E.O. 11990) requires federal agencies to minimize the loss or degradation of wetlands and enhance their natural value.

Impact avoidance has been achieved throughout the development of project alternatives and the preliminary design process. Wetland avoidance will continue to be refined in the final design process.

All of the alternatives include widening of the existing highway (and an existing city street under alternatives Ronan 3 and 4). There is no practicable alternative to increasing the capacity and safety in this corridor without widening the existing roadway. Wetland avoidance by realignment of the roadway would cause environmental impacts of substantial magnitude, mainly to wetlands, wildlife, wildlife habitat, and Section 4(f) resources. Of the rural alternatives, there are three alternatives (Rural 1, 2 and 10) that have slightly less total wetland impact than the preferred alternative, Rural 3. Alternatives Rural 1 and 2 do not adequately address the capacity and safety needs of the corridor, and Alternative Rural 10 was determined to have greater potential impacts on wildlife, which was objectionable to the resource agencies. Alternative Rural 7, which would have fewer permanent impacts but greater temporary impacts, was determined to be not practicable due to greatly increased cost and subsequent project delays and impacts to safety. Of the Ronan alternatives, only Ronan 5 would have slightly fewer wetland impacts than the urban preferred alternative, Ronan 4, and it does not adequately address the operational and safety concerns within the city.

The selected preferred alternatives incorporate slope steepening where practical, added culverts and increased bridge lengths to improve hydrologic connections, retaining walls to avoid wetlands, and wetland and stream restoration at wildlife crossing structures to minimize impacts. Additional measures to protect wetlands will include preservation fencing, conformance to an invasive weed plan, and salvage and re-use of wetland vegetation as described above in Section 5.10.4. All wetlands permanently impacted will be replaced in accordance with the USACE and CSKT permitting requirements.

Based upon the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands and the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.

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5.11 Floodplains and Streams

5.11.1 Rural Portion

Direct Effects

No-Action Alternative

Because no construction activities would be conducted and the roadway would not be changed from the existing condition in the vicinity of streams and floodplains under the No-Action Alternative, no impacts on floodplains or streams are expected in the rural portion of the US 93 Ninepipe/Ronan improvement project.

Action Alternatives

Construction activities are not expected to affect floodplain values or stream hydrology in the rural portion of the US 93 Ninepipe/Ronan project corridor under any of the action alternatives or wildlife crossing structure options.

The following potential impacts on floodplains and streamflow were analyzed: 1) the effect of reconstructed bridge and culvert openings on flood conveyance and floodplain elevations at each floodplain crossing; 2) the effect of roadway fill on floodplain storage; and 3) the effect of new impervious roadway area on peak flows in streams. There are no unique impacts on floodplains and streamflow during the construction phase of the proposed project.

The impacts of bridge and culvert implementation on conveyance and floodplain elevations are discussed based on a comparison of the lengths of the proposed crossing structures to the existing conditions as well as the change in floodplain area and storage resulting from the construction of the structures. No hydraulic modeling was conducted to estimate actual changes to stream flow, water surface elevations, or flooding under the action alternatives. All crossings would result in transverse (perpendicular) encroachments on Floodplains and no longitudinal encroachments are expected.

The impacts of roadway fill on floodplain storage are discussed based on the approximate increase or decrease in storage at each of the crossings. While the floodplain boundaries for the project area are shown on the FEMA maps for the area, the boundaries are not tied to topographic elevations. Therefore, the accuracy of the floodplain boundary is not great enough to provide a definitive assessment of floodplain impacts. These impacts are therefore discussed as approximate impacts. The actual quantity of fill in the floodplain would be determined during final design.

The impacts to streamflow due to increased peak flows and volumes of stormwater runoff resulting from increased impervious surface area were analyzed by comparing impervious areas within the project corridor that drain to streams.

Stream channel conveyance capacity would not be decreased at the Post Creek, Ninepipe Reservoir, and Crow Creek crossings under any of the action alternatives. Stream capacity would likely be increased at the bridge location by increasing the hydraulic capacity of the opening, and additional floodplain storage would be created. While no hydraulic modeling has been conducted for the proposed bridge crossing modifications, it is expected that all action alternatives would result in maintenance or reduction of the 100-year flood water surface elevation at the highway crossing due to increased channel and floodplain capacity.

To compare alternatives, total crossing length is used as a surrogate for conveyance and floodplain connectivity at US 93 crossings. Table 5.11-1 displays structure lengths and approximate floodplain width at the floodplain crossings. Alternative Rural 7 is likely to have the greatest beneficial impact on the floodplains associated with aquatic resources by providing the greatest stream and floodplain openings. Under this alternative, a bridge would be constructed that would span nearly the entire 100-year floodplain at Post Creek as mapped by FEMA (1987) and would completely span the floodplains at Ninepipe Reservoir and Crow Creek. This structure would reduce any existing constriction of flow in the stream channel and allow the greatest connection of the stream channel to the floodplain throughout the highway crossing. The proposed wildlife crossing structures for all other rural action alternatives would provide similar benefits to floodplains.

Table 5.11-1. Floodplain width and total crossing structure length in meters (feet) at aquatic resources in the rural portion of the US 93 Ninepipe/Ronan project corridor.

	Approximate Floodplain Width [a] meters (feet)	Total Crossing Structure Length [b] meters (feet)	Percentage of Floodplain Spanned [c] (structure length / floodplain width)
Post Creek Structure Options	400 (1,300)		
No-Action		15 (50)	4%
All Rural Action Alternative, except Rural 7		156 (512)	39%
Rural 7		365 (1200)	92%
Ninepipe Reservoir Structure Options	105 (345)		
No-Action		21 (70)	20%
All Rural Action Alternatives, except Rural 7		216 (706)	greater than 100%
Rural 7		6,100 (20,000) [d]	greater than 100%
Crow Creek Structure Options	170 (560)		
No-Action		9 (28)	5%
All Rural Action Alternatives, except Rural 7		83 (270)	48%
Rural 7		6,100 (20,000)	greater than 100%

[a] Source: FEMA 1987
[b] Comprises total length of all wildlife crossing structures identified at each location. Refer to *Section 3.2.2 Rural Action Alternatives* for a description of wildlife crossing structures.
[c] Calculated by dividing the total crossing structure length by the approximate floodplain width. Where the total structure length exceeds the floodplain width, the percentage is stated as greater than 100%. Note: bridge piers may be required within the floodplain.
[d] Comprises total length of the elevated parkway structure. Refer to *Section 3.2.2 Rural Action Alternatives* for a description of the elevated parkway structure.

The impact of each alternative on floodplains is also compared in terms of the increase or decrease in floodplain area and floodplain storage at each crossing relative to the No-Action Alternative. Table 5.11-2 displays the approximate change in floodplain area and storage at stream crossings under the action alternatives. While floodplain storage would increase where the structure opening is expanded, widening of the roadway would involve placing fill at the outside edges of the 100-year floodplain at some crossings. Quantitative estimates of fill volumes within the fringes of the 100-year floodplain boundaries are based on the approximate mapped boundary. Floodplain fill would reduce flood storage, but it is expected that increasing stream and floodplain conveyance and storage within the crossings would have a greater beneficial effect on flood elevations than the negative impact of adjacent floodplain fill.

Table 5.11-2. Estimated change in floodplain area in hectares (acres) and floodplain storage in cubic meters (cubic yards) at aquatic resources in the rural portion of the US 93 Ninepipe/Ronan project corridor.

	Change in Floodplain Area hectares (acres)	Change in Floodplain Storage cubic meters (cubic yards)
Post Creek Structure Options		
Rural 1through 4, 6, and 10	0.11 (0.26)	670 (876)
Rural 5	0.09 (0.22)	340 (445)
Rural 7	0.41 (1.0)	3,770 (4,931)
Rural 8	0.40 (1.0)	-1,080 (-1,413)
Rural 9	-0.32 (-0.80)	-1,670 (-2,184)
Ninepipe Reservoir Structure Options		
Rural Action Alternatives, except Rural 9	0.37 (0.92)	4,790 (6,265)
Rural 9	0.35 (0.86)	4,670 (6,108)
Crow Creek Structure Options		
Rural 1 through 3, 5, 6, and 10	0.13 (0.33)	1,320 (1,726)
Rural 4	0.12 (0.30)	1,160 (1,517)
Rural 7	0.21 (0.53)	1,660 (2,171)
Rural 8	0.14 (0.35)	1,150 (1,504)
Rural 9	0.001 (0.002)	970 (1,269)

At the Post Creek crossing, the proposed longer bridge allows for the net removal of fill from the floodplain area as well as a net increase in floodplain storage under Alternatives Rural 1 through 7 and 10. Under Alternative Rural 8 there would be a net increase in floodplain area, but a net decrease in floodplain storage. Under Alternative Rural 9, there would be a net decrease in both floodplain area and floodplain storage. Alternative Rural 7 would have the greatest net increase in floodplain area, approximately 0.41 hectares (1.0 acres), and the greatest net increase floodplain storage, approximately 3,770 cubic meters (4,931 cubic yards) of floodplain storage. Alternative Rural 9 would have a net decrease of approximately 0.32 hectares (0.80 acres) in floodplain area and a net decrease of approximately 1,670 cubic meters (2,184 cubic yards) of floodplain storage.

At the Ninepipe Reservoir crossing, the proposed longer bridge allows for more removal of fill covering the floodplain area than would be placed for widening the roadway. Alternatives Rural 1 through 8 and 10 would have a net increase of approximately 0.37 hectares (0.92 acres) in floodplain area and a net increase of approximately 4,790 cubic meters (6,265 cubic yards) of floodplain storage. Alternative 9 would have a net increase of approximately 0.35 hectares (0.86 acres) in floodplain area and a net increase of approximately 4,670 cubic meters (6,108 cubic yards) of floodplain storage.

At the Crow Creek crossing, the longer bridges allow for removal of the fill covering more floodplain area than the widening covers. Alternative 7 would have the greatest net increase in floodplain area, approximately 0.21 hectares (0.53 acres), and the greatest net increase of floodplain storage, approximately 1,660 cubic meters (2,171 cubic yards). Alternative 9 would have the smallest net increase in floodplain area, approximately 0.001 hectares (0.002 acres), and the smallest net increase of floodplain storage, approximately 970 cubic meters (1,269 cubic yards).

In summary, by spanning a greater portion of the floodplain than the No-Action Alternative, the proposed structures would result in greater connectivity between the surface water and adjacent wetlands and upland riparian areas. Increased openings could reduce flooding upstream and could contribute to flooding downstream, but no flooding issues are reported for the project corridor. Therefore, the risks associated with implementation of the proposed project are minimal. By improving stream interaction with the adjacent floodplain, the value of the system would increase for wildlife and other biological processes. The proposed project is not expected to contribute to the increase of incompatible floodplain development, and measures would be implemented during construction to minimize impacts to the floodplain.

Kettle Ponds 1 and 2 do not have associated floodplains, and therefore the wildlife crossing structures at these locations have no effect on floodplains.

Project impacts on wildlife habitat within the floodplains are discussed in *Section 5.12 Fish and Wildlife* and *Section 5.13 Threatened and Endangered Species*. No substantial impacts on groundwater recharge are anticipated.

Greater roadway areas would drain to streams within the Post Creek Hill segment under all action alternatives than under the No-Action Alternative, leading to greater stormwater runoff volumes and flow rates. Implementation of flow control measures (see *Section 5.11.4 Mitigation Measures* section) would prevent associated physical impacts to streams.

Indirect Effects

A potential indirect effect of increasing the hydraulic openings at US 93 stream crossings is an increase in downstream streamflow velocities. If increased streamflow velocities occur, they could contribute to erosion of unstable stream banks, movement of stream substrates, and flushing of sediment deposits.

Development of material source sites could result in additional impacts on floodplains, if the site or access roads to the site are located in or cross a floodplain. Material source sites could include asphalt production facilities, concrete facilities, and sources for fill. The effect on floodplains would be similar to those described previously.

Colonization of newly disturbed floodplains by invasive weeds where new structures are installed could decrease the vegetation structure and complexity of the system, displace native plants that are more beneficial to wildlife, and require follow up treatments, such as chemical application. All of these factors would contribute to decreased functions and values of floodplains. However, MDT in conjunction with CSKT and the county weed management coordinator would develop pre-construction weed management plans and special provisions to contracts that aid in preventing the spread of noxious weed species to the project area.

5.11.2 Urban Portion

Direct Effects

No-Action Alternative

Because no construction activities would be conducted and the roadway would not be changed from the existing condition in the vicinity of streams and floodplains under the No-Action Alternative, no impacts on floodplains or streams are expected in the urban portion of the US 93 Ninepipe/Ronan project corridor.

Action Alternatives

Construction activities are not expected to affect floodplain values or stream hydrology in the urban portion of the US 93 Ninepipe/Ronan project corridor under any of the action alternatives.

The only stream channel receiving stormwater from the urban portion of the project corridor is Ronan Spring Creek. The channel capacity would not be decreased at the US 93 and Terrace Lake Road crossings of Ronan Spring Creek under any of the action alternatives. Stream flow capacity would likely be increased at this location by increasing the hydraulic capacity of the opening. Under all action alternatives, the culverts would be designed to pass the peak streamflow rate in a 50-year storm event without overtopping the roadway or exceeding the maximum allowable headwater, per MDT standards (Skillings-Connolly 2003).

Ronan Spring Creek would also be daylighted between First Avenue SE and US 93 as a part of the proposed project (see Figure 3.2-13). This would improve floodplain storage and other values (water quality maintenance, groundwater recharge) within this reach. Project impacts on wildlife habitat within the floodplains are discussed in *Section 5.12 Fish and Wildlife* and *Section 5.13 Threatened and Endangered Species*. Overall, none of the action alternatives are expected to contribute to increased risks to the natural environment due to changes in the floodplain. By daylighting the stream channel, the value of the system would increase for wildlife and other biological processes. The proposed project is not expected to contribute to the increase of incompatible floodplain development and measures would be implemented during construction to minimize impacts to the floodplain. Greater roadway areas would drain to Ronan Spring Creek under all of the action alternatives than under the No-Action Alternative, leading to greater stormwater runoff volumes and flow rates. Implementation of flow control measures (see *Section 5.11.4 Mitigation Measures*) would prevent associated physical impacts to streams.

Indirect Effects

A potential indirect effect of increasing the hydraulic opening at the Ronan Spring Creek crossing is an increase in downstream streamflow velocities. No hydraulic modeling was conducted to quantify this potential effect. Other indirect effects on floodplains would be similar to those described for the rural portion.

5.11.3 Impacts of the Total Project

There are four crossings of mapped floodplains in the project corridor - Post Creek, Ninepipe Reservoir, and Crow Creek in the rural portion and Ronan Spring Creek in the urban portion. All of the action alternatives would result in some beneficial impacts to streams and their associated floodplains by increasing channel capacity at highway crossings, thereby reducing peak water surface elevations during the 100-year flood and lesser high flow events. Quantitative estimates of water surface elevations were not developed for the action alternatives. However, the impact of the alternatives on floodplains can be compared in terms of the proportion of the floodplain spanned and the increase or decrease in floodplain area and floodplain storage at each crossing.

At the Post Creek crossing, 39 percent (Alternatives Rural 1 through 6, and Rural 8 through Rural 10) or 92 percent (Alternative Rural 7) of the floodplain width would be spanned, compared to 4 percent under the No-Action Alternative. Despite road widening activities, the longer bridges would allow for the net removal of fill from the floodplain area as well as a net increase in floodplain storage under Alternatives Rural 1 through 7 and 10 (Table 5.11-2). Under Alternative Rural 8 there would be a net increase in floodplain area, but a net decrease in floodplain storage. Under Alternative Rural 9, there would be a net decrease in both floodplain area and floodplain storage.

At the Ninepipe Reservoir crossing, 100 percent of the floodplain would spanned under all action alternatives, compared to 20 percent under the No-Action Alternative. Despite road widening activities, the longer bridges would allow for the net removal of fill from the floodplain area as well as a net increase in floodplain storage.

At the Crow Creek crossing, 48 percent (Alternatives Rural 1-6, 8, 9, and 10) or 100 percent (Alternative Rural 7) of the floodplain width would be spanned, compared to 5 percent under the No-Action Alternative. Despite road widening activities, the longer bridges would allow for the net removal of fill from the floodplain area as well as a net increase in floodplain storage.

5.11.4 Mitigation Measures

Avoidance and Minimization Measures Included in Design

Under all action alternatives, stream and associated floodplain openings at the Post Creek, Ninepipe Reservoir, and Crow Creek crossings would be increased, and the existing roadway fill removed, improving conveyance and floodplain storage.

Under all of the action alternatives, the proposed structures would increase the percentage of floodplain spanned over the No-Action Alternative. Under all of the action alternatives, the proposed structure at the Ninepipe Reservoir would span 100 percent of the existing floodplain and would require no net fill. In addition, under Alternative Rural 7 the proposed structure at Crow Creek would span 100 percent of the existing floodplain, and would require no net fill. For sites where floodplain fill may occur, the quantity of fill in the floodplain would be determined during final design and opportunities to remove fill from the affected floodplain would be sought, so that no net increase in floodplain fill and no net loss in floodplain storage capacity would occur.

During the development of the final designs for the proposed project, measures to reduce the impact of increased stormwater flow rates would be implemented on portions of the highway that drain directly to sensitive receiving waters. Based on stormwater management criteria developed for other portions of US 93, flow control should be implemented to the following standard:

- Peak flows from newly developed impervious areas draining directly to sensitive waters should be reduced to match pre-developed peak flows for 24-hour duration storms with recurrence intervals of 2, 10, and 50 years.

Potential measures to meet this standard include stormwater retention systems, which allow collected water to infiltrate into the soil, and detention systems (such as ponds), which temporarily store stormwater to attenuate peak flow rates.

The proposed preliminary design for all of the rural alternatives reviewed the possibility for steepened roadway slopes on key features in the project corridor. Proposed approximate locations are shown in Appendix A. During final design the areas will be further investigated to determine if the proposed preliminary design is practicable and feasible. If during final design there are areas that slopes can be safely steepened, they would be incorporated into the proposed project’s plans. (Note: Slope steepening would require approval from the MDT Highways Engineer and FHWA through the design exceptions process). These steeper slopes would reduce the width of the roadway footprint and consequently reduce impacts on floodplains.

Additional Mitigation Measures Required

To reduce temporary construction impacts on floodplains and streams, MDT requires that construction activities adhere to the BMPs outlined in the MDT standard specifications, which place restrictions on the contractor's activities in an attempt to avoid and minimize impacts on sensitive areas.

In order to comply with the requirements of the Clean Water Act, MDT and the contractor would obtain an NPDES General Permit for Discharge from Large and Small Construction Activities to control sediment discharge and erosion during construction projects to protect water quality.

MDT and their contractor are required to prepare a SWPPP to be implemented during construction. This plan requires a description of BMPs to reduce soil erosion, to reduce site sediment loss, and to manage construction generated wastes, thereby reducing the risk to streams and floodplains.

As stated previously, during the development of the final designs for the proposed project, measures would be included to reduce the impact of increased stormwater flow rates on portions of the highway that drain directly to sensitive receiving waters.

Only Practicable Alternative Finding

All projects with federal funding must comply with Executive Order 11988 – Floodplain Management (E.O. 11988). E.O. 11988 directs federal agencies to avoid to the extent possible adverse impacts associated with floodplains and to avoid direct or indirect support of floodplain development.

All of the alternatives include widening of the existing highway (and an existing city street under alternatives Ronan 3 and 4). There is no practicable alternative to increasing the capacity and safety in this corridor without widening the existing roadway. Impact avoidance by realignment of the roadway would cause environmental impacts of substantial magnitude, mainly to wetlands, wildlife, wildlife habitat, and Section 4(f) resources.

Under all rural and urban alternatives, no net increase in floodplain fill and no net loss in floodplain storage capacity will occur. All of the rural alternatives except Rural 7, including the selected preferred alternative, Rural 3, will provide beneficial impacts by removing existing fill and increasing the width of floodplain spanned at each floodplain crossing, thereby providing a substantial increase in floodplain storage capacity. Alternative Rural 7, which would have provided even greater spanning of floodplains, was determined to be not practicable due to greatly increased cost, greater temporary wetland impacts, and subsequent project delays and impacts to safety. None of the urban alternatives impact floodplain values or stream hydrology.

With implementation of the identified avoidance and minimization measures and additional measures during construction, the proposed project is expected to be in compliance with Executive Order 11988.

5.12 Fish and Wildlife

5.12.1 Rural Portion - Wildlife and Vegetation

Direct Effects

No-Action Alternative

Because no construction is proposed under the No-Action Alternative, no impacts on wildlife and vegetation are expected.

In its current condition, the existing US 93 roadway displaces wildlife from habitats near the road corridor. The paved surface of the roadway within the rural portion of the corridor consumes 12.2 hectares (30.2 acres) of habitat that is no longer available to wildlife. As described in *Section 4.12 Fish and Wildlife,* the right-of-way associated with the roadway does support wildlife use, but its value is compromised by its proximity to the roadway and continual maintenance of this area. Overall, approximately 65.4 hectares (161.5 acres) of habitat is compromised within the existing right-of-way. Under the No-Action Alternative, this impact on wildlife habitat would remain, but no new areas of wildlife habitat would be disturbed or reduced in value.

The existing US 93 road corridor does not provide opportunities for wildlife to cross the roadway, other than over the road. In its current condition and at existing traffic levels, it is presumed that the road corridor is a barrier to most wildlife attempting to cross. Because of the existing road and high traffic levels, most wildlife is limited to one side of the roadway and is unable to access the diverse habitat types and protected lands on both sides of the roadway in the Ninepipe Area.

Although some wildlife successfully cross the road, as traffic levels in the corridor increase, more wildlife are likely to be deterred from crossing the corridor. Because traffic levels along the project corridor are expected to increase with or without the proposed improvements, and wildlife have no alternative other than crossing over the road surface, mortality from wildlife/vehicle collisions for some species may decrease because these animals would become unwilling to attempt to cross the roadway. For other species, such as birds, mortality from wildlife/vehicle collisions may increase (Clevenger et al. 2003).

The existing US 93 roadway also restricts the natural hydrologic regime of streams and wetlands within the road corridor. These conditions reduce the functions and values of these wetlands and riparian systems, which affects their ability to provide wildlife habitat. This impact would continue under the No-Action Alternative.

The No-Action Alternative would not directly affect populations of plant or animal species of concern identified in the project corridor. The ongoing lack of habitat connectivity in the project corridor would continue to affect populations of species of concern.

Action Alternatives

Temporary impacts on wildlife and vegetation resulting from construction of any of the action alternatives for the US 93 Ninepipe/Ronan improvement project include the following:

- Temporary clearing and loss or degradation of wetland and upland habitat
- Temporary noise disturbance within wetland and upland habitat
- Temporary displacement of wildlife from suitable habitat in the project corridor due to increased noise and construction activity
- Mortality of wildlife with limited mobility
- Increased sediment runoff to aquatic systems.

While all of the action alternatives would benefit wildlife in the long-term, noise, increased human activity, and vegetation removal during construction would result in the displacement or elimination of wildlife within the project corridor and adjacent suitable habitats. Wildlife inhabiting areas adjacent to the existing road corridor, such as turtles nesting near the roadway, may be displaced during construction, but are expected to return at some point after construction is complete. Because turtles typically nest near the roadway, these animals may attempt to nest in these areas during construction and would be susceptible to additional mortality. Proposed construction could require one to two years, depending on how construction is sequenced, the number of contractors hired to complete the work, and other factors. Wider roadway alternatives (i.e., Alternative Rural 8 and Alternative Rural 9) may take slightly longer to construct. Wildlife with limited mobility such as nestlings, reptiles, and amphibians would likely perish in areas cleared of vegetation for construction activities. Increased noise and disturbance in the road corridor may also affect nesting success for the numerous birds nesting near the road corridor but outside the limits of construction. No adverse affects on great blue heron and double crested cormorant nesting colonies and bald eagle nest sites are expected because of the distance of the nests from the project corridor.

Alternatives Rural 1 through Rural 7 would likely require the construction of temporary detour lanes adjacent to the existing road alignment. These temporary lanes may require culvert placement or extension in wetlands and streams and would temporarily alter upland and wetland habitats. All fill for the temporary roadway that is not incorporated into the new roadway would be removed after construction is complete and the area would be regraded and reseeded. Grassland and wetlands habitats supporting emergent plant communities would be expected to recover at various timeframes. Tree removal or removal of scrub-shrub or forested plant communities in wetlands would require a longer time period to return.

Additional impacts would occur in association with Alternative Rural 7 in the Ninepipe segment where a raised parkway would be constructed and the existing roadway would be removed. Construction of the raised parkway would likely require a longer construction period to complete than the other alternatives due to the extended length of raised roadway and subsequent roadway fill removal. Hence, this alternative would result in the most disruptive construction period for wildlife, especially turtles, which occur in high numbers in these systems. In addition, extensive roadway fill would be removed below the raised parkway to restore and reconnect habitat. While this effort would result in long-term benefits by increasing habitat connectivity, during the construction period it would generate increased deposition of eroded sediments and turbidity in adjacent wetlands and the Ninepipe Reservoir, displacing nesting habitat, aquatic species, and decreasing amphibian and reptile survival during the construction period. In addition, large trucks would haul fill materials offsite for disposal. Disposal locations have not yet been identified. Some of this material may be used in other roadway projects proposed in this roadway corridor, but this alternative is expected to generate the greatest amount of fill requiring disposal, which may cause additional impacts on wildlife at offsite locations.

Permanent impacts on wildlife and vegetation resulting from operation of the US 93 Ninepipe/Ronan project that are common to all rural action alternatives include the following:

- Direct loss of wetland and wildlife habitat
- Reduced value of upland habitat adjacent to the roadway corridor
- Loss of wetland functions and values
- Colonization of disturbed areas by noxious or invasive weeds.

Expected benefits that are common to all rural action alternatives include:

- Reduced fragmentation of upland and wetland habitats in the road corridor
- Reduced mortality of terrestrial wildlife from vehicular collisions
- More successful crossings of the road corridor by wildlife depending on the alternative.

Roadway reconstruction would result in the direct loss of upland and wetland wildlife habitat. The majority of habitat affected is within the right-of-way and is already of lesser value to wildlife. Impacts on wetlands and wildlife would be greatest for the wider roadway configurations because they would disturb the largest areas of habitat (i.e., Alternative Rural 8 and Alternative Rural 9). These alternatives would affect greater areas of individual wetlands and may displace some wildlife use from these systems. Wildlife habitat converted from agricultural or wildlife management grasslands to disturbed roadside grassland would have a reduced value to wildlife. The wider the road surface and the more traffic, the greater the zone of influence (the areas beyond the road corridor that are influenced by the road), and the lower the value of adjacent habitats to most wildlife species. This impact would be greatest for the wider roadway configurations because they would disturb the largest areas of habitat (i.e., Alternative Rural 8 and Alternative Rural 9). Table 5.12-1 provides a summary of the estimated amount of wildlife habitat that would be lost or compromised by the rural action alternatives.

Fill, changes in hydrology, and proximity of the road under all rural action alternatives would also reduce the functions and values of some wetlands in the project corridor, thereby displacing wildlife or compromising the wetland's ability to support certain species of wildlife. For example, reducing the size of a large pothole wetland may eliminate its ability to support birds with a high wing-load (i.e., birds requiring sufficient open water for take-off and landing). Roadfill encroachment at the edges of pothole wetlands may cause localized changes in permeability causing them to drain earlier in the season and compromising their ability to provide suitable egg-laying habitat for amphibians. Emergent habitat may become flooded in pothole wetlands receiving more hydrology and these pothole wetlands may lose their ability to provide nesting sites for some species of birds. Increased proximity of the road may displace some species of birds or individuals from wetlands.

Table 5.12-1. Estimated impacts on wildlife habitat in hectares (acres) for the rural action alternatives of the US 93 Ninepipe/Ronan improvement project.

	Area of Wildlife Habitat Lost [a]	Area of Wildlife Habitat Compromised [b]
No-Action	No additional areas affected.	
Rural 1	6.5 (16.1)	14.3 (35.4)
Rural 2	7.5 (18.7)	15.0 (37.1)
Rural 3 (PA)	9.7 (24.0)	18.6 (46.0)
Rural 4	10.3 (25.5)	18.8 (46.5)
Rural 5	9.5 (23.6)	17.6 (43.6)
Rural 6	10.7 (26.3)	30.7 (75.9)
Rural 7	8.2 (20.3)	19.6 (48.5)
Rural 8	8.2 (20.3)	25.5 (62.9)
Rural 9	20.3 (50.1)	41.9 (103.6)
Rural 10	9.8 (24.2)	17.5 (43.1)

[a] This number represents the increase (from no action) in the area of potential habitat to be occupied by roadway pavement. This area is currently within the existing right-of-way, and so is already compromised in its ability to provide wildlife habitat.

[b] This number represents the increase (from no action) in the area of wildlife habitat that would be converted to right-of-way and therefore would become compromised wildlife habitat due to its proximity to the highway and ongoing maintenance activities.

Road fill encroachment in the vicinity of Ashley Creek under all of the rural action alternatives would fill the stream channel of Ashley Creek, which currently flows along the roadway in a ditch. Alternative Rural 9 would fill the greatest amount of the Ashley Creek stream channel. However, a new culvert is proposed at approximate RP 37.5 and opportunities may be available to relocate the stream channel in the project vicinity. Moving the stream channel out of the roadside ditch would improve its value as habitat for wildlife by creating opportunities to improve water quality, and by providing streamside cover and habitat for wildlife.

Road fill encroachment near Post Creek would fill portions of the unnamed tributaries to Post Creek 2 and 3. Alternative Rural 9 would fill the greatest amount of these systems. These channels currently parallel the road corridor and largely function as sediment filters and drainage ditches. Relocating and recreating these channels would improve their value as wildlife habitat. Piping these systems under the roadway would improve water quality for some systems in this area, which could benefit wildlife by improving aquatic habitat, but would result in a loss of aquatic (although degraded) wildlife habitat. Replacing these streams in newly configured drainage ditches may improve water quality but would retain their current low value as aquatic wildlife habitat.

The alignment change in the Post Creek Hill segment extending from approximate RP 38.5 to 39.5 would mostly disturb roadside and agricultural grasslands and roadside ditch wetlands, irrigation canals, and irrigation wetlands. All of these systems provide habitat for wildlife but are less valuable than other vegetation communities in the corridor. Alternatives Rural 6, Rural 8, and Rural 9 would disturb the greatest areas of habitat currently unaffected by the roadway due to their wider lane configurations in this realignment.

All action alternatives which include a passing lane (Alternatives Rural 2 through 5) or segments of four-lane traffic (Alternatives Rural 3 through 6, 8 and 9) would create a wider area of pavement for wildlife to cross. Wider road widths would expose wildlife to a greater risk of mortality as they attempted to cross over the road. For some wildlife, the wider road width would be a deterrent from attempting to cross the road corridor. (This impact likely already exists for some individuals and species of wildlife given the current traffic volumes in the corridor).

During the EIS scoping process, mortality of wildlife on the road corridor was an issue that received much discussion and ultimately led to the implementation of wildlife crossing structures. The proposed crossing structures and the effects of the road project on the rate of wildlife mortality in the corridor are discussed below in the section titled *Wildlife Crossing Structures*.

Also during the EIS scoping process, several local biologists identified concerns with avian mortality rates associated with power lines in the corridor, especially given the density of migratory and breeding birds in the project area. Collisions with power lines are reported to account for a substantial loss in bird populations each year (Reese and Heber 1995). The impact of power lines on avian populations in the vicinity of the project corridor is unknown. However, since the CSKT Wildlife Program began reintroducing human-raised trumpeter swans in 2002, 18 swans have been lost to electrocutions or collisions with power lines. It was suggested by local resource agencies and biologist that if power line relocation was required for roadway reconstruction, perhaps power lines could be buried or relocated. This issue was particularly relevant while continuous wildlife fencing was still an element of the proposed project. Placing wildlife fencing near power lines could lead to an increase in avian collisions with these obstacles. At this time, it does not appear that power lines would require relocation for construction of the proposed project nor that burying or rerouting power lines is feasible. Some lines are not conducive to being buried if they carry a high voltage or are a key transmission line. Further, installing continuous wildlife fencing throughout the corridor was eliminated from the proposal. However, if during development of the final designs, it is determined that power lines require relocation, the following options would be considered to determine the most appropriate means for power line relocation:

- Burying the power line
- Rerouting the power line
- Applying visible marking to the lines
- Implementing no action.

For Alternative Rural 7, it is difficult to predict the benefits or impacts of a raised parkway road configuration. This alternative is expected to benefit wildlife, wetlands, and aquatic species by reducing fragmentation of the habitats adjacent to the road corridor, increasing wildlife movements through the corridor, and improving access to habitats on both sides of the road corridor. These benefits would be derived from the elevated road allowing wildlife virtually unlimited locations to cross under the road corridor in both upland and wetland habitats.

However, it is important to note that habitats adjacent to the elevated roadway would likely still be somewhat reduced in value because an elevated roadway would still exert a zone of influence in these areas. These influences include increased noise, shading and shadows from the elevated structure, and potentially an obstruction of flight paths.

An elevated roadway in the Ninepipe segment would reconnect pothole wetlands and other wetlands bisected by the existing roadway. In some instances, fill removal may create one large system. For example, removing road fill at wetland group I8A, I8B, and I8C would likely result in a single large pothole wetland at this location, rather than the existing complex of three small pothole wetlands. Assuming waterfowl are currently nesting in these ponds, despite the proximity of the road, the total number of nesting pairs in this complex may decrease. However, creating a larger, open water system may attract additional species to the pond, such as birds with a high-wing load that previously could not use this complex due to a lack of sufficient open water for take-off and landings. Similar changes in the character of wetland complexes may also occur at H39A and H39B, I7A and I7B, and I14A, I14B and I14C. For the other rural alternatives, wetland complex I8A, I8B, and I8C, I7A and I7B, and I14A, I14B and I14C would be reconnected by the addition of a culvert. However, this measure is not expected to result in a substantial change in the character of these systems, as may occur under Alternative Rural 7.

The elevated roadway would increase nesting opportunities for cliff swallows and may increase swallow/vehicle collision rates. This alternative may reduce overall bird/collision rates in the corridor because birds could access habitats on both sides of the road by moving under the elevated parkway. Further, this configuration would not provide roadside habitat for birds to collect grit, which renders them susceptible to collisions. Alternatively, the elevated roadway may also interrupt avian flight paths in the project area. Marine bird collisions with vehicles are a reported problem at coastal roads and bridges in Florida, particularly on windy days (Bard et al. 2002), although the bridge in that study is substantially higher than the elevated parkway.

Stormwater runoff on the elevated roadway would drain to catch basins or bridge drains and be piped to an appropriate location for treatment. This system would eliminate the need for roadside ditches, thereby minimizing the overall amount of disturbance in the road right-of-way. This system would also allow greater flexibility in locating stormwater treatment facilities so that additional impacts to wetland and upland habitat are minimized.

Culturally Significant Plants and Animals

It is expected that some culturally significant plants and animals would be disturbed under all of the action alternatives. Some culturally significant animals may be displaced from the project area during construction but would be expected to return once construction is complete.

Noxious/Invasive Species

Invasive species can be a major problem along roadsides. Invasive plant species can be transported on vehicles or their loads. In addition, highway maintenance activities such as mowing or spraying can also spread or introduce invasive species transport (FHWA 1999), although most of these actions are aimed at reducing the spread of invasive species. Increases in disturbed roadside areas from increases in right-of-way may provide additional habitat for noxious or invasive weeds. Exposed soils would be susceptible to colonization by noxious and invasive weeds.

Plant and Wildlife Species of Concern

The only plant species of concern identified in the project corridor is Oregon checker-mallow. All action alternatives would result in the direct loss of individual plants at several locations in the corridor. In addition, construction activities for all action alternatives could affect the suitability of habitats in the corridor for future colonization by this species. Wider lane configurations (Alternative Rural 8 and Alternative Rural 9) would affect more habitat than the other configurations.

Nesting pair of bald eagles occurs approximately 0.8 km (0.5 miles) from the corridor (Morrison-Maierle 1995; Becker 2003b personal communication). Under all of the action alternatives, no direct effects on nesting bald eagles are expected as a result of construction. Nest sites in the project area are a sufficient distance from the corridor that construction activities are not expected to disrupt nesting activities.

The wintering period for bald eagles is generally between October 31 and March 31. Construction activities also typically shut down for the majority of this time period, although this may vary from year to year. Generally, a wide range of foraging opportunities are available to eagles until the freeze-up period (early December to late March) in the winter season. Construction in the winter season, prior to freeze-up, may cause eagles to avoid the immediate project corridor, but is not expected to preclude them from foraging opportunities. Construction activities would cease during the freeze-up period in the winter season; therefore, no effect on wintering bald eagles is expected during this time period. Construction may resume once the region has largely thawed, but by this time eagles are expected to be returning to their nesting territories and are not expected to be affected by construction activities.

While the species of concern designation affords no protection, the bald eagle is protected under the Bald and Golden Eagle Protection Act. Newly issued National Bald Eagle Management Guidelines (USFWS 2007) will be followed to protect this species.

Forster's tern nesting also occurs in the project area and, in some years, is reported to use the small islands adjacent to the Ninepipe Reservoir bridge on US 93. Initiation of construction activities during the nesting period could cause adult terns to abandon their nest, resulting in the loss of that year's young.

Trumpeter swans do not nest in the project area and areas where they are currently concentrating are a sufficient distance from the corridor that construction activities for all action alternatives are not expected to affect them (Becker 2003a personal communication). Caspian terns and common loons are not reported in the project corridor and no impacts are expected.

Wildlife Crossing Structures

Removal of roadway fill and existing structures at all of the proposed wildlife crossings would result in increased deposition of eroded sediments and turbidity in wetlands and streams and wildlife displacement from these areas. These effects would be greatest for the elevated parkway which would require additional fill removal and would require a slightly longer construction period.

The effects of noise generated from pilings that are driven rather than augered for multi-span bridges (PC-2) and elevated parkways (Rural 7) would extend further from the road corridor creating a greater risk of contributing to nest failures during the construction season. Bridge removal and replacement would displace nesting cliff swallows whose nests are constructed on the underside of bridges. Depending on the timing of construction, all nesting for that season may be displaced or nestling survival may be greatly reduced.

Structure construction at the kettle ponds would likely displace all duck and waterbird nesting activities for the period of construction and displaced pairs may not have another opportunity to nest during that construction season. Fill removal at the kettle ponds for structure construction would likely also affect amphibian egg survival in these systems. Fill removal and construction associated with the multi-span bridges would likely displace all reptiles and amphibians occurring in these ponds, due to the extensive fill removal required and the resulting sedimentation and turbidity. Construction at the kettle ponds would also require construction of a temporary detour route to remove traffic from the existing roadway while wildlife crossing structures are constructed. Traffic would likely be routed around the perimeter of the ponds following an old roadway alignment. This impact would likely be greatest for turtles because they commonly nest near the roadway and may continue to enter these areas during construction suffering additional mortality. These areas would be regraded and revegetated after construction, but may require an extra season, or longer, to recover before they return to their original wildlife productivity.

Wildlife crossing construction at the Ninepipe Reservoir would likely displace duck and waterbird nesting activities along the eastern edge of the reservoir adjacent to the road corridor for the period of construction. Fill removal and resulting sedimentation would likely also affect amphibian egg survival and would likely displace all reptiles and amphibians from the construction area.

Recognizing the potential for increased wildlife mortality and habitat fragmentation as a result of the proposed project, all action alternatives, except Alternative Rural 7, which is an elevated roadway and therefore does not require crossing structures, incorporate five wildlife crossing structures, (including bridges or enlarged culverts) as well as 12 smaller crossing structures consisting of enlarged culverts to facilitate wildlife movement through the road corridor and reduce the fragmentation of habitat. Biologists and wildlife managers will determine the locations for wildlife crossing structures by considering habitat, roadkill data, and tracking information, and the UM turtle mortality study, and by using their best professional judgment.

Generally, the wide range of structure types and locations in the corridor is expected to facilitate movement by many species including turtles, deer, some small- and medium-sized mammals, and grizzly bear. The benefits of all the structures would take time to realize as wildlife learn how to negotiate the structures and become willing to use them.

In addition to the five major crossing sites, additional enlarged culverts are proposed throughout the corridor. Based on preliminary designs, these structures would range in size from 1.2 X 1.8 meters to 4 X 6.7 meters (4 X 6 feet to 12 X 22 feet) and may be sized larger or smaller in order to balance the limitations of the road designs with the needs of wildlife. At this time, four additional structures are proposed in the Post Creek Hill segment and seven additional structures are proposed in the Ninepipe segment. The actual number and location of these structures would be determined during the final roadway design stage.

The benefits of all the structures would take time to realize as wildlife learn how to negotiate the structures and become willing to use them. Recent observations on US 93 south indicate that minor modifications to culverts, such as installing a small mammal ramp, have led to use of the structures by all species of small mammals expected to use the structure and by turtles. However, it is reasonable to expect that some species and some individual wildlife may not use the proposed structures. Use of crossing structures by wildlife has not been studied for a sufficient amount of time to guarantee that proposed structures would benefit all species in the corridor.

Species and individual wildlife that do learn to use the crossing structures would benefit not only by increasing their access to additional habitat, but also by decreasing their risk of mortality from collisions with vehicles. Proposed wing fencing in association with the Post Creek crossing structures should further contribute to a reduction in mortality rates from wildlife/vehicles collisions for most groups of wildlife in this vicinity.

While numerous crossing structures are proposed in the Ninepipe segment of the project corridor, continuous fencing throughout the corridor is not proposed to direct wildlife to the structures and restrict access to the roadway surface. Continuous fencing was initially proposed in association with the wildlife crossing structures similar to fencing in use at Banff National Park in Alberta, Canada. However, unlike Banff National Park, this corridor permits direct access to the roadway because several businesses and residents require access to the highway within areas where fencing was proposed. To accommodate these access points, wildlife guards would be required at the ends of driveways, similar to cattle guards, which are used to prevent cattle from entering road corridors. However, after consultation with experts and a review of the literature, no designs for wildlife guards could be identified that would prove successful. Although not currently proposed for the Ninepipe segment of the project, the use of fencing in conjunction with the wildlife crossing structures in this segment of the project will be considered in the final design. The placement of fencing in this segment of the project will be determined by wildlife biologists and habitat managers and will be subject to agreement by MDT, FHWA, and CSKT.

Without the fencing to direct wildlife to the crossing structures in the Ninepipe segment of the project, it is likely that at least initially, until wildlife learn to use the crossing structures, wildlife road-kill rates would remain at current levels or possibly increase in sections of the road that have been widened. The risk of collisions with vehicles may increase for cliff swallows, which would likely increase in numbers with the longer bridge spans and increased number of culverts in the corridor. Swallows and blackbirds currently make up a large percentage of the road-killed birds in the corridor (Griffin 2005 personal communication). It is difficult to predict the effect of the proposed project on the mortality rate of wetland birds in the corridor. For some, providing increased bridge lengths, removing roadway fill, and enlarging culverts will allow them to cross under the roadway to access adjacent habitats or initiate their flight. Overall, the proposed project is not expected to result in a substantial increase in wetland bird mortality.

Indirect Effects

Development of material source sites and access roads to the sites would result in additional impacts on wildlife and vegetation, and could result in additional impacts on species of concern, if the site or access roads to the site are located in suitable habitat for the species. The effects on vegetation and wildlife would be similar to those described above. Development of material source sites on Tribal-owned properties would undergo environmental review through the NEPA process. Development of material source sites on non-Tribal properties would undergo environmental review through the MDEQ permitting system.

Long-term road maintenance activities necessary to maintain the newly reconstructed US 93 have the potential to indirectly affect vegetation communities through herbicide spraying for weed control, use of chemicals to remove or prevent ice formation, and clearing of vegetation in the clear zone adjacent to the roadway. However, these activities already occur in the road corridor and would not result in new or substantial effects on wildlife.

The proposed project may influence the rate and pattern of land use development because access to the highway would be improved at a few key intersections; however, the proposed project is not expected to increase the rate of development in the rural portion of the corridor (see *Section 5.2 Land Use*). Because the greatest influence on land use would be on highway-oriented businesses, few additional impacts on wildlife species are expected.

5.12.2 Urban Portion

Direct Effects

No-Action Alternative

Because no construction is proposed under the No-Action Alternative, no impacts on wildlife and vegetation are expected.

The No-Action Alternative would not affect populations of plant or animal species of concern in the project corridor.

Action Alternatives

Effects of construction in the urban portion of the project corridor would be the similar to those described under the rural portion. Because this segment of the corridor largely supports urban-sparsely vegetated communities and species adapted to urban habitats, wildlife are likely to remain near the corridor during construction and readily recolonize the area once construction is complete.

Alternatives Ronan 3 and Ronan 4 (PA) would disturb an additional area associated with the couplet compared to Alternatives Ronan 1, Ronan 2 and Ronan 5, with Alternative Ronan 4 (PPA) resulting in the greatest area of disturbance and Alternative Ronan 5 causing the least area of disturbance.

Impacts on wildlife resulting from the urban alternatives would be similar to those described under the rural portion. The overall effects on wildlife would, however, be low because the urban portion is located in a developed setting, and most of the alternatives would follow the existing roadway alignment, and the construction disturbance would be limited to the existing right-of-way. Under Alternatives Ronan 3 and Ronan 4 (PA), the southbound portion of the couplet would disturb new areas not currently occupied by roadways. All of the urban alternatives would likely require removal of the mature trees on the east side of the existing roadway between RP 46.6 and 47. These trees provide some nesting habitat for urban birds and may be used incidentally by perching raptors. Alternative Ronan 5 would disturb the fewest number of trees. The four-lane configuration (Alternatives Ronan 1 and Ronan 2) would increase the barrier effect of the road and would deter wildlife from crossing this corridor, but this effect is expected to be minimal due to the low habitat value in this portion of the corridor and because few wildlife are expected to cross this segment of the corridor. Alternatives Ronan 3 and Ronan 4 (PA) would require wildlife to cross two high-traffic roadways rather than one, but again, this effect is expected to be minimal. Alternative Ronan 5 would have a similar barrier effect for wildlife movement as the No-Action Alternative because this alternative would occur within the same area as the existing alignment. The southbound portion of the couplet for Alternatives Ronan 3 and Ronan 4 (PA) would result in additional loss of wildlife habitat, including agricultural grasslands. Table 5.12-2 describes the estimated impacts on wildlife under each of the urban action alternatives.

Table 5.12-2. Estimated impacts on wildlife in the urban portion of the US 93 Ninepipe/Ronan project corridor.

Alternative	Area of Wildlife Habitat Lost [a] and Increase in Impervious Surface Area	Area of Wildlife Habitat Compromised [b]	Summary
No-Action	No change	No change	
Ronan 1	3.9 hectares (9.5 acres)	3.2 hectares (7.9 acres)	Affected area is largely developed and supports few wildlife.
Ronan 2	3.9 hectares (9.5 acres)	2.7 hectares (6.8 acres)	Affected area is largely developed and supports few wildlife.
Ronan 3			
Northbound couplet	2.3 hectares (5.8 acres)	2.2 hectares (5.5 acres)	Affected area is developed and supports few wildlife.
Southbound couplet	7.3 hectares (18.1 acres)	4.3 hectares (10.6 acres)	Affected area is agricultural grasslands.
Ronan 4 (PA)			
Northbound couplet	2.3 hectares (5.8 acres)	2.2 hectares (5.5 acres)	Affected area is developed and supports few wildlife.
Southbound couplet	7.3 hectares (18.1 acres)	4.9 hectares (12.2 acres)	Affected area is agricultural grasslands.
Ronan 5	No change	1.1 hectares (2.7 acres)	More than No-Action Alternative.

[a] This number represents the increase (from no action) in the area of potential habitat to be occupied by roadway pavement. This area is currently within the existing right-of-way, and so is compromised in its ability to provide wildlife habitat.
[b] This number represents the increase (from no action) in the area of wildlife habitat that would be converted to right-of-way and therefore would become compromised wildlife habitat due to its proximity to the highway and ongoing maintenance activities.

No impacts from the action alternatives in the urban portion have been identified for plant or animal species of concern.

Indirect Effects

Indirect effects in the urban portion would be similar to those discussed under the rural portion.

Alternatives Ronan 3 and Ronan 4 (PA), which would construct a southbound couplet on First Avenue SW, would likely influence future commercial development in the City of Ronan. Development along the southbound couplet would disturb agricultural grasslands that provide some wildlife habitat and may also disturb habitats that could be occupied or colonized by plant species of concern.

5.12.3 Impacts of the Total Project

The combined impacts of Alternatives Rural 1 and Ronan 5 would be the least of all action alternatives. Impacts of Alternative Rural 1 would be the least of all of the rural alternatives because it would retain the existing two-lane configuration, mostly on the existing alignment, although the traffic lanes and shoulders would be widened. Alternative Ronan 5 would obtain the least amount of right-of-way and would maintain the same alignment. These alternatives would result in the least conversion of habitat to roadway and right-of-way areas. These alternatives would also impact the least area of wetlands and stream channels, which provide aquatic wildlife habitat.

The combined impacts of Alternatives Rural 9 and Ronan 4 (PA) would be the greatest of all action alternatives. Impacts on wildlife and vegetation resulting from Alternative Rural 9 would result in the greatest loss of habitat for wildlife compared to the other alternatives. Alternative Ronan 4 (PA) would disturb the largest area of habitat currently unoccupied by roadways of all the urban alternatives. These alternatives would also impact the greatest area of wetlands and stream channels thereby causing the greatest impacts on aquatic wildlife habitat.

5.12.4 Mitigation Measures

Avoidance and Minimization Measures Included in Design

Numerous measures have been incorporated into the preliminary construction plans for the proposed project. These measures include:

- The proposed project includes wildlife crossings at major systems with additional wildlife crossing culverts in the corridor. These facilities are expected to reduce the fragmentation of habitats in the project corridor, facilitate wildlife movement through the project corridor, and minimize wildlife-vehicle collisions.

- Steepening fill slopes at key features in the project corridor would benefit fish, wildlife and wildlife habitat in the project area.

- Wetland and stream restoration occurring at the Post Creek, Ninepipe Reservoir, and Crow Creek wildlife crossing structures would also improve habitat for wildlife in the project area.

Monitoring is being implemented during operation at wildlife crossings for the Evaro to Red Horn Road portion of the US 93 Evaro to Polson reconstruction projects. The information gathered from this monitoring effort may be applicable to wildlife crossings associated with the proposed project and should be reviewed during development of the final designs to address the following issues:

- Modifying the wing fencing in the vicinity of Post Creek may be necessary to prevent turtles, duck nestlings, and other large and small mammals from penetrating the mesh and entering the road corridor. One recommendation would be to add an additional layer of fencing with a denser weave partially buried and extending several feet from the base of the fence line to prevent penetration through digging and climbing.

- Constructing wildlife crossing structures of concrete box culverts or some other similar materials if turtle passage is desired at the crossing. Partially sinking the metal culvert or adding substrate materials may also be suitable measures to improve metal culverts for turtle use if substrates would not be dislodged during seasonal runoff events.

- If during development of the final designs, it is determined that power lines require relocation, the following options would be considered to determine the most appropriate means for power line relocation:

  - ☐ Burying the power line
  - ☐ Rerouting the power line
  - ☐ Applying visible marking to the lines
  - ☐ Implementing no action.

- If power lines require relocation, they would be raptor-proofed.

Additional Mitigation Measures Required

The contractor would be required to notify the Tribal Preservation Office of the construction schedule and to provide opportunities for Tribal members to collect and salvage culturally significant plants in areas to be disturbed for construction.

MDT requires that construction activities adhere to the BMPs outlined in the MDT standard specifications.

The MDT standard specifications place restrictions on the contractor's activities in an attempt to avoid and minimize impacts on sensitive areas. These restrictions often apply specifically to streams and wetlands, but wildlife habitat benefits as well. Minimization of impacts is achieved in many ways, including limiting the total area that may be disturbed at any one time, which gives wildlife an opportunity to move out of the construction area, and seeding exposed soils as soon as work is complete, which facilitates re-establishment of the disturbed habitat. Additional measures include making sure electric facilities relocated due to construction activities are raptor-proofed.

MDT and their contractor are also required to prepare a SWPPP to be implemented during construction. This plan requires a description of BMPs to reduce soil erosion, to reduce site sediment loss, and to manage construction generated wastes, thereby reducing the risk to water quality in project area wetlands and streams and aquatic wildlife associated with those systems.

Additional measures would be incorporated into the construction special provisions for the proposed project, which further limit contractor activities beyond the standard specifications. These provisions would include measures to effectively keep birds from returning to their nests at existing structures or establishing nests at structures during the construction period in order to comply with the Migratory Bird Treaty Act. In addition, timing restrictions may be implemented to protect nesting areas or key migration periods for wildlife or limitations on the locations of staging areas may be added to avoid key habitat features located in close proximity to the proposed project. No other measures to be included in the construction special provisions have been identified at this time.

Noxious/Invasive Species

- Follow the Evaro to Polson Integrated Invasive Weed Management Plan.
- Maintenance of the highway right-of-way would follow MDT's *Maintenance Operations and Best Management Practices Manual*, which includes provisions for controlling the spread of noxious weeds.

Plant and Wildlife Species of Concern

While the species of concern designation affords no protection for the species, these species are at risk and the following mitigation measures are proposed:

- During final design populations of Oregon checker-mallow will be identified and avoided or salvaged where possible.
- Newly issued National Bald Eagle Management Guidelines (USFWS 2007) will be followed to protect this species.

5.12.5 Rural Portion - Fisheries

Direct Effects

No-Action Alternative

Because no construction is proposed under the No-Action Alternative, no impacts on fisheries resources are expected.

The No-Action Alternative would not affect populations of fish species of concern in the rural portion of the project corridor.

The No-Action Alternative would have no new impacts on existing stream habitat in the project corridor. In its current condition, the existing US 93 roadway through the project corridor has undersized culverts and bridges, which alter stream capacity and energy balance in project area streams (Post Creek, Crow Creek, and Ronan Spring Creek). The poorly placed and undersized culverts and bridges limit the natural hydrologic regime of streams and wetlands within the project corridor. These conditions can, over time, reduce the functions and values of these streams, which would affect their ability to provide fish habitat. Under the No-Action Alternative, these conditions would remain. Further, stream channels that were routed into ditches and channelized by construction of the existing US 93 would continue to receive excess amounts of sediments and stormwater run-off containing pollutants.

Road maintenance activities that have occurred in the past would continue to occur, including cleaning culverts and ditches, snow and ice removal including plowing, de-icing and sanding in the winter, resurfacing, re-striping, and repairing failed pavement. Increased highway traffic would continue to cause non-point pollution resulting from runoff of oil and petroleum products in stormwater. As reported in the *Memorandum of Agreement* (MDT et al. 2000), downstream effects of highway pollution have been observed greater than 1,000 meters (3,300 feet) from the existing US 93 at Post and Crow Creeks, and silt, sand, and nutrient effects from road dust of greater than 15.2 meters (50 feet) upwind and downwind from the existing US 93. Exact distance of impacts is influenced locally by topography and hydrology.

Action Alternatives

Generally, all of the proposed culvert and bridge replacements in the US 93 corridor would result in the following beneficial effects for fisheries resources:

- Improved hydraulic conveyance capacity at all stream crossings
- Improved hydrologic connectivity in streams, floodplains, and wetlands
- Improved fish passage.

Despite these benefits, construction activities may directly affect fish and aquatic habitat in the following ways:

- Temporary diversion of streamflow within systems where culverts and bridges are replaced would create a temporary migration barrier for fish
- Necessary in-water work, construction noise, and construction disturbance at culvert and bridge sites would temporarily displace fish upstream and downstream of the construction site
- In-water work would disrupt aquatic substrates during equipment operation and removal of structures from aquatic habitats
- Dust and particles from asphalt and fill removal and paving may settle into nearby streams and wetlands
- Runoff from recently cleared and graded areas and soil stockpiles may result in increased sediment entering nearby streams and wetlands
- Accidental spills of fuels, oils, concrete leachate, and chemicals used during construction could enter nearby streams.

Short-term water quality impacts due to erosion and sediment discharge from construction areas are assumed to be directly related to the total area of disturbance. To analyze these impacts, the area of construction disturbance (proposed road widths and right-of-way limits) is compared between alternatives. In general, the potential impacts on fisheries resources from construction activities would increase with road width and stream crossing structure length. Wider roads would require longer construction periods, larger amounts of earthwork, and greater areas of riparian vegetation clearing and soil disturbance during construction (Alternatives Rural 8 and Rural 9). Water quality impacts can be reduced with proper installation and maintenance of stormwater management controls.

All action alternatives would likely require the construction of temporary detour lanes adjacent to the existing road alignment. These temporary lanes may require culvert placement or extension in streams and would temporarily alter stream habitat. All fill for the temporary roadway that is not incorporated into the new roadway would be removed after construction is complete and the area would be regraded and revegetated. These temporary lanes would result in short term displacement of fish and sediment increases through aquatic substrate disturbance and erosion until stabilization can occur.

Sediment can affect adult trout by increasing stress and changing behavior (Waters 1995). Increased turbidity and sediment movement in streams could displace adult fish to other unaffected portions of the stream until construction has been completed. This impact would be of short duration and would occur in a small geographic area; therefore, the direct adverse impacts on fish would not be substantial. Because construction would be subject to timing restrictions, no impacts to spawning fish are expected.

Short-term impacts to fish and stream habitat may also occur due to accidental spills. During construction, a leak or spill could result in petroleum fuels, lubricants, or other fluids spilling into streams. Concrete leachate and other chemicals used during construction may also accidentally enter a stream. If these chemicals enter streams and wetlands, it could result in a temporary displacement of fish from the area, or cause fish mortality if the amount of chemicals reaching a stream is at lethal levels. MDT standard specifications would require the Contractor to establish staging areas a minimum of 15 meters (50 feet) from streams and to implement spill prevention measures during construction near streams.

Construction activities under all alternatives require some level of in-water work to remove and construct crossing structures. In-water work may require dewatering portions of project area streams during construction of associated in-stream features. Dewatering would result in displacement of fish and temporary loss of in-stream habitat during the construction phase of the proposed project. These effects are temporary and should only have short-term effects on fish in the project reach. Staged dewatering and re-introduction of stream flows will aid in minimizing the possibility of direct fish mortality. Special provisions can be written to address issues such as staged stream flow dewatering and re-introduction and fish removal in dewatered portions of streams.

Potential impacts on fish and stream habitat under all action alternatives that may occur include:

- Increased stormwater runoff from new impervious surfaces and potential routing of pollutants and sediment to streams
- Removal of riparian vegetation
- Decreased flood storage and stream recharge from filling of wetlands including riparian wetlands
- Habitat alteration from placement and removal of in-water structures and stream relocation.

All action alternatives require construction of a roadway wider than the existing road, which would result in a greater total area of impervious surface. Increased impervious surface area would provide a larger paved surface for collection of pollutants that are available for transport in stormwater runoff. Stormwater runoff may contain contaminants including lead, copper, petroleum hydrocarbons and contaminants found in de-icers, such as magnesium chloride. Increased rates and volumes of stormwater runoff could cause increased erosion in ditches and small streams, and could potentially induce localized flooding in drainage conveyance systems. The amount of impervious surface area and therefore the amount of stormwater runoff would increase with the number of lanes proposed. In the vicinity of Post Creek, Alternatives Rural 5, Rural 6, and Rural 9 would generate the greatest increases in stormwater runoff. Design measures would be implemented to reduce suspended solids from stormwater generated by this roadway improvement project on roadway surfaces in areas that drain directly to surface waters. In the Ninepipe segment, Alternatives Rural 4 and Rural 9 would generate the greatest increases in volume of stormwater runoff. Within the rural portion, Alternative Rural 9 would generate the greatest increase in volume of stormwater runoff, followed by Rural 4 and Rural 6. The long-term effects of increased volumes of stormwater on fisheries resources would depend on the amount of increase in impervious surface area, effectiveness of infiltration, level of filtration in roadside ditches, and level of treatment in water quality facilities.

A widened roadway would also require more sanding in the winter months to maintain safe, drivable roads. Increased sanding could result in increased sedimentation to streams in the project corridor. Construction of drainage ditches throughout the US 93 corridor would reduce the potential effects of increased sanding and pollution from stormwater runoff because runoff would be directed to ditches or other stormwater containment or treatment areas where sediments would settle out before entering nearby streams and wetlands. Stormwater treatments would follow the CSKT Water Quality Standards and Antidegradation Policy guidelines.

Long-term impacts may also occur if excess sediment is transported to streams during and after construction. Sediment can affect adult trout by changing behavior, reducing available habitat, increasing stress, and reducing food supply. High levels of suspended sediment can result in the loss of visual capability, leading to reduced feeding and a depressed growth rate (Waters 1995). High levels of sediment can deplete benthic invertebrate populations, reducing the available food supply for fish. Sediment can fill pools and blanket structural cover, reducing the available habitat for adult salmonids (Waters 1995). Deposited sediments also affect habitat for juvenile salmonids by filling pools and intergravel spaces. Fine sediments in stream gravels affect incubating eggs and developing alevins (sac embryo) by inhibiting dissipation of metabolic wastes. Fine sediments in stream gravels may also abrade or scrape off developing embryos and emerging fry, delay the rate of egg hatching, and reduce survival during incubation.

Operation of the widened roadway would result in the loss of wetland acres throughout the project corridor. Loss of wetland habitat can directly and indirectly affect fish habitat depending on the proximity of the wetland to fish-bearing streams, the presence of a hydrologic connection between the wetland and the stream, and the type of wetland. Loss of wetland habitat may result in a loss of infiltration through the soil and in flood storage capacity. Under these conditions, stormwater enters area streams and rivers episodically, resulting in increased peak flows and reduced base flows. Loss of flood storage capacity can also lead to the occurrence of more frequent flood events. Wetlands also serve to filter sediments, nutrients, and pollutants from stormwater runoff before it enters streams. Of all the action alternatives, Alternatives Rural 7 and Rural 10 would impact the least area of riparian wetlands.

Direct loss of aquatic habitat would occur at streams where fill must be placed in existing stream channels to widen the road. Ashley Creek and three unnamed tributaries to Post Creek would require re-routing to avoid fill placement directly into active stream channels. These streams are located within the proposed construction limits for all alternatives. Approximately 565 meters (1,854 feet) of Ashley Creek flows within the existing roadway right-of-way. Under all action alternatives, this portion of the stream would be routed under the highway through a wildlife crossing structure at RP 37.5 to provide hydrology to Post Creek floodplains on the west side of the roadway and remove the stream from its existing degraded channel. There is potential for creation of a more natural channel type through the Post Creek floodplain that could potentially restore aquatic habitat and lost functions for fish species in Ashley Creek.

The three unnamed tributaries to Post Creek would also require some relocation outside of the construction fill limits. There are opportunities for all three of these streams to be restored to more natural channel types within the proposed right-of-way. These systems could be improved to provide off-channel habitat for fish species in Post Creek or at a minimum to serve as water quality filters to Post Creek. Table 5.12-3 provides a comparison of the estimated amount of stream channel relocation required for each of the action alternatives.

Estimated impacts to fisheries resources under all Rural alternatives are summarized in Table 5.12-3.

Fish Species of Concern

If westslope cutthroat trout are present in the project corridor during the time of construction, this species would suffer impacts similar to those described previously.

Table 5.12-3. Estimated impacts on fisheries resources within the rural portion of the US 93 Ninepipe/Ronan project corridor.

Alternative	Impervious Surface [a] hectares (acres)	Riparian Wetland Impacts hectares (acres)	Approximate Length of Stream Channel Affected [b]	
Rural 1	18.7 (46.3)	2.5 (6.2)	Unnamed Tributary to Post Creek 1	112 m (367 ft)
			Ashley Creek	352 m (1,155 ft)
			Unnamed Tributary to Post Creek 2	62 m (203 ft)
			Unnamed Tributary to Post Creek 3	310 m (1,017 ft)
Rural 2	19.8 (48.9)	2.5 (6.2)	Same as Rural 1	
Rural 3 (PA)	21.9 (54.2)	2.5 (6.2)	Same as Rural 1	
Rural 4	22.5 (55.7)	2.7 (6.6)	Same as Rural 1	
Rural 5	21.7 (53.7)	2.7 (6.7)	Unnamed Tributary to Post Creek 1	116 m (381 ft)
			Ashley Creek	402 m (1,320 ft)
			Unnamed Tributary to Post Creek 2	90 m (295 ft)
			Unnamed Tributary to Post Creek 3	345 m (1,132 ft)
Rural 6	22.9 (56.5)	2.7 (6.6)	Same as Rural 1	
Rural 7	22.2 (54.8)	2.2 (5.4)	Unnamed Tributary to Post Creek 1	116 m (380 ft)
			Ashley Creek	224 m (735 ft)
			Unnamed Tributary to Post Creek 2	212 m (695 ft)
			Unnamed Tributary to Post Creek 3	100 m (328 ft)
Rural 8	29.1 (71.8)	3.1 (7.7)	Unnamed Tributary to Post Creek 1	124 m (407 ft)
			Ashley Creek	402 m (1,320 ft)
			Unnamed Tributary to Post Creek 2	135 m (443 ft)
			Unnamed Tributary to Post Creek 3	365 m (1,198 ft)
Rural 9	32.5 (80.3)	3.6 (8.8)	Unnamed Tributary to Post Creek 1	134 m (440 ft)
			Ashley Creek	422 m (1,385 ft)
			Unnamed Tributary to Post Creek 2	270 m (886 ft)
			Unnamed Tributary to Post Creek 3	415 m (1,362 ft)
Rural 10	22.0 (54.4)	2.5 (6.2)	Unnamed Tributary to Post Creek 1	120 m (395 ft)
			Ashley Creek	300 m (985 ft)
			Unnamed Tributary to Post Creek 2	none
			Unnamed Tributary to Post Creek 3	273 m (895 ft)

a. This value represents the total acreage of impervious surface area that would result from the action alternative.
b. This number represents the length of stream within the proposed construction limits for each alternative that would be filled and would require relocation.
Note. Differences in conversions between hectares and acres from one alternative to another are due to rounding.

Wildlife Crossing Structures

Removal of existing fill would be required at all of the stream crossings, regardless of the type of structure to be installed. This would result in increased sediment delivery and turbidity in streams. In general, construction of the multi-span bridges would require removal of the greatest amount of existing roadway fill compared with the other structure types (e.g., culverts), thereby increasing the risk and duration of sedimentation and turbidity in streams. Greater crossing structure length may also require longer construction periods than shorter structures.

Longer construction periods increase the potential for accidental spills that may contaminate streams; result in longer periods of dewatering and fish displacement from the area; and may increase the length of time before exposed soil is stabilized, which could increase erosion and sediment inputs to streams.

All action alternatives include the replacement of existing structures with wildlife crossing structures at major fish bearing streams in the project corridor. The primary adverse effects of the proposed wildlife crossing structures are associated with construction. Additional potential direct effects could include changes in stream channel dynamics due to the larger sized crossing structures, compared to the No-Action Alternative. Structure replacement would result in a wider opening for flows to pass through, which may result in effects downstream of the crossing structure. These effects include channel alterations such as substrate re-distribution and areas of local scour and erosion. The larger the structure the more likely downstream changes in channel balance would occur. These effects are expected to be local and outweighed by the beneficial effects of lengthening crossing structures on fisheries resources.

Indirect Effects

Development of material source sites could result in additional impacts on streams and fisheries resources. Material source sites could include asphalt production facilities, concrete facilities, and sources for fill. These sites may be developed just for use in the proposed project or may result in an increase of production at an existing site which could potentially increase pollutant discharge. The extent of impacts on fisheries resources at these sites would depend on the location of the site and access points relative to the location of streams. Development of a material source site or construction of an access road to the material source site near a stream would result in similar impacts on streams as those described previously under direct effects. The effects of development of material source sites on Tribal-owned properties would undergo environmental review through the NEPA process. The effects of development of material source sites on non Tribal-owned properties would undergo environmental review through the MDEQ permitting process.

Long-term road maintenance activities necessary to maintain the newly reconstructed US 93 have the potential to indirectly affect fisheries resources. Ongoing maintenance activities include herbicide spraying for weed control, snow-removal, use of chemicals to remove or prevent ice formation, sanding, asphalt repair, striping, culvert and bridge repair and cleaning and any other activity required to maintain the highway. Herbicides would be applied by a licensed applicator and effects from herbicide spraying and maintenance activities would be minimal as long as the materials are applied in accordance with U.S. EPA safety data sheets and the manufacturer's recommendations. The potential impact of deicing chemicals would depend on the rate of application, the amount of increase in impervious surface under each alternative, effectiveness of infiltration, and filtration in roadside ditches. A widened roadway would also require slightly more sanding in the winter months to maintain safe, drivable roads. Increased sanding could result in increased sedimentation to streams in the project corridor. However, the stormwater treatment facilities proposed as mitigation measures will also provide enhanced removal of sand materials through filtration and/or sedimentation. Further, roadside ditches are designed for ease of maintenance and to prevent erosion, and that would likely result in less debris, pollutants, and sediment entering sensitive areas. These maintenance activities already occur in the corridor and no new or substantial impacts are expected to occur.

5.12.6 Urban Portion – Fisheries

Direct Effects

No-Action Alternative

The No-Action Alternative would not affect populations of fish species of concern in the project corridor.

Action Alternatives

Short-term sediment increases to Ronan Spring Creek may occur for all urban alternatives. Expansion or replacement of the culvert in Ronan Spring Creek would have the same short term effects described for the rural portion, although impacts would likely be less since the degree of work proposed in this area is much smaller than for the rural portion.

Widening the road under Alternatives Ronan 1, Ronan 2 and Ronan 5 would require replacing or expanding the Ronan Spring Creek culvert. Replacement of the structures in Ronan Spring Creek that convey flows under US 93 and under Terrace Lake Road, both of which are undersized, would create restoration opportunities for the Ronan Spring Creek channel, improve fish passage, improve hydraulic connectivity and control water velocities.

In addition to the beneficial effect listed previously, Ronan Spring Creek between US 93 and First Avenue SW would be daylighted (removed from the existing culvert and exposed) under all urban alternatives. Daylighting Ronan Spring Creek would allow for re-establishment of the floodplain which would increase hydraulic capacity, improve water quality by exposing water to air, sunlight, vegetation, and soils, all of which help transform, bind up or otherwise neutralize pollutants, and recreate aquatic habitat and improve fish passage. The entire length of Ronan Spring Creek upstream of the US 93 crossing was reconstructed in 1996, thereby increasing the benefits of daylighting the channel and restoring the floodplain through the project corridor.

Indirect Effects

Indirect effects would be the same as those described for the rural portion of the proposed project.

5.12.7 Impacts of the Total Project

The Rural 9 alternative would result in the greatest estimated impacts on fisheries resources because it would fill the greatest amount of riparian wetlands (approximately 3.6 hectares [8.8 acres]), would result in the greatest increase in impervious surface area (approximately 32.5 hectares [80.3 acres]) and would require the greatest amount of stream channel relocation (approximately 1,241 meters [4,070 feet] of all the action alternatives. The Rural 7 alternative would fill the least riparian wetland area (approximately 2.2 hectares [5.4 acres]) and require the least amount of stream relocation (approximately 652 meters (2,138 feet)). The other rural alternatives are generally similar filling between approximately 2.5 and 3.1 hectares (6.2 and 7.7 acres) of riparian wetland, increasing the impervious surface area between approximately 18.7 and 20.4 hectares (46.3 and 50.5 acres) and requiring approximately 836 to 1,026 meters (2,740 to 3,366 feet) of stream channel relocation.

5.12.8 Mitigation Measures

Avoidance and Minimization Measures Included in Design

The preliminary design for the proposed project incorporates numerous measures to minimize impacts on streams in the project corridor. For example, all of the proposed wildlife crossing structures would enhance fisheries resources by opening a greater portion of the floodplain and allowing areas to be restored, which would improve hydrologic connections and provide greater vegetative cover on the stream banks and in riparian wetlands. In addition, proposed roadway alignments for all alternatives remain generally within the existing alignment to minimize new impacts on streams.

The following additional measures have been incorporated into the preliminary construction plans and specifications to minimize project effects on fisheries resources:

- Permanent stormwater treatment measures would be designed to reduce suspended solids from stormwater.
- In fish bearing streams, culverts would be designed and installed to accommodate fish passage.
- The proposed preliminary design for all of the rural alternatives reviewed the possibility for steepened roadway slopes to minimize impacts on key features in the project corridor. Proposed approximate locations are shown in Appendix A. During final design the areas will be further

investigated to determine if the proposed preliminary design is practicable and feasible. If during final design there are areas that slopes can be safely steepened, they would be incorporated into the proposed project's plans. (Note: Slope steepening would require approval from the MDT Highways Engineer and FHWA through the design exceptions process). These steeper slopes reduce the width of the roadway footprint and would consequently reduce impacts on streams.

Measures that have not yet been incorporated into the preliminary construction plans, but would be considered as construction plans are finalized, include the following:

- As an element of restoration where new crossings structures are proposed, revegetate stream banks with appropriate species.
- Stream channels that would be affected by roadway widening must be relocated. During final design onsite restoration and enhancement will be explored at Ashley Creek and unnamed tributary to Post Creek 1, 2, and 3.

Additional Mitigation Measures Required

Because many streams support associated wetlands, mitigation for impacts on streams often follows the same sequence applied for wetlands including avoidance, minimization, and compensation. By implementing these measures for wetlands, impacts are often avoided or minimized for streams as well.

As stated for wetlands, MDT requires that all construction activities within and adjacent to wetlands and streams adhere to the BMPs outlined in the MDT standard specifications and described in the SWPPP, which is prepared for all projects disturbing more than 0.4 hectares (1 acre) of land area.

In addition to the standard specifications, additional measures can be added to the project special provisions to minimize disturbance to stream channels and fish habitat. The following measures would be included for the proposed project:

- Work in project area streams would comply with appropriate work windows as determined by the United States Fish and Wildlife Service (USFWS) and CSKT biologists
- Preservation fencing would be installed to protect identified vegetation sites at specific riparian areas.

5.13 Threatened and Endangered Species

As described in *Section 4.13 Threatened and Endangered Species,* Ute ladies'–tresses, water howellia, Spalding's campion/catchfly, slender moonwort, gray wolf, and Canada lynx are not expected in the project corridor; therefore, no effects on these species are expected and no further discussion is provided. For additional information on these species and for a more complete discussion of project effects on all federally listed species, refer to the *Biological Assessment: US 93 Ninepipe/Ronan Improvement Project* (Herrera 2004c). Table 5.13-1 presents the determination of effects on federally listed threatened species for all of the action alternatives.

Table 5.13-1. Determinations of effect for federally listed threatened species expected in the US 93 Ninepipe/Ronan project corridor.

Species Name	Scientific Name	Status	Determination of Effect
Bald eagle	*Haliaeetus leucocephalus*	Delisted	
Bull trout	*Salvelinus confluentes*	Threatened	May affect, likely to adversely affect
Bull trout critical habitat		Designated	May affect, likely to adversely affect
Grizzly bear	*Ursus arctos horribilis*	Threatened	May affect, likely to adversely affect

The Federal Highway Administration and MDT have completed formal consultation with the USFWS for the proposed project. The USFWS issued a biological opinion on August 29, 2005 for the effects to the threatened bull trout and grizzly bear due to the proposed project (USFWS 2005), and issued a biological opinion on June 27, 2006 for the effects to bull trout critical habitat (USFWS 2006). Consultation for these species remains valid for the proposed project. The biological opinions issued for this project are included in Appendix M.

In the 2005 biological opinion, the USFWS determined that the project, as proposed, would not be likely to jeopardize the continued existence of the Columbia Basin distinct population segment of bull trout, nor any recovery subunit thereof. It also concluded that the project, as proposed, would not be likely to jeopardize the continued existence of the Northern Continental Divide Ecosystem population of grizzly bears. The USFWS expects some level of adverse effects to bull trout associated with implementation of the US 93 Ninepipe / Ronan project. However, they do not anticipate that project effects would rise to the level of incidental take. The amount of incidental take of grizzly bears anticipated as a result of implementation of the proposed project is included in the October 19, 2001 incidental take statement for the entire corridor. Thus, the anticipated level of incidental take associated with the existence and operation of the reconstructed segment of U.S. Highway 93 from Evaro to Polson, Montana, is two grizzly bears during any ten-year period in the future. In the 2006 biological opinion, the USFWS determined that the project, as proposed, would not result in the destruction or adverse modification of bull trout critical habitat.

Incidental take statements typically provide reasonable and prudent measures which are expected to reduce the amount of incidental take. In the biological opinion, the USFWS stated no additional reasonable and prudent measures are deemed necessary to minimize impacts on bull trout. The reasonable and prudent measures for grizzly bears are discussed below in *Section 5.13.4 Mitigation Measures*.

5.13.1 Rural Portion

Direct Effects

No-Action Alternative

The existing US 93 road corridor does not provide opportunities for wildlife to cross the roadway other than crossing over the road. In its current condition and at existing traffic levels, it is presumed that the road corridor is a barrier to most individual grizzly bears attempting to cross the road corridor. (Crossings by wolves are generally not expected in this portion of the corridor and crossings by Canada lynx are not expected for the project area.) Although some grizzly bears successfully cross the road, several bear mortalities have been reported in the area in the past few years. As traffic levels in the corridor increase, the roadway under the No-Action Alternative would likely become a greater barrier to grizzly bear movement in the project corridor and may contribute to increased grizzly bear mortality.

The No-Action Alternative would not affect grizzly bears or gray wolves in the project corridor. Nor would it directly affect bull trout, although current conditions contribute to the lack of suitable habitat in the project area for this species.

Action Alternatives

Bull Trout—Bull trout in Post Creek may be affected by project construction under all action alternatives if runoff from recently cleared and graded areas and soil stockpiles results in increased sediment entering Post Creek and its tributaries. Accidental spills of fuels, oils, concrete leachate, and chemicals used during construction could also enter project area streams; however, MDT standard specifications would require the Contractor to establish staging areas a minimum of 15 meters (50 feet) from streams and to implement spill prevention measures during construction near streams.

The primary effects of construction on bull trout for all action alternatives are associated with construction of the wildlife crossing structures at Post Creek. The risk of increased deposition of eroded sediments in Post Creek and its tributaries would be greatest for Alternative Rural 7, followed by the other rural action alternatives. This is attributed to the extent of roadway fill that would be removed to construct the multi-span structures. Implementation of BMPs and erosion control methods would reduce but not eliminate sediment input to Post Creek during construction.

For all structure options, replacement of the bridge over Post Creek may displace bull trout from the stream reach in the project area. Implementation of BMPs, a temporary erosion and sediment control plan, and timing restrictions may minimize the extent and duration of this effect.

All of the action alternatives would generate an increased impervious surface area in the project area. Increased impervious surface area would provide a larger paved surface for collection of pollutants that are available for transport in stormwater runoff. Stormwater runoff may contain contaminants including lead, petroleum hydrocarbons and contaminants found in de-icers, such as magnesium chloride. The amount of impervious surface area and, therefore, the amount of stormwater runoff would increase with the number of lanes proposed. In the vicinity of Post Creek, Alternatives Rural 5, 6, 8 and 9 would generate the greatest increases in stormwater runoff. Design measures would be implemented to reduce suspended solids from stormwater generated by this roadway improvement project on roadway surfaces in areas that drain directly to sensitive waters.

The Post Creek wildlife crossing structures would span the stream channel and provide opportunities to remove fill from the floodplain and restore riparian wetlands; thereby improving fish and bull trout habitat in the project area. Alternative Rural 7 would provide the greatest opportunity for floodplain interaction and wetland restoration, followed by the other rural action alternatives. All rural action alternatives would require the placement of piers in the floodplain, which could cause scouring during flood flows.

Bull Trout Critical Habitat—Critical habitat consists of physical and biological features essential to the conservation of the species (primary constituent elements [PCEs]) and that may require special management considerations or protection. When assessing potential effects on bull trout critical habitat, biologists provide an analysis of effects on the PCEs and related habitat indicators. Eight PCEs have been established for bull trout critical habitat. The proposed action alternatives will impact three of these.

Analysis for the proposed US 93 Ninepipe/Ronan improvement project found that activities associated with this project were likely to result in short-term impacts to the habitat indicators *sediment, substrate embeddedness, and streambank conditions* but would ultimately maintain or improve these indicators in the long-term. These impacts are anticipated to result in a minor short-term degradation and a long-term restoration of the *sediment* and *substrate embeddedness* indicator and subsequent PCE 3, *substrates of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival.* These impacts are also anticipated to result in a minor short-term degradation and a long-term restoration of the *streambank conditions* at least within the immediate project area. Effects on subsequent PCE 1, *water temperatures that support bull trout use***,** would likely remain unchanged while effects on subsequent PCE 2, *complex stream channels with features such as woody debris, side channels, pools, and undercut banks to provide a variety of depths, velocities, and instream structure*, would likely improve because fill would be removed from the floodplain at the bridge crossing. The project would also result in long-term degradation of habitat indicator *road density and location*. However, there are no subsequent PCEs for this indicator. The impacts associated with the proposed action are not discountable, insignificant, or entirely beneficial.

Grizzly Bears—The primary effect of construction activities on grizzly bears would be an increased risk of human-bear conflicts. All of the action alternatives would require temporary construction staging areas, including offices and lodging, which may attract bears if food is not properly stored and disposed. Alternatives with wider lane configurations (Alternative Rural 8 and Alternative Rural 9) may require slightly longer to construct and so staging areas may be required for a longer period of time. However, contractors and construction crews would be instructed on the need and techniques for proper sanitation in grizzly bear habitat, and all grizzly bear sightings would be reported to CSKT Tribal Wildlife Program biologists.

Construction activities in the project corridor for all action alternatives may cause grizzly bears to avoid foraging habitats near construction sites. Alternatives with wider lane configurations (Alternative Rural 8 and Alternative Rural 9) would disturb a larger area and may deter bears from a greater area of habitat. Construction of the raised parkway under Alternative Rural 7 would likely require a longer construction period to complete than the other alternatives due to the extended length of raised roadway and subsequent roadway fill removal, which may deter bears for a longer period of time than required for the other action alternatives. Large amounts of roadway fill would be removed below the raised parkway to restore and reconnect habitat and would require extensive hauling to dispose of the excavated material. Disposal locations have not yet been identified. This alternative is expected to generate the greatest amount of fill requiring disposal, which may cause additional impacts on bears depending on the location of offsite disposal. As long as disposal sites are not in or near habitats frequented by bears, (e.g., apple orchards, riparian corridors, Ninepipe National Wildlife Refuge, wildlife management areas), activities at disposal sites would not have a substantial effect on bears.

Because the habitat in the project area does not represent key habitat for the survival of bears in the region and use of the area is highly variable and unpredictable from year to year, disruption of grizzly bear access to project area habitats is expected to have a minor effect on bears (Becker 2003a personal communication).

Effects of the proposed project on grizzly bears include a minor loss of habitat, a potential decrease in habitat value for some areas adjacent to the corridor, a period of continued mortality on the roadway until bears learn to use the new structures, and an impediment to grizzly bear movement through the corridor for some individual bears.

The proposed project would result in the minor loss of habitat areas in the corridor that may support use by bears. Bears are most likely to use the wildlife management grasslands, fruit trees, and some wetlands with tuberous species. Therefore, action alternatives with the greatest impacts on wetlands and wildlife management grasslands would have the greatest effect on grizzly bears (Alternatives Rural 8 and Rural 9). Although Rural 10 includes a passing lane in a portion of the Ninepipe segment, construction would occur within the existing right-of-way through the wildlife management and refuge areas. Loss of habitat in the project area would likely have a minor effect on bears given the limited and widely ranging use of the area. Furthermore, this habitat does not represent key habitat important for the survival of bears in the region (Becker 2003a personal communication). Because bears generally avoid roadways, a greater area of habitat would be reduced in value with the operation of a wider roadway surface. This impact would be greatest for the wider lane configuration (Alternatives Rural 8 and 9) because the zone of influence would comprise a greater area.

Under existing conditions, bears must cross over the roadway to access habitats on the west side of the corridor. Some bears appear to regularly cross the existing roadway near Post Creek and in the Ninepipe Area of the project corridor. Direct effects of roadway projects include a contribution to the impediment of wildlife movement through the road corridor and increased risk of mortality associated with wildlife/vehicle collisions. However, the proposed action includes several wildlife crossing structures aimed at reducing fragmentation of habitats in the project area, facilitating wildlife movement through the corridor, and preventing grizzly bear/vehicle mortality. The effectiveness of these structures in reducing or preventing grizzly bear/vehicle mortality and providing grizzly bears access to habitats on the other side of the roadway is unknown. In Canada, researchers have documented limited use of crossing structures underneath the Trans Canada Highway and grizzly bears have been observed digging under fencing or circumventing fencing to cross over the roadway (Clevenger 1998; Gibeau and Heuer 1996). Similar results were presented in Florida, where bears preferred to cross roadways beyond the fenced areas (Roof and Wooding 1996). The proposed project does not currently include fencing in the Ninepipe segment, so bears would not be precluded from crossing over the roadway. However, as traffic levels in the corridor increase, the barrier effect of the road is likely to increase, deterring more individuals from crossing over the road. As traffic levels increase and bears are further deterred from crossing over the road, the level of mortality for grizzly bears in the corridor would likely be reduced. In addition, the use of wildlife fencing in the Ninepipe segment of the project will be considered in the final design phase of this project.

Several structures in the project corridor would be located on protected lands managed specifically for wildlife, further improving the potential for their use by bears. Alternatively, if bears are attracted to the wildlife crossing structures, more individuals may choose to access habitats on the west side of the corridor, which could render them susceptible to human-bear conflicts. In general, CSKT Wildlife Program tries not to influence or encourage bear movements to the west side of the corridor, because habitat quality is low and there is an increased risk of human-bear conflicts (Becker 2003a personal communication).

Indirect Effects

Material source sites have not been selected for the proposed project. Sites owned by private individuals are regulated by the State of Montana, which requires a permit for operation of a site, including threatened and endangered species review. Sites owned by the Confederated Salish and Kootenai Tribes are regulated through the Lands Division and require NEPA analysis including threatened and endangered species review, prior to their use. Therefore, sites would be surveyed for the presence of threatened and endangered plants, animals, or fish prior to their use. The identification of listed species on the site would likely eliminate the site from the list of potential sources.

Long-term road maintenance activities have the potential to indirectly affect water quality in wetlands, thereby affecting their ability to support listed species. Herbicide spraying for weed control would likely benefit rare, native plant populations in the project corridor that are outcompeted by non-native weeds. Native habitats also have higher value to wildlife, including listed species. Therefore this measure is likely to benefit listed species in the project corridor.

The proposed project may influence where development takes place because access to the highway would be improved at a few key intersections. Because this is most likely to influence highway-oriented businesses, the potential effects on listed species would be minimal.

5.13.2 Urban Portion

Direct Effects

No-Action Alternative

The No-Action Alternative would not affect populations of threatened or endangered species in the project corridor.

Action Alternatives

Because listed species are not expected in the urban portion of the project corridor, no construction impacts from the action alternatives in the urban portion have been identified for threatened or endangered plants, animals, or fish.

Because listed species are not expected in the urban portion of the project corridor, no impacts from the action alternatives in the urban portion have been identified for threatened and endangered plants, animals, or fish.

Indirect Effects

Alternative Ronan 3 and Alternative Ronan 4 (PA), which would construct a southbound couplet on First Avenue SW, would likely influence future commercial development in the City of Ronan. Development along the southbound couplet is not expected to result in additional impacts on listed species due to the density of development in the area and the lack of suitable habitat.

5.13.3 Impacts of the Total Project

Selection of Alternative Rural 1 and Alternative Ronan 5 would disturb the least amount of wetland and wildlife habitat in the project corridor and would generate the least increase in stormwater runoff to area streams and wetlands, which could result in decreased water quality and the ability of these systems to support bull trout. Selection of Alternative Rural 9 and Alternative Ronan 4 would disturb the greatest amount of wetland and wildlife habitat in the project corridor and would generate the greatest increases in stormwater runoff to area streams and wetlands, which could result in decreased water quality and the ability of these systems to support bull trout. Implementation of wildlife crossing structures may facilitate movement of grizzly bears and wolves through the project corridor.

5.13.4 Mitigation Measures

Avoidance and Minimization Measures Included in Design

Measures included in preliminary design to minimize impacts on threatened species would be the same as those described for wildlife and vegetation, wetlands, and fisheries resources.

Generally, all of the proposed wildlife crossing structure options would enhance fisheries and wetland resources by improving hydrologic connections in riparian wetlands at the crossings and restoring areas currently affected by roadway fill. Further, the proposed crossing structures were sited and selected based on the best available data on functional structures at highway locations throughout North America.

Additional Mitigation Measures Required

Bull Trout

Conservation measures for bull trout are the same as those described in *Section 5.12 Fish and Wildlife* for fisheries resources. The following additional measures would be implemented at Post Creek:

- Work in project area streams would comply with appropriate work windows as determined by the USFWS and CSKT biologists
- Preservation fencing would be installed to protect identified vegetation sites at specific riparian areas..

Because the U.S. Fish and Wildlife Service does not anticipate that project-related adverse effects would rise to the level of incidental take of bull trout, no reasonable and prudent measures to minimize incidental take were required for bull trout.

Grizzly Bears

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

- Educate contractors and construction crews regarding the need for proper sanitation in grizzly bear habitat, and instruct workers to report all grizzly bear sightings immediately to Tribal wildlife program biologists
- Ensure that contractors and construction crews store all food and garbage in bear-proof containers or inside a secured hard-sided dwelling, storage building, vehicle or bear-resistant container when unattended

- 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 RP 38.2 (approximately 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.

Monitoring is being implemented during operation at wildlife crossings for the Evaro to Red Horn Road portion of the US 93 Evaro to Polson reconstruction projects. The information gathered from this monitoring effort may be applicable to wildlife crossings associated with the proposed project.

Reasonable and prudent measures are those measures necessary and appropriate to minimize the incidental take resulting from the proposed action. These reasonable and prudent measures are non-discretionary and must be implemented by the project proponents. The reasonable and prudent measures are nearly identical to those provided in the incidental take statement for the US 93 Evaro to Polson project issued by the Service on October 19, 2001.

1. The FHWA and MDT shall identify and implement means to reduce the potential for incidental take of grizzly bears from direct mortality as a result of high traffic levels present on U.S. Highway 93, and from habitat fragmentation and displacement for these species as a result of project-related increases in highway width and increases in traffic volume and speed.

2. The FHWA and the MDT shall monitor reconstruction of the highway, as well as the construction of wildlife crossing structures, to ensure that these activities and structures comply with the Re-evaluation of the Final Environmental Impact Statement, BA, BA Supplement, Memorandum of Agreement, and biological opinion for the US 93 Evaro to Polson project, and the BA, BA addendum, and SEIS for the US 93 Ninepipe / Ronan project. The FHWA and the MDT shall also implement the reporting requirements as described in the terms and conditions of the biological opinion.

To fulfill reasonable and prudent measure #1, the following terms and conditions shall be implemented:

- The wildlife crossing structures for the proposed project shall be constructed as proposed and shall include implementation of all of the conservation measures described in the proposed project's BA and SEIS.

To fulfill reasonable and prudent measure #2, the following terms and conditions shall be implemented:

- A monitoring plan shall be implemented, such as or similar to the August 2001 draft "US 93 Evaro to Polson Wildlife Crossing Structures Evaluation" proposed by the Western Transportation Institute in conjunction with the CSKT and the Department. The evaluation program implemented shall include monitoring of wildlife crossings of the U.S. Highway 93 corridor before, during, and after construction of the proposed project and shall be used to guide and adapt the design, maintenance, and potential modification of the crossing structures and fencing constructed during the proposed project and in the future.

- Upon locating a dead, injured or sick grizzly bear, notification must be made within 24 hours to the Service's Montana Field Office at (406)449-5225, or the Tribal Fish, Wildlife, Recreation and Conservation Office at (406)675-2700. Record information relative to the date, time and location of dead or injured listed species when found, and if possible, the cause of injury or death of each animal and provide this information to the Service.

5.13.5 Determinations of Effect

Grizzly Bear

With implementation of conservation measures, the proposed action alternatives *may affect and are likely to adversely affect* grizzly bears.

Bull Trout

The proposed action alternatives *may affect and are likely to adversely affect* bull trout.

Bull Trout Critical Habitat

The proposed action alternatives *may affect and are likely to adversely affect* critical habitat for bull trout in Post Creek.

5.13.6 Cumulative Effects

Cumulative effects under the ESA are effects of future state or private activities, not involving federal activities, that are reasonably certain to occur within the action area of the federal action subject to consultation [50 CFR § 402.02]. Future activities include a new motel and restaurant in Ronan planned by private developers; road improvements on Mollman Pass Trail; improvement of MT 354, which roughly parallels US 93 between MT 211 and Polson;

construction of the Timber Lane Pedestrian Pathway beginning at the junction of US 93 and Timber Lane Road and extending north for is a 8.0-kilometers (5.0-miles); two potential subdivisions in the vicinity of Ronan; land acquisition and restoration in the Ninepipe Area by CSKT through the Kerr Dam Fish and Wildlife Mitigation settlement; abandonment of Duck Road between US 93 and Piedalue Road; and updates to several regional land use plans. Finally, since the 1990s, rural areas in the US 93 corridor have faced increasing pressure for residential development and this trend is expected to continue.

Future projects that may contribute to cumulative effects on bald eagles are ongoing residential development; reconstruction on Mollman Pass Trail; abandonment of Duck Road; and acquisition of lands in the Ninepipe Area. Residential development in rural areas may contribute to the loss of bald eagle perch sites in the area but is not expected to affect nesting pairs or displace wintering birds. CSKT will consult with their Wildlife Program to address potential impacts on bald eagles and measures would be implemented to reduce potential impacts during construction of the Mollman Pass Trail project. As long as resurfacing or safety projects occur greater than 1.6 kilometers (1 mile) from bald eagle nest sites or outside the nesting period, they would not result in cumulative effects on bald eagles. Implementation of the Kerr Dam Fish and Wildlife Mitigation settlement and abandonment of Duck Road may benefit bald eagles by preserving additional lands in the Ninepipe Area and Kicking Horse reservoir, which would create an additional buffer around the open water areas.

Cumulative effects on grizzly bears could occur from residential development in rural areas, which may contribute to fragmentation or encroachment on riparian areas and wildlife movement corridors. The area surrounding the MT 354 corridor is not considered habitat for grizzly bears. The proposed wildlife crossing structures throughout the corridor would minimize the cumulative effects of past roadway projects which inhibited wildlife movement through the corridor. Implementation of the Kerr Dam Fish and Wildlife Mitigation settlement and abandonment of Duck Road may benefit grizzly bears by preserving additional lands in the Ninepipe Area, which provide foraging habitat.

Future development would affect bull trout if the development results in the loss of riparian habitat, contributes to decreases in water quality in bull trout streams, or increases or otherwise alters bull trout habitat.

5.14 Cultural Resources

The following discussion of the environmental consequences to cultural and historic resources is based on the US 93 Evaro to Polson FEIS and additional analysis completed to support the conclusions in this Supplemental EIS (see Appendix C).

5.14.1 Introduction

General guidelines for determining adverse effect are provided by the Advisory Council for Historic Preservation. The criteria for an adverse effect as defined in 36 CFR 800.5 are as follows:

Adverse effects on properties on or eligible for the National Register of Historic Places (NRHP) include but are not limited to:

- Physical destruction of or damage to all or part of the property
- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR part 68) and applicable guidelines
- Removal of the property from its historic location
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance
- Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features
- Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious cultural significance to an Indian Tribe or Native Hawaiian organization
- Transfer, lease, or sale of a property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

Of the seven listed conditions, the first five are most applicable to the proposed action. Physical effects may include ground disturbing construction activities that result in the alteration of resources that contribute to the eligibility of a property. With regard to historic properties with standing buildings, this could include the destruction and/or removal of resources associated with the property, including buildings, structures and landscaping elements. Traditional cultural properties are also susceptible to physical effect, since the character of the setting may be primary to the eligibility of the property. Archaeological properties (both historic and prehistoric) may be adversely affected by ground disturbing activities, if the depositional integrity of artifacts is disturbed.

5.14.2 Rural Portion

Direct Effects

No-Action Alternative

Under the No-Action Alternative, cultural and historic resources would not be affected.

Action Alternatives

Improvement of the US 93 project corridor is likely to result in an adverse impact to ethnographic cultural resources during the construction period for the reasons stated in the introduction to this section.

Improvement of the US 93 project corridor is likely to result in an adverse impact to ethnographic cultural resources during operation. Alternatives with wider roadway cross-sections (Rural 8 and Rural 9 alternatives), particularly in the Ninepipe Area, would result in somewhat greater impacts to ethnographic cultural resources due to greater impacts to biological resources (see *Section 5.12 Fish and Wildlife*). Because traffic levels would be the same among the alternatives, including under the No-Action Alternative, traffic-proportional effects on ethnographic cultural resources, such as air quality impacts and traffic generated noise, would vary minimally among the alternatives.

The specific effects on parcels with listed, eligible, and potentially eligible sites are described in the following analysis. **Fort Connah (24LA0057)** is approximately 665 meters (2,100 feet) east of the existing right-of-way and would not be affected by the proposed project and is not further discussed in this section. Determinations of effect on historic resources were made for the preferred alternative according to Title 36 Code of Federal Regulations Part 800.

Post Creek Hill Segment

The **Flathead Irrigation Project (24LA91)** includes five mainline crossings with culverts that would be modified and four areas where existing canals would be realigned. There would be No Adverse Effect on the **Flathead Irrigation Project (24LA91).** THPO concurrence and a memorandum of agreement stipulating mitigation measures are documented in Appendix C.

Ninepipe Segment

The barn on the **Anderson Farmstead (24LA0161)** is located approximately 50 meters (164 feet) west of the existing right-of-way. All of the rural action alternatives will be designed to include a veneered retaining wall along this site's frontage, so that no right-of-way acquisition would be required from this site. There would be No Adverse Effect on the Anderson Farmstead as a result of the preferred alternative. The THPO has concurred with this determination (Appendix C).

The historic **Stagecoach Route (no record by the Montana State Historic Preservation Office**) crosses US 93 (approximate RP 40.3) at the south end of the Ninepipe National Wildlife Refuge. Alternatives Rural 8 and Rural 9 would result in a minor amount of acquisition of right-of-way in the vicinity of the stagecoach route, but historic alignment would be perpetuated and it would continue to be used as a local access route. None of the other action alternatives would require acquisition of right-of-way from this historic site. There would be No Effect on the Stagecoach Route as a result of Alternative Rural 3 (the preferred alternative). The THPO has concurred with this determination (Appendix C).

There would be No Adverse Effect on the **Flathead Irrigation Project (24LA91)**. THPO concurrence and a memorandum of agreement stipulating mitigation measures are documented in Appendix C.

Indirect Effects

Indirect effects to either ethnographic or vernacular cultural resources would be minimal in the rural portion of the corridor, although, to the extent that improvement of US 93 contributes to the continuing urbanization of the project corridor and surrounding Mission Valley, the proposed project would indirectly effect the cultural environment of the CSKT.

5.14.3 Urban Portion

Direct Effects

No-Action Alternative

Under the No-Action Alternative, cultural and historic resources would not be affected.

Action Alternatives

There would be No Adverse Effect on the **Flathead Irrigation Project (24LA91).** THPO concurrence and a memorandum of agreement stipulating mitigation measures are documented in Appendix C.

Indirect Effects

No indirect effects to either ethnographic or vernacular cultural resources would occur in the urban portion of the corridor.

5.14.4 Impacts of the Total Project

All alternatives have constructively equal effects on vernacular cultural resources that are limited to impacts on the Flathead Irrigation Project (24LA91). The total project would impact twelve mainline crossings with culverts that would require modification and eight areas where existing canals would be realigned.

5.14.5 Mitigation Measures

Avoidance and Minimization Measures Included in Design

At the Anderson Farmstead a veneered retaining wall will be constructed and no physical features of the site will be directly impacted.

Although we have made a determination that the proposed project will have no adverse effect to the Flathead Irrigation Project, it is recognized by FHWA and documented in the Memorandum of Agreement (dated February 10, 2004) that an effect will occur (see Appendix C). The MOA stipulates mitigation measures to offset the effects of the road project on the historic irrigation system. The stipulated mitigation measures are as follows:

- "The MDT will provide a turn-out and funding for a historical interpretive marker describing the development and significance of the Flathead Irrigation Project on the Flathead Indian Reservation. The Tribal Preservation Office will prepare the text for the interpretive marker and provide it to the MDT for review and production of the marker."
- "The MDT will provide $6,000 to the CSKT Tribal Preservation Office as partial funding for the inventory and evaluation of the Flathead Irrigation Project. The MDT will receive five copies of the completed report. The MDT's contribution to the study will be acknowledged in the report."

Additional Mitigation Measures Required

The following measures would be implemented during construction under any of the action alternatives:

- If a cultural resource is encountered, the contractor would cease all work in the immediate area and contact the Tribal Preservation Office, the State Historic Preservation Office and the MDT archaeologist

- If human remains or materials subject to cultural patrimony (as defined in the Native American Graves and Repatriation Act) are encountered, the contractor would contact the Tribal Preservation Office, the State Historic Preservation Office and MDT archaeologist.

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5.15 Parks and Recreation

5.15.1 Rural Portion

Direct Effects

No-Action Alternative

No construction effects on parks and developed or dispersed recreation facilities would occur under the No-Action Alternative.

Action Alternatives

Access to parks and developed or dispersed recreation facilities adjacent to the roadway would be temporarily less convenient during construction, but is expected to remain open.

The specific areas that would be acquired are summarized in Table 5.15-1.

A minor amount of right-of-way would be acquired from CSKT wildlife management lands at parcel 4-34 for all of the action alternatives. The effect of this acquisition on recreation would be minimal.

A minor amount of right-of-way acquisition at the Ninepipe Reservoir fishing access site, a 6(f) property located within the Ninepipe National Wildlife Refuge, would be necessary under Alternative Rural 9 to accommodate the approach to the wildlife crossing structure at Ninepipe Reservoir. This acquisition could be avoided in final design through a variety of measures.

A minor amount of right-of-way acquisition at the Ninepipe Wildlife Management Area, a 6(f) property surrounding the Ninepipe National Wildlife Refuge, would be necessary under Alternatives Rural 6, 7, 8 and 9. The effect of this acquisition on recreation would be minimal. Opportunities to avoid acquisition would be sought during final design.

Indirect Effects

No indirect effects on developed or dispersed recreation facilities and parks in the rural portion would result from any of the action alternatives.

5.15.2 Urban Portion

Direct Effects

No-Action Alternative

No effects on parks and developed or dispersed recreation would occur under the No-Action Alternative.

Table 5.15-1. Approximate areas of acquisition in hectares (acres) of recreational resources by alternative in the rural portion of the US 93 Ninepipe/Ronan project corridor.

	CSKT Parcel 4-34	Ninepipe National Wildlife Refuge	Ninepipe Wildlife Management Area	Kicking Horse WPA	Duck Haven WPA	Ereaux WPA	CSKT Parcel 4-72	CSKT Parcel 4-85	Total Area of Acquisition Required
Rural 1	1.1 (2.7)								1.1 (2.7)
Rural 2	1.1 (2.7)								1.1 (2.7)
Rural 3 (PA)	1.1 (2.7)								1.1 (2.7)
Rural 4	1.3 (3.1)								1.3 (3.1)
Rural 5	1.5 (3.6)								1.5 (3.6)
Rural 6	1.3 (3.1)		2.5 (6.2)						3.8 (9.3)
Rural 7	1.3 (3.3)		1.2 (3.0)		0.1 (0.3)			0.1 (0.2)	2.7 (6.8)
Rural 8	1.3 (3.3)	0.3 (0.8)	3.6 (8.9)	0.7 (1.7)	0.5 (1.2)		1.4 (3.4)	0.2 (0.4)	8.0 (19.7)
Rural 9	2.1 (5.3)	1.3 (3.3)	7.0 (17.4)	1.1 (2.6)	1.3 (3.2)	0.04 (0.1)	1.9 (4.8)	0.4 (1.0)	15.1 (37.7)
Rural 10	1.1 (2.7)								1.1 (2.7)

Action Alternatives

The Ronan 1, 2, or 5 alternatives would not require acquisition or temporary occupancy of property from the Ronan City Park. The Ronan 3 and Ronan 4 alternatives would retain the existing diagonal parking on the west side of First Avenue SW in a plan that allows a parking area adjacent to the through lanes, which will be accessed by providing one-way traffic through the parking area. This parking plan was discussed and agreed upon with the City. There are no direct impacts to the park land; consequently, there will be no use of parkland for the project. There do appear to be some proximity impacts. Apparently the diagonal on-street parking on the east side of the street is also intended serve as overflow parking for the park. This parking will be converted to parallel parking with some loss of parking spaces.

Construction activity along First Avenue SW under either Alternative Ronan 3 or Ronan 4 (PA) would result in temporary adverse effects on the Ronan City Park due to increases in noise and dust. Construction activity occurring near the recreation facilities at the north end of Ronan would result in less impact because the facilities (e.g. ballfields) are used for active rather than passive recreation and are adjacent to the current US 93 alignment with its high level of activity.

Over the long term, the general increase in traffic along First Avenue SW under the Ronan 3 and Ronan 4 alternatives would result in increases in noise and general activity that would modify the current quiet character of the Ronan City Park, although the park would continue to function adequately as a recreation facility.

The 6(f) properties in the vicinity of this portion of the corridor (Ronan Park Acquisition, Ronan Tennis Courts, and Ronan Park and Softball Fields) would not be acquired in whole or in part under any of the action alternatives.

Indirect Effects

No indirect effects on parks and developed or dispersed recreation in the urban portion would result from any of the alternatives.

5.15.3 Impacts of the Total Project

The greatest impacts would occur through a combination of the Rural 9 alternative (acquisition of up to 15.8 hectares [39.3 acres] of recreational land) and the Ronan 3 or Ronan 4 alternatives (which are the closest proximity to Ronan City Park). The least impact would occur through a combination of Rural 3 alternative (PA) (or Alternatives Rural 1, Rural 2, or Rural 10 assuming the design modifications made to avoid impacts under the PA would be applied to the other rural alternatives as well) and the Ronan 5 alternative. This impact would include the least right-of-way acquisition and the least proximity to Ronan City Park.

5.15.4 Mitigation Measures

Avoidance and Minimization Measures Included in Design

The project preliminary design includes the following measures to avoid or minimize impacts by limiting the roadway profile and footprint, adjusting the horizontal alignment to better fit the landscape, and reducing changes to landscape character:

- The proposed preliminary design for all of the rural alternatives reviewed the possibility for steepened roadway slopes to minimize impacts on key features in the project corridor. Proposed approximate locations are shown in Appendix A. During final design the areas will be further investigated to determine if the proposed preliminary design is practicable and feasible. If during final design there are areas that slopes can be safely steepened, they would be incorporated into the proposed project's plans. (Note: Slope steepening would require approval from the MDT Highways Engineer and FHWA through the design exceptions process.) These steeper slopes reduce the width of the roadway footprint and would consequently reduce impacts on parks and recreation lands.

- Longer structures at major streams, kettle ponds, and the Ninepipe Reservoir inlet, and construction of smaller box culverts throughout the Ninepipe segment to improve wildlife connectivity of riparian corridors. This would improve wildlife management lands by improving habitat connectivity, and therefore indirectly affect recreation in these areas by improving wildlife habitat.

- The City owns property just south of the Ronan City Park that could be developed for additional parking to mitigate loss of parking on the east side of First Avenue SW. MDT and the City agreed they would consider development of additional parking during the design process.

- For Alternatives Ronan 3 and 4 (PA), a shrub buffer or other screening and/or fencing may be placed along the Ronan City Park boundary adjacent to First Street SW to mitigate for the close proximity of the southbound portion of the new highway. The proposed mitigation at this location would be further refined during final design in coordination with the City of Ronan.

Additional Mitigation Measures Required

If the impacts on the Ninepipe Wildlife Management Area, a 6(f) property surrounding the Ninepipe National Wildlife Refuge managed by Montana Fish, Wildlife, and Parks, are unavoidable, mitigation in the form of replacement lands would be required to compensate for the loss of land.

5.16 Hazardous Materials

5.16.1 Rural Portion

Direct Effects

No-Action Alternative

Under the No-Action Alternative there would be no need for any right-of-way acquisition. Consequently, there would be no acquisition of any properties with hazardous materials releases. Existing contamination would remain in place, cleanup of contaminated sites would not occur, and hazardous materials with the potential to release would not be removed.

Action Alternatives

Potential impacts could result from the use of hazardous materials (lubricants, fuels, solvents, etc.) during project construction, and/or from encountering sites with existing soil or ground water contamination. The likelihood of impacts from encountering existing contaminated sites depends upon the extent and character of contamination and would be minimized by identifying the sites and potential sites prior to construction and employing appropriate control, cleanup, and disposal measures. A variety of impacts, both beneficial and adverse, could result from encounters with existing hazardous materials sites, including:

- Contamination that otherwise would remain in place and potentially migrate, may be discovered and addressed by the proposed project
- Contamination may be cleaned up faster to accommodate project construction
- Contamination may be prevented by removing potential existing sources, such as underground storage tanks, before they release
- Contaminated materials may be uncovered, allowing more direct exposure to the public
- Contamination may be spread as a result of construction.

Project impacts to the environment at individual hazardous materials sites cannot be determined without detailed evaluations of site-specific conditions. Potential impacts can be attributed based on site type (e.g., petroleum release versus dry cleaner release) and location relative to the construction limits. Regardless of type or extent of contamination encountered, with proper control techniques, contaminated soil would be removed and disposed of or treated at locations designed for hazardous materials management; contaminated ground water would be treated either onsite or at a licensed offsite facility. By using licensed carriers and vehicles equipped for the task, limited risk of public exposure would occur during removal and transport off site.

Onsite treatment of ground water would employ techniques engineered for the specific contaminants encountered.

Potential impacts associated with existing contamination present on any of the alternative sites would be largely short-term (during construction).

Impacts associated with existing contamination present on any of the alternative sites would be direct impacts during construction and indirect impacts if left in place following construction. Impacts may include exposure of construction workers and the public to contaminated media, introduction of hazardous materials to the environment from construction equipment, and potential release of hazardous materials that are currently contained (e.g., materials containing asbestos during demolition, materials in underground storage tanks during excavation). Construction impacts would be mitigated by implementing control measures during the construction process.

Construction activities would require partial or full displacement of some existing structures on properties along the alignment, and existing structures could contain hazardous building materials. All structures in the project corridor have the potential to contain asbestos, and lead-based paint. In addition to hazardous building materials, all properties have the potential to contain unreported heating oil underground storage tanks (USTs). Asbestos continues to be used for some building products and can be expected to be found in a majority of the buildings that would require demolition. Lead was a common additive in most interior and exterior oil-based paints prior to the 1950s. In the early 1950s, other ingredients became more popular, but some lead pigments, corrosion inhibitors, and drying agents were still used. A voluntary standard was adopted in 1966 to limit the lead content in interior paint; however, buildings constructed in the 1960s and the 1970s continued to use lead-based paints for interior work. Up to 1977, exterior paints continued to contain significant amounts of lead. After 1977, lead content in paint was limited to no more than 0.06 percent. It should be expected that hazardous building materials would be associated with a majority of structures on properties to be displaced.

All rural action alternatives would have some positive impact on potential hazardous materials sites in the project impact areas. Table 5.16-1 lists the number of hazardous materials sites affected under each alternative in the rural portion of the project area. The four-lane alternatives (Alternatives Rural 8 and Rural 9) would affect the largest number of potential hazardous materials sites in the rural portion of the project corridor. Fifteen high priority hazardous materials sites, four of which are in the rural portion of the proposed project, are identified on Figure 5.16-1. High priority sites are defined as: 1) sites with a documented release located on properties or immediately adjacent to properties where construction activities would occur, or 2) sites without a documented release but likely to have hazardous materials located on the property, and a substantial portion of the property would be acquired.

Table 5.16-1. Summary of hazardous materials sites under each alternative in the rural portion of the US 93 Ninepipe/Ronan project area.

Alternative	Releases						Acquisitions					
	Potential [a]					Documented [b]	Full			Partial		
	UST	RCRA/FINDS	Historical	Recon.	Total		Potential	Documented	Total	Potential	Documented	Total
Post Creek Hill Segment:												
No-Action	0	0	0	0	0	0	0	0	0	0	0	0
Rural 1	1	0	0	6	7	0	2	0	2	3	0	3
Rural 2	1	0	0	6	7	0	2	0	2	3	0	3
Rural 3 (PA)	1	0	0	6	7	0	2	0	2	3	0	3
Rural 4	1	0	0	6	7	0	2	0	2	3	0	3
Rural 5	1	0	0	6	7	0	2	0	2	3	0	3
Rural 6	1	0	0	6	7	0	2	0	2	3	0	3
Rural 7	1	0	0	6	7	0	2	0	2	3	0	3
Rural 8	1	0	0	6	7	0	2	0	2	4	0	4
Rural 9	1	0	0	6	7	0	2	0	2	4	0	4
Rural 10	1	0	0	6	7	0	2	0	2	2	0	2
Ninepipe Segment:												
No-Action	0	0	0	0	0	0	0	0	0	0	0	0
Rural 1	5	1	1	2	9	0	0	0	0	7 [c]	0	7
Rural 2	5	1	1	2	9	0	0	0	0	7 [c]	0	7
Rural 3 (PA)	5	1	1	2	9	0	0	0	0	7 [c]	0	7
Rural 4	5	1	1	2	9	0	0	0	0	7 [c]	0	7
Rural 5	5	1	1	2	9	0	0	0	0	7 [c]	0	7
Rural 6	5	1	1	2	9	0	0	0	0	7 [c]	0	7
Rural 7	5	1	1	2	9	0	0	0	0	6	0	6
Rural 8	5	1	1	2	9	0	0	0	0	8	0	8
Rural 9	5	1	1	2	9	0	1	0	1	7	0	7
Rural 10	5	1	1	2	9	0	0	0	0	7 [c]	0	7

[a] Potential Releases – includes potential release sites with recorded current activities or features, or recorded historical activities or features, or observed activities or features with the potential to release hazardous materials to the environment
UST – underground storage tank
RCRA – Resource Conservation and Recovery Act
FINDS – Facility Index System
Historical – identified by historic aerial photos and Sanborn Fire Insurance Maps
Recon – identified during drive-through of project corridor
[b] Documented Releases – includes leaking underground storage tanks (LUSTs) within two blocks of the alternatives.
[c] Includes 1 partial acquisition if wildlife structure option CC-1, CC-2, or CC-3 is selected. Deduct one partial acquisition if CC-4 is selected because the site would not be acquired.

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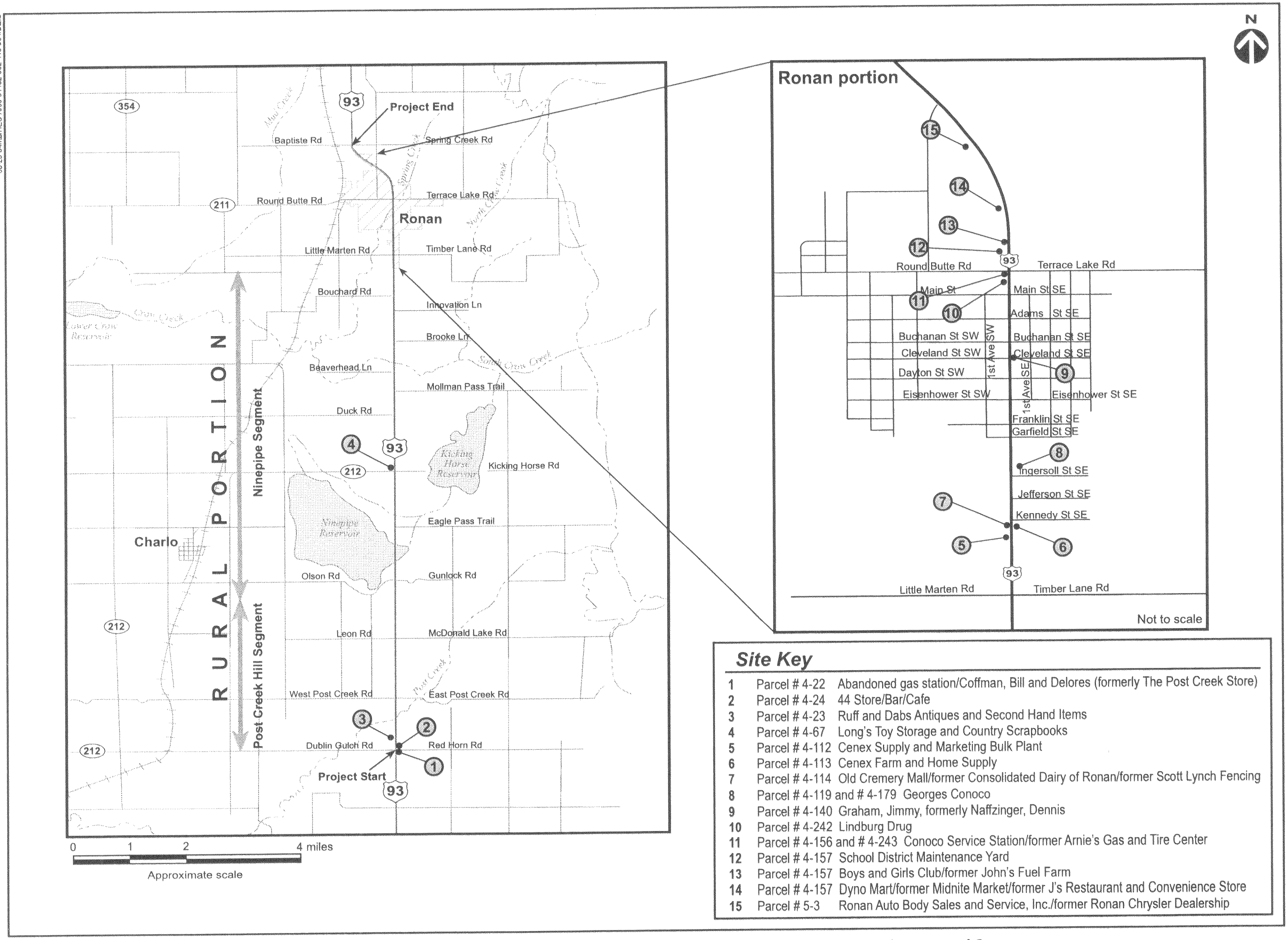

Figure 5.16-1. High priority hazardous material sites, US 93 Ninepipe/Ronan improvement project corridor.

Table 5.16-1 includes the total number of sites (both on and adjacent to the alignment of the alternatives where appropriate) for each alternative in each segment. Sites of highest concern include documented release sites located either on properties planned for displacement or directly on the alignment, as well as those with releases to ground water adjacent to the project corridor. These sites present the potential for long-term impacts, as well as the potential to be impacted by construction.

None of the rural alternatives would call for full acquisition of a hazardous materials site with a documented release. There would be zero partial acquisitions of documented release sites under the rural action alternatives. No hazardous materials sites with documented releases would be partially acquired under any of the rural alternatives.

None of the wildlife crossing structures would affect potential hazardous materials sites, except at Crow Creek where the CC-PA would result in partial acquisition of one potential hazardous materials site under Alternatives Rural 1 through Rural 6 and Rural 10 .

Indirect Effects

Indirect impacts could occur where acquired properties could result in ongoing cleanup responsibility after construction. Such sites are typically associated with ground water contamination or multiple contaminant sources. Indirect impacts would be mitigated by control or cleanup of hazardous materials at a later date.

5.16.2 Urban Portion

Direct Effects

No-Action Alternative

Direct effects of the No-Action Alternative listed in the rural portion would also apply in the urban portion. In addition, some exceptions could occur if the City of Ronan or Lake County should decide to implement turning lanes, traffic signals, or other upgrades at major intersections or on First Avenue SW or First Avenue SE for local usage and improved circulation.

Action Alternatives

Potential impacts could result from the use of hazardous materials during project construction in the urban portion, and/or from encountering sites with existing soil or ground water contamination. Impacts would be similar in character to those described for the rural portion.

The urban couplet alternatives (Ronan 3 and 4 [PA]) would affect the largest number of potential hazardous materials sites in the urban portion of the project corridor. Table 5.16-2 lists the number of hazardous materials sites affected under each alternative in the urban portion of the project area.

Table 5.16-2. Summary of full and partial acquisitions of hazardous materials sites under each alternative in the urban portion of the US 93 Ninepipe/Ronan project area.

Alternative	Releases						Acquisitions					
	Potential [a]					Total	Full			Partial		
	UST	RCRA/FINDS	Historical	Reconn.	Documented [b]		Potential	Documented	Total	Potential	Documented	Total
Urban Portion												
No-Action	0	0	0	0	0	0	0	0	0	0	0	0
Ronan 1	14	3	8	13	16	54	0	0	0	13	3	16
Ronan 2	14	3	8	13	16	54	0	0	0	13	2	15
Ronan 3	14	3	8	13	16	54	0	0	0	13	6	19
Ronan 4 (PA)	14	3	8	13	16	54	0	0	0	13	5	18
Ronan 5	14	3	8	13	16	54	0	0	0	2	0	2

[a] Potential Releases – includes potential release sites with recorded current activities or features, or recorded historical activities or features, or observed activities or features with the potential to release hazardous materials to the environment

UST – underground storage tank
RCRA – Resource Conservation and Recovery Act
FINDS – Facility Index System
Historical – identified by historical aerial photos and Sanborn Fire Insurance Maps
Reconn – identified during drive-through of project corridor

[b] Documented Releases – includes leaking underground storage tanks (LUSTs) within two blocks of the alternatives.

None of the urban alternatives would call for full acquisition of a hazardous materials site with a documented release. Partial acquisitions of documented release sites would range from zero to six depending on the alternative selected. No hazardous materials sites with documented releases would be partially acquired under Ronan 5 alternative. Six hazardous materials sites with documented releases would be partially acquired under the Ronan 3 alternative.

Indirect Effects

None of the rural alternatives would require full or partial acquisition of a hazardous materials site with a documented release. All of the rural alternatives require full and partial acquisitions of hazardous materials sites with a potential release.

5.16.3 Impacts of the Total Project

The action alternatives would affect as few as 12 hazardous materials sites with potential and documented releases and as many as 33 sites, depending on which combination of rural and urban alternatives is selected as the preferred alternative.

5.16.4 Mitigation Measures

Avoidance and Minimization Measures Included in Design

Many sites along the project corridor have the potential for hazardous materials concerns at various depths, primarily petroleum hydrocarbon releases to soil and ground water. During the final design and right-of-way acquisition phases of project development, these sites would be investigated in detail for soil and ground water impacts that may affect construction. Preliminary roadway design was modified to avoid potential hazardous materials sites where possible.

Additional Mitigation Measures Required

MDT would inspect all buildings that have been or would be acquired for right-of-way purposes and that are slated for demolition for the presence of asbestos. Established methods and controls would be implemented to prevent worker and public exposure to lead paint and asbestos in accordance with Occupational Safety and Health Administration (OSHA), Montana Department of Labor and Industry occupational safety and health requirements, and MDEQ requirements for demolition.

If hazardous materials remediation is necessary during construction, the contractor would be required to submit a health and safety plan to MDT prior to beginning work. There would be special provisions included in the contract documents to address management of contaminated soil and ground water, as needed.

Throughout the construction process, encounters with hazardous materials would be documented and reported appropriately. Project planning would accommodate regulatory agency requirements as well as disposal or treatment facility requirements.

If ongoing cleanup and monitoring become necessary, properties left with residual contamination would be clearly identified in documentation provided to the MDEQ.

5.17 Visual

5.17.1 Rural Portion

Direct Effects

No-Action Alternative

In the rural portion of the US 93 Ninepipe/Ronan project corridor, the No-Action Alternative would not result in any change in visual character.

Action Alternatives

Under the action alternatives, construction activity would result in temporary visual effects due to the prominence of construction equipment and disturbed areas as well as the general increase in activity along the road.

The existing US 93 roadway and the vehicles traveling on it are prominent visual features in views from many locations in the US 93 corridor and the surrounding parts of the Mission Valley. Improvement of US 93 would expand the roadway, but would not introduce prominent new visual elements to the landscape and would not block any regional views. Therefore, visual effects range from minimal to moderate under the various action alternatives. In general, the wider roadway would be most evident in views from the road itself and in northward views from locations south of Post Creek Hill. At view locations from which vehicle activity, rather than the roadway itself, is the prominent visual feature associated with US 93, none of the alternatives are expected to result in more than minimal effects because traffic volumes and speeds (and therefore the visual character associated with this roadway activity) are not expected to differ materially among alternatives (including the No-Action Alternative).

Post Creek Hill Segment

The wider roadway under all action alternatives would be evident in views (of the road) toward Post Creek Hill from the south (Post Creek to the vicinity of the town of Saint Ignatius). The greatest number of these affected viewers would be in and around the town of Saint Ignatius. While many of the northward views toward Post Creek Hill are from locations up to several kilometers (miles) from the roadway, US 93 is nonetheless prominent even in views from distant locations because of its high contrast with the surrounding land. The wider the roadway resulting from the proposed project, the greater the prominence of the roadway in these views, and the greater the visual impact. For this reason, Rural 6, 8, and 9 alternatives would have a greater visual effect than the other rural action alternatives, although, because the new roadway would be a widening of an existing roadway, the visual effect on views of the road would be no more than moderate. Alternatives with three lanes on Post Creek Hill (Rural 2 through 5, Rural 7, and Rural 10) would result in effects on views of the road that are intermediate between Rural 6, Rural 8, and Rural 9 alternatives (four lanes on Post Creek Hill) and the Alternative

Rural 1 (two lanes on Post Creek Hill). The split roadway configuration on Post Creek Hill under Rural 6 may result in lower visual effects (compared to the single alignment) in views from nearby locations but, in views from more distant locations, the separated northbound and southbound lanes may be visually perceived as a combined single visual entity that may be more visually prominent than the four-lane configuration under Alternatives 8 and Rural 9 (which would consist of adjacent travel lanes rather than widely separated travel lanes as for Rural 6).

The impacts on views from the road would also be greater under Rural 6, Rural 8, and Rural 9 alternatives than other action alternatives. It is likely that viewers (vehicle drivers and their passengers) on the roadway would be somewhat less sensitive to the visual effects of a wider roadway than viewers at locations off the roadway, and this lowered sensitivity would ameliorate the visual effects of the wider roadway under the action alternatives.

Ninepipe Segment

Views of the road in which the roadway itself is prominent are limited in the Ninepipe segment. Actual viewpoints off the roadway in this segment are generally at or below the elevation of the roadway, so that from these locations the roadway is viewed more edge-on rather than head-on. For this reason, the roadway itself in the Ninepipe segment is typically not prominent in views of the road to the degree the roadway itself in the Post Creek Hill segment is prominent in views of the road. Therefore, road widening in the Ninepipe segment would be seen comparatively as less of a visual change from the existing condition, and visual effects would be minimal.

As in the Post Creek Hill segment, impacts on views from the road would be greater under Rural 8 and 9 alternatives than other alternatives. While the lowered sensitivity of drivers and passengers to the visual character of the roadway would ameliorate the visual effects of the wider roadway, the more natural visual character of the Ninepipe segment would tend to exaggerate the visual contrast, and therefore the visual effects, of a wider roadway. This contrast would be especially evident where pothole wetland features are located adjacent to the roadway especially where the roadway bisects the two kettle ponds. Visual effects on views from the road under Rural 8 and Rural 9 alternatives would be moderate.

Where raised approaches to wildlife crossing structures are required, the roadway prism would be more prominent than it would be in areas where the roadway would be at the existing grade. In views of the road, the viewer would be viewing the side embankment of the road rather than the road surface itself, and therefore the visual effect of a wider roadway would be limited. The structures themselves would be an evident new visual element in the landscape with longer structures being more visually prominent than shorter structures. On the other hand, longer structures may serve to improve the visual connectivity between pond areas on opposite sides of the roadway, and may have a beneficial visual effect. Overall, the visual effect of proposed structures would be limited, although the Rural 7 alternative has an “elevated parkway” section 6.4 kilometers (4.0 miles) long in this segment that would be visually prominent in views from nearby viewpoints.

Indirect Effects

No indirect visual effects in the rural portion of the project corridor would result from any of the alternatives.

5.17.2 Urban Portion

Direct Effects

No-Action Alternative

In the urban portion of the US 93 Ninepipe/Ronan project corridor, the No-Action Alternative would not result in any change in visual character.

Action Alternatives

Construction activity under the action alternatives would result in temporary visual effects due to the prominence of construction equipment and disturbed areas.

Under the action alternatives, no views would be blocked by the improved roadway, and changes in visual character would be minimal during and after construction. The urban portion of the project corridor is dominated by human-made features having rectilinear lines and forms, and the improved roadway would not contrast with the surrounding urban development.

The visual character along First Avenue SW would change under both Alternatives Ronan 3 and Ronan 4 (PA) because of the new roadway connections at the north and south ends of the couplet, the increased level of vehicular activity along First Avenue SW, and the removal of some buildings along First Avenue SW, but the effects of these visual changes are limited because of the urban surroundings.

Proposed alternatives with wide buffers, including southbound Ronan 4 (PA), or planting strips, including Ronan 1, northbound Ronan 3, and northbound Ronan 4 (PA) would have positive visual effects in the downtown Ronan area.

Indirect Effects

No indirect visual effects in the urban portion would result from any of the alternatives.

5.17.3 Impacts of the Total Project

The Rural 8 or Rural 9 alternative together with Alternative Ronan 3 or Ronan 4 (PA) would result in the greatest visual effects, while the Rural 1 alternative together with the Ronan 5 alternative would result in the least visual effect. Alternatives Rural 3 (PA) and Ronan 4 (PA) would result in a visual effect greater than the combined Rural 1 and Ronan 5 alternatives due to a wider footprint in several sections of the rural portion of the corridor. However, the magnitude of the effect would be minor.

5.17.4 Mitigation Measures

Avoidance and Minimization Measures Included in Design

Preliminary project design includes the following measure to avoid or minimize visual impacts by limiting the roadway profile and footprint, adjusting the horizontal alignment to better fit the landscape, and reducing changes to landscape character:

- Curvilinear alignment was added as appropriate to direct views from the road, and enhance the visual quality of the landscape character.

Additional measures that would be considered during development of final designs include:

- Providing interpretive elements including pull-offs at viewpoints, recreational resources, and culturally important sites
- Placing name signs and other interpretive signs where practicable
- Considering selective decommissioning of adjoining roads in the Ninepipe segment to restore the visual quality of the natural landscape character of the Ninepipe Area and core pothole area.

Additional Mitigation Measures Required

Proposed mitigation measures for impacts on visual resources during construction include the following:

- Replace vegetative screening removed through construction between the road and any residences where possible.

5.18 Relocations

5.18.1 Rural Portion

Direct Effects

No-Action Alternative

Under the No-Action Alternative, there would be no right-of-way acquisition. Consequently, there would be no structural or real property disruption or displacement impacts on residences or businesses.

Motorists may choose to patronize competitors who provide the same products and services at more readily accessible locations. Any shift in customer base would be detrimental to those businesses so affected.

Action Alternatives

Rural action alternatives in combination with any one of the wildlife crossing structure options would have minimal impacts on housing or the employment base throughout the project area. The four-lane alternatives (Rural 8 and 9) would displace the largest number of employers and employees, whether on a temporary basis (during the construction phase) or permanently. The majority of the potentially displaced employers in the rural portion indicated they would most likely remain on the residual portion of their parcel (multiple acreage in most cases) if their amended access is satisfactory. Table 5.18-1 provides a summary of displacements in the rural portion of the project corridor.

The action alternatives would increase vehicle capacity, reduce congestion, and improve motorist, pedestrian, and cyclist safety. The unavoidable need for additional right-of-way under any of the action alternatives would not reduce or affect the current availability of essential social facilities, as well as public or private products and services, which are currently available to area residents. Table 5.18-2 provides a summary of the right-of-way acquisition required in the rural portion of the project corridor.

This proposed project would not divide neighborhoods along the rural portion of the project corridor. Residents would not be separated from governmental, social, and other public or private facilities or community services. The action alternatives would make these public facilities more accessible to those residing within the project area as well as those commuting from greater distances.

None of the action alternatives would result in relocation that would violate Executive Order 12898 regarding Environmental Justice. A detailed discussion of Environmental Justice is included in Section 4.4 and Section 5.4.

Table 5.18-1. Summary of displacements in the rural portion of the US 93 Ninepipe/Ronan project corridor.

	Post Creek Hill Segment (RP 37.1 to RP 40)					Ninepipe Segment (RP 40 to RP 46)				
	Residential	Business		Tribal		Residential	Business		Tribal	
Alternative	Displacements	Displacements	Employees	Displacements	Employees	Displacements	Displacements	Employees	Displacements	Employees
(No-Action)	0	0	0	0	0	0	0	0	0	0
Rural 1	1	2	8	0	0	0	0	0	0	0
Rural 2	1	2	8	0	0	0	0	0	0	0
Rural 3 (PA)	1	2	8	0	0	0	0	0	0	0
Rural 4	1	2	8	0	0	0	0	0	0	0
Rural 5	1	2	8	0	0	0	0	0	0	0
Rural 6	1	2	8	0	0	0	0	0	0	0
Rural 7	1	2	8	0	0	0	0	0	0	0
Rural 8	1	2	8	0	0	0	1	1	0	0
Rural 9	2	2	8	0	0	0	2	5	0	0
Rural 10	1	2	8	0	0	0	0	0	0	0

Table 5.18-2. Summary of the estimated right-of-way required in the rural portion of the US 93 Ninepipe/Ronan project corridor.

Alternative	Approximate Right-of-Way Acquisition Required	
	Hectares	Acres
(No-Action)	No additional right-of-way required.	
Rural 1	14	35
Rural 2	15	37
Rural 3 (PA)	18	45
Rural 4	18	45
Rural 5	17	43
Rural 6	31	76
Rural 7	19	48
Rural 8	25	62
Rural 9	42	103
Rural 10	17	42

Indirect Effects

The reconstruction project for US 93 from Evaro to Polson, which excludes the US 93 Ninepipe/Ronan project area, and is located to the north and south of the US 93 Ninepipe/Ronan project area, is in the final design and right-of-way acquisition stage. Relocation impacts and associated mitigation for the US 93 Evaro to Polson project are therefore much more imminent than those associated with the US 93 Ninepipe/Ronan improvement project, and are spread out over a much wider area. Neither the US 93 Evaro to Polson project nor the US 93 Ninepipe/Ronan improvement project nor any other planned projects would affect the availability of replacement housing.

5.18.2 Urban Portion

Direct Effects

No-Action Alternative

Under the No-Action Alternative there would be no need for any right-of-way acquisition. Consequently, there would be no structural or real property disruption or displacement impact on residences or businesses. Some exceptions could occur in the event the City of Ronan or Lake County should decide to implement turning lanes, traffic signals, or other upgrades at major intersections or other upgrades on First Avenue SW or First Avenue SE for local usage and improved circulation. Over the long term, the ADT (average daily traffic volume) projected along US 93 could make it more difficult for motorists to access adjacent businesses.

Motorists may choose to patronize competitors who provide the same products and services at more readily accessible locations. Any shift in customer base would be detrimental to those businesses.

Action Alternatives

All action alternatives would have minimal impact on housing or the employment base throughout either the project impact or study areas. The Ronan 1 and 2 alternatives would displace the largest number of employers and employees, whether on a temporary basis (during the construction phase) or permanently. Many of the potentially displaced businesses in Ronan would remain in Ronan. Table 5.18-3 provides a summary of displacements in the urban portion of the project corridor.

All action alternatives would increase vehicle capacity, reduce congestion, and improve motorist, pedestrian, and cyclist safety. The unavoidable need for additional right-of-way under any one of the proposed action alternatives would not substantially reduce or negatively impact the current availability of essential social facilities, as well as public or private products and services, which are currently available to area residents. Table 5.18-4 provides a summary of right-of-way acquisition required in the urban portion of the project corridor.

Table 5.18-3. Summary of displacements in the urban portion of the US 93 Ninepipe/Ronan project corridor.

Alternative	Residential	Business		Tribal	
	Displacements	Displacements	Employees	Displacements	Employees
(No-Action)	0	0	0	0	0
Ronan 1	0	5	23	0	0
Ronan 2	0	4	23	0	0
Ronan 3	0	2	16	1	10
Ronan 4 (PA)	7-9	2	16	1	10
Ronan 5	0	1	3	0	0

Table 5.18-4. Summary of the estimated right-of-way required in the urban portion of the US 93 Ninepipe/Ronan project corridor.

Alternative	Approximate Right-of-way Acquisition Required	
	Hectares	Acres
(No-Action)	No additional right-of-way required.	
Ronan 1	3.2	7.8
Ronan 2	2.8	6.8
Ronan 3	4.5	11.1
Ronan 4 (PA)	4.9	12.0
Ronan 5	1.1	2.7

The action alternatives would not divide neighborhoods in Ronan or along the unincorporated area of the project corridor. Residents would not be separated from governmental, social, and other public or private facilities or community services. The proposed project would make these public facilities more accessible to those residing within the project study area, as well as those commuting from greater distances. Relocation assistance will be provided for the Tribal facilities that are affected by the proposed project.

None of the action alternatives would result in relocation that would violate Executive Order 12898 regarding Environmental Justice. A detailed discussion of Environmental Justice is included in Section 4.4 and Section 5.4.

Indirect Effects

There would be no indirect effects under any of the urban action alternatives.

5.18.3 Impacts of the Total Project

The proposed improvement project could displace as few as one residence and three businesses (with 11 employees) and acquire as little as approximately 15 hectares (37.7 acres) of right-of-way. The Alternatives Rural 3 (PA) and Ronan 4 (PA) would displace approximately 10 residences and four businesses (with 24 employees), plus one Tribal facility (with 10 employees) and acquire approximately 23 hectares (57 acres). No multi-unit housing would be displaced under any of the proposed alternatives. Under a worst-case scenario, 11 single-family residences, 6 businesses with 29 employees, and one Tribal facility would be displaced with Alternatives Rural 9 and Ronan 4; or 2 single-family residences and 9 businesses with 36 employees would be displaced with Alternatives Rural 9 and Ronan 1. Worst-case property acquisition would be approximately 47 hectares (115 acres) of right-of-way with alternatives Rural 9 and Ronan 4. Business displacements would include owners, managers, and permanent, part-time and seasonal workers. The number of displaced employees would vary depending on the month in which a specific business acquisition occurs. If the proposed project were constructed in stages, right-of-way acquisition would occur over a longer time period.

5.18.4 Mitigation Measures

Avoidance and Minimization Measures Included in Design

Efforts have been made to reduce displacements and property impacts throughout the preliminary design of the proposed project. During final design, further opportunities to avoid displacement of structures and reduce relocation impacts would be investigated. At Ninepipes Lodge, retaining walls would be used to avoid the need to displace this business.

Additional Mitigation Measures Required

Residential and commercial displacements would occur under all of the action alternatives, and a Tribal facility would be displaced under two of the alternatives in Ronan. The Montana Department of Transportation would purchase properties or acquire an easement and provide relocation assistance, as prescribed by the Uniform Relocation Act of 1970 and Sections 70-31-101 and 70-31-311 of the Montana Code Annotated (MCA). MDT would coordinate with the CSKT prior to construction to relocate the Tribal Health facility to minimize disruption to the providing of health services.

State and federal laws and regulations to protect both landowners and the taxpaying public govern the acquisition of land or improvements for highway construction. Landowners affected are entitled to receive fair market value for any land or buildings acquired and any damages as defined by law to remaining land due to the effects of highway construction. This action would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646 as amended), 42 U.S.C. Section 4651 and 4652, et. seq., and the Uniform Relocations Act Amendments of 1987 (P.L. 100-17).

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5.19 Geology and Soils

In addition to the physical impacts on geology and soils which cause erosion and seismic susceptibility, impacts on geological systems can affect the ethnographic cultural landscape and traditional cultural resources. Impacts of this nature are difficult to characterize but are important because the project area is of considerable interest to the Tribal government and the Tribal cultural communities, due to the unique geological features and the abundance of plants and animals.

5.19.1 Rural Portion

Direct Effects

No-Action Alternative

Under the No-Action Alternative, the existing road structure would continue to be susceptible to a level of seismic activity commensurate with the existing structural design.

Action Alternatives

Excavation and fill would be required for each action alternative. While some of the excavation material would be usable onsite, additional fill material would need to be imported. Excavation and fill activities would expose soils susceptible to erosion and seismic hazards (i.e., liquefaction). The estimated volumes of excavation and fill required are summarized in Table 5.19-1.

All of the action alternatives would have a generally lower susceptibility to seismic hazards (such as liquefaction) than the No-Action Alternative because roadway improvements would be constructed to seismic standards current at the time of construction. There would be minimal difference in seismic susceptibility among the action alternatives.

Indirect Effects

Evacuation and processing of aggregate, at either existing or new extraction sites, would be necessary to provide base and surfacing materials.

5.19.2 Urban Portion

Direct Effects

No-Action Alternative

Under the No-Action Alternative, the existing road structure would continue to be susceptible to a level of seismic activity commensurate with the existing structural design

Table 5.19-1. Estimated earthwork volumes in cubic meters (cubic yards) by alternative for the rural portion of the US 93 Ninepipe/Ronan project corridor.

	Rural 1	Rural 2	Rural 3 (PA)	Rural 4	Rural 5	Rural 6	Rural 7	Rural 8	Rural 9	Rural 10
Post Creek Segment (RP 37.1 to RP 40)										
Excavation	79,000 (103,000)	90,000 (118,000)	90,000 (118,000)	93,000 (122,000)	94,000 (123,000)	116,000 (152,000)	111,000 (145,000)	91,000 (119,000)	104,000 (136,000)	94,000 (123,000)
Fill	116,000 (152,000)	121,000 (158,000)	121,000 (158,000)	126,000 (165,000)	117,000 (153,000)	185,000 (242,000)	154,000 (201,000)	145,000 (190,000)	225,000 (294,000)	108,000 (141,000)
Total	195,000 (255,000)	211,000 (276,000)	211,000 (276,000)	219,000 (287,000)	211,000 (276,000)	301,000 (394,000)	265,000 (346,000)	236,000 (309,000)	329,000 (430,000)	202,000 (264,000)
Ninepipe Segment (RP 40 to RP 46)										
Excavation	142,000 (186,000)	142,000 (186,000)	183,000 (239,000)	217,000 (284,000)	168,000 (220,000)	161,000 (211,000)	100,000 (131,000)	174,000 (228,000)	195,000 (255,000)	156,000 (204,000)
Fill	83,000 (109,000)	83,000 (109,000)	122,000 (160,000)	133,000 (174,000)	111,000 (145,000)	107,000 (140,000)	137,000 (179,000)	124,000 (162,000)	265,000 (347,000)	104,000 (136,000)
Total	225,000 (295,000)	225,000 (295,000)	305,000 (399,000)	350,000 (458,000)	279,000 (365,000)	268,000 (351,000)	237,000 (310,000)	398,000 (390,000)	460,000 (602,000)	260,000 (340,000)
Total for the Rural Portion (RP 37.1 to 46)										
Excavation	221,000 (289,000)	232,000 (304,000)	273,000 (357,000)	310,000 (406,000)	262,000 (343,000)	277,000 (363,000)	211,000 (276,000)	265,000 (347,000)	299,000 (391,000)	250,000 (327,000)
Fill	199,000 (261,000)	204,000 (267,000)	243,000 (318,000)	259,000 (339,000)	228,000 (298,000)	292,000 (382,000)	291,000 (380,000)	269,000 (352,000)	490,000 (641,000)	212,000 (277,000)
Total Earthwork	420,000 (550,000)	436,000 (571,000)	516,000 (675,000)	569,000 (745,000)	490,000 (641,000)	569,000 (745,000)	502,000 (656,000)	534,000 (699,000)	789,000 (1,032,000)	462,000 (604,000)

Action Alternatives

Cut and fill would be required for each action alternative. While some of the excavation material would be usable on-site, additional fill material would need to be imported. Excavation and fill activities would expose soils susceptible to erosion and seismic hazards (i.e., liquefaction). The estimated volumes required are listed in Table 5.19-2.

Table 5.19-2. Estimated earthwork volumes in cubic meters (cubic yards) by alternative for the urban portion of the US 93 Ninepipe/Ronan project corridor.

Alternative	Excavation	Fill	Total
Ronan 1	99,000 (129,000)	29,000 (38,000)	128,000 (167,000)
Ronan 2	97,000 (127,000)	22,000 (29,000)	119,000 (156,000)
Ronan 3	99,000 (129,000)	22,000 (29,000)	121,000 (158,000)
Ronan 4 (PA)	100,000 (131,000)	21,000 (27,000)	121,000 (158,000)
Ronan 5	80,000 (105,000)	15,000 (20,000)	95,000 (125,000)

Indirect Effects

Evacuation and processing of aggregate, at either existing or new extraction sites, would be necessary to provide base and surfacing materials.

5.19.3 Impacts of the Total Project

Estimated earthwork volumes for the entire corridor range from 515,000 cubic meters (675,000 cubic yards) (Rural 1 and Ronan 5) to 917,000 cubic meters (1,199,000 cubic yards) (Rural 9 and Ronan 1).

5.19.4 Mitigation Measures

Avoidance and Minimization Measures Included in Design

A variety of measures to avoid or minimize potential impacts related to soils and geology would be implemented as the proposed project proceeds through full design and eventual construction. These measures include:

- All excavation and grading for roadways and slope stabilization would be designed and executed in accordance with geotechnical standards of practice.

- Appropriate seismic criteria would be used in final design of the wildlife crossing structures.

Additional Mitigation Measures Required

Standard erosion control measures would be implemented during the earthwork stages of the project. These measures could include the use of water trucks to reduce dust, as well as the use of vegetative cover, temporary plastic sheeting, silt fences, siltation ponds, and other BMPs to temporarily control surface water drainage and reduce erosion of exposed soils. *Section 5.9 Water Quality* details the provisions that should be included in this plan to prevent soil erosion and minimize adverse impacts on water bodies.

Appropriate seismic parameters would be used in final design of the roadway and for slope stabilization.

5.20 Cumulative Impacts

A cumulative effect is "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7)." Additional guidance provided by FHWA (2003) was also considered in the analysis of cumulative effects for the proposed project.

Actions that have resulted in cumulative effects upon specific resources in the vicinity of US 93 are addressed in this section.

5.20.1 Past, Present, and Future Actions

Past Actions

Past actions considered in the cumulative impact analysis for the proposed project that have contributed, in general, to the present environmental conditions in the project area include road development, ranching and livestock grazing, irrigation withdrawals, residential, commercial, and light industrial development, establishment of the Ninepipe National Wildlife Refuge, and noxious and invasive species colonization.

The placement of the US 93 highway in its current location altered hydrology, plant communities, and soil permeability within the area. Construction of the existing alignment of US 93 is estimated to have resulted in the loss of 8.7 hectares (21.5 acres) of wetland and construction of county roads in the Ninepipe Area is estimated to have resulted in the loss of an additional 11.9 hectares (29.4 acres) of wetland (CSKT 1999). Roadway construction also drained some wetlands and severed or altered connections between many wetlands. Soil characteristics and vegetation communities likely changed in former wetland areas because of a lack of wetland hydrology. Because of the highway, wetlands have developed in areas that were formerly uplands, such as drainage ditches in the highway right-of-way. Roadway runoff accumulates in the ditches where it ponds and creates artificial wetland areas (CSKT 1999).

Agricultural use of lands altered wetland areas by plowing shallow depression wetlands when water levels were low. Range and pasture use of lands has altered the plant community and wetland structure in some places. Species diversity is generally lower in these areas and noxious and invasive species are common (CSKT 1999). Agricultural use of lands has also resulted in the loss of native grassland habitats in the project area.

Irrigation projects that have affected the current condition of wetlands in the US 93 Ninepipe/Ronan project area include diversions of natural stream and spring flows into irrigation canals and development of reservoirs. Irrigation canals that intercept natural stream channels and springs have drained or dewatered some ephemeral and intermittent streams and some larger streams throughout the project vicinity. As part of the irrigation infrastructure, reservoirs were created, including the Ninepipe and Kicking Horse reservoirs. These reservoirs have altered the hydrologic regime of many wetlands in the area, causing water to saturate or flood wetlands for a longer duration than the historical flood regime, which has resulted in a shift of some wetlands to mudflat aquatic bed habitats (CSKT 1999). In addition, many pothole wetlands have been incorporated into the irrigation system or are directly influenced by irrigation canals through subsurface connections (Price 2003b personal communication). In both situations, the hydrologic regime of affected pothole wetlands is altered. Irrigation canals and ditches are also conduits for the dispersal of invasive plant species, including purple loosestrife and yellow iris (Price 2003b personal communication).

Due to the presence of the Ninepipe National Wildlife Refuge, the immediate vicinity of the project area is a highly productive wildlife area for numerous species of birds. Not only does this area support numerous breeding and migratory birds, these lands are also used by threatened bald eagles and grizzly bears.

Many of the wetlands, uplands, and riparian areas exist in a degraded condition where invasive species dominate large portions of the herbaceous plant community. Noxious and other invasive plant species are common within the highway right-of-way and border wetland boundaries in some areas (CSKT 1999).

Past road development has not, for the most part, resulted in substantial adverse effects on the visual quality of the project area. Past actions that influence transportation patterns in the corridor, including use by bicyclists and pedestrians in the project area, include road development with few vehicle pullouts and no bicycle or pedestrian lanes. Past roadway and land development have likely contributed to losses of physical evidence of cultural sites in the project area.

Present Actions

Present actions that are influencing environmental conditions in the project area include road improvements and widening projects, residential and business development, preservation of lands adjacent to the Ninepipe National Wildlife Refuge, and aggressive restoration projects implemented by CSKT throughout the Flathead Indian Reservation.

Development pressures since 1990 have been greater in rural areas along the US 93 corridor than within cities and towns. Residential and commercial development has been most intense east of US 93 toward the Mission Mountains (CSKT 1996). Population growth in the project area from 1990 to 2000 increased 26 percent (U.S. Census Bureau 2002, 1990). This rate of population growth was well above the statewide average of 12.9 percent for the same timeframe, and Lake County ranked among the fastest growing counties in the state.

Ongoing road improvement and widening projects have led to numerous temporary impacts on wildlife, fish, and biological resources in the project area including displacement of fish and wildlife species, temporary increases in deposition of eroded sediments in streams and wetlands, and loss of habitat.

Establishment of the Ninepipe National Wildlife Refuge and subsequent preservation of adjacent lands by federal, state, and Tribal governments and private organizations has led to the presence of a highly productive wildlife area at the center of the project corridor. Not only does this area support numerous wildlife species, land preservation in the vicinity has established habitat connectivity with adjacent valuable wildlife lands including the Mission Mountains, the National Bison Range, and the Flathead River corridor.

The CSKT Kerr Dam Fish and Wildlife Mitigation settlement with PPL Montana is a mitigation plan and monetary settlement aimed at mitigating the impacts of Kerr Dam during the period from 1985 through 2035. PPL Montana is a subsidiary of PPL Corporation, which operates two coal-fired power plants and 11 hydroelectric facilities in Montana. The settlement includes acquisition of approximately 1,375 hectares (3,400 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 and the U.S. Fish and Wildlife Service. The wildlife habitat and management goals of the three entities are similar, and the addition of these lands to those of the other agencies would be a benefit to wildlife.

In addition, several CSKT projects are currently underway in the Ronan area. The Mollman Pass Trail project would improve air quality and vehicle and passenger safety. The construction project begins to the east of Kicking Horse Job Corps at Hillside Road and extends approximately 2.4 kilometers (1.5 miles) to the east. The proposed project is expected to be completed in 2006. The Timber Lane Pedestrian Pathway is a 8.0-kilometer (5.0-mile) pathway beginning at the junction of US 93 and Timber Lane Road, which is immediately south of the City of Ronan. The pathway extends north and provides an alternate route for pedestrian use. The proposed project is also expected to be completed in 2006.

Future Actions

Several future actions have been considered in this cumulative effects analysis. Reconstruction of US 93 from Evaro to Polson began in 2004 with the replacement of the Jocko River bridge. Reconstruction of US 93 near the junction with MT 35 extending south to a point north of Ronan is also underway. In addition to reconstruction of the roadway, mitigation would be implemented at several sites to compensate for unavoidable impacts on wetlands. The nearest sites to the proposed project include Mud Creek, a tributary to Crow Creek; Mission Creek, which is fed by Post Creek; and an unnamed tributary to Post Creek. MDT is proposing the improvement of MT 354, which roughly parallels US 93 between MT 211 and Polson. Construction for the proposed project is expected to begin by 2008. This proposed project would largely affect Ronan, Pablo, and Polson. Surface and safety improvements to state and county roads in the project vicinity would be undertaken as conditions warrant. Reconstruction throughout the corridor is likely to extend into 2008. A new motel and restaurant are planned in Ronan by private developers.

Closure and removal of a 3.2-kilometer (2.0-mile) segment of Duck Road between the easterly intersection with US 93 and the westerly intersection with Piedalue Road is in the early planning stages. The proposed project would be a cooperative effort by Lake County, CSKT, USFWS, and MFWP, with Lake County releasing the road right-of-way and the land reverting to public ownership. Abandonment and removal of the road may serve as suitable mitigation for the expected impacts of the US 93 Ninepipe/Ronan project. The proponents of the proposed project have suggested it may provide suitable mitigation for impacts resulting from the US 93 Ninepipe/Ronan project (Appendix I).

Street improvements are also proposed by CSKT in downtown Ronan, including one block of Second Avenue S.E. and two blocks of Main Street. These improvements are expected to be implemented by 2010.

Since the 1990s, rural areas in the US 93 corridor have faced increasing pressure for residential development and this trend is expected to continue. Possible subdivisions on Terrace Lake Road and Round Butte Road are in the early stages of discussion. In response to the increased development pressure in the area, the City of Ronan has begun developing a long range land use plan and Lake County and CSKT are working on a cooperative land use plan. Lastly, the Flathead Agency Irrigation District, which operates numerous reservoirs, stream diversions, and irrigation canals throughout the Flathead Indian Reservation, has begun the analysis of the impacts of their operations on listed species. This analysis is expected to result in some changes in their maintenance procedures and improved coordination with CSKT.

5.20.2 Analysis of Cumulative Effects

The potential cumulative effects resulting from the incremental effects of the proposed action alternatives when added to other past, present, and future actions are described in this section. The proposed action alternatives are not expected to contribute to cumulative effects on the following resources for the reasons stated:

- Social – The other proposed projects in the City of Ronan would be constructed by 2010; and the proposed project would not contribute to substantial effects on the social environment; therefore no cumulative effects to the social environment are anticipated.

- Economics – No other major projects in the project vicinity are planned at this time; therefore no cumulative effects to economics are anticipated.

- Hazardous Materials – No cumulative impacts on hazardous materials are anticipated under any of the alternatives.

Traffic Operation and Safety

The geographic area considered for analysis of cumulative effects on traffic is the corridor between Ronan and Saint Ignatius, from the Mission Mountains on the east to the Flathead River on the west. Because no long-term adverse impacts to traffic operation and safety are anticipated, there would be no associated adverse cumulative effects. The proposed project would improve operations by providing passing opportunities in the rural portion of the corridor and reducing backups at signalized intersections in Ronan by adding lanes and capacity for turning movements and would reduce accidents by 20 percent in the project corridor, thereby contributing to cumulative benefits to traffic operations and safety in a broader area. During construction, travel times are expected to increase on US 93. Other actions may occur concurrent with construction that would also impact traffic flow, such as reconstruction of other portions of the US 93 corridor and the improvement of MT 354 between MT 211 and Polson. In this case, the proposed project would contribute to short-term cumulative effects on traffic flow. Abandonment of Duck Road would eliminate the intersection with US 93 yielding increased safety at this location.

Land Use

The past and current land use trend of conversion of agricultural uses to residential and commercial development could be facilitated somewhat by the improvement of US 93, but the cumulative effect is likely to be small. Planning activities by CKST and Lake County may result in land use policies that direct commercial development toward the same improved intersections that would attract development as a result of the roadway improvements. Together these actions make it more likely than either action alone that commercial development will take place at certain locations.

Prime and Unique Farmlands

The geographic area of effect considered for this analysis is the Mission Valley, which approximates the lowland portions of Lake County. Past development in the county has resulted in both the agricultural use of some designated farmland soils, as well as the loss of some of designated farmland soils through conversion to residential, commercial, and light industrial development. Although no specific calculation of past conversion of farmland soil has been made, less than 10 percent of the county's designated farmland soils of all types have been converted as a result of past non-agricultural development. As non-agricultural development continues in the future in the county, further conversion is likely to occur at a continued gradual pace. The maximum farmland conversion of just over approximately 48.2 hectares (119.5 acres) as a result of the US 93 Ninepipe/Ronan project represents approximately 0.2 percent of the total farmland soil area of 19,000 hectares (47,000 acres) in Lake County.

Pedestrians and Bicyclists

Improved mainline shoulder widths throughout the US 93 Evaro to Polson corridor would greatly enhance pedestrian and bicycle safety and accessibility. Facilities provided by this project would tie into and complement the separated pedestrian/bicycle path north to Polson. Construction impacts would be temporary, and would be phased through the corridor. Because pedestrian and bicycle safety and accessibility are expected to improve, no adverse cumulative effects are expected.

Air

The geographic area considered for cumulative air quality effects is potentially large, due to the fact that air contaminants can be transported large distances through the atmosphere, although the concentrations of air contaminants decrease with distance from the source. Two areas are designated as federal nonattainment areas for PM_{10}: Polson and Ronan; and three areas are designated as state nonattainment areas for PM_{10}: Columbia Falls, Kalispell, and Whitefish. Kalispell has also been identified by the state as an area of concern for carbon monoxide, but has not been legally designated as a nonattainment area for that constituent (MDEQ 2004b).

Recent and current human activities, primarily those that generate traffic and those that involve soil disturbance, have resulted in the current ambient air quality in the project area. This ambient air quality is generally good, although, as described in *Section 4.7 Air Quality*, the City of Ronan and other areas within the Flathead airshed have experienced relatively high levels of PM_{10}. Projects in the general vicinity of US 93 that could contribute to cumulative air quality effects are limited. MDT does anticipate some new construction occurring in the general vicinity during the period that the US 93 Ninepipe/Ronan project would be constructed. These MDT projects could include reconstruction and safety improvements to area roads, improvement of MT 354 between MT 211 and Polson, and the reconstruction of US 93 north of Ronan to MT 35. Lake County and the City of Ronan do not anticipate any major roadway improvements, and there are no firm plans for other development in those jurisdictions, in the project vicinity. As described in *Section 4.2 Social*, Lake County has experienced rapid growth with a 26 percent increase in population between 1990 and 2000. Further from the project corridor, but within the defined geographic area of effect, Flathead County has also experienced rapid development over the past decade (25 percent population growth between 1990 and 2000 with a higher percentage increase in rural parts of the county compared to the three municipalities of Kalispell, Whitefish, and Columbia Falls). Rapid development seems likely to continue in both counties. Continued development, particularly in rural areas of the two counties, is likely to increase sources of PM_{10} and contribute to cumulative effects on air quality.

Noise

The geographic area considered for the analysis of cumulative effects on noise includes the area within approximately 0.4 kilometers (0.25 miles) of US 93. Noise generated from sources more than approximately 122 meters (400 feet) from the project corridor is unlikely to add to the noise impacts from the US 93 Ninepipe/Ronan improvement project; however, a slightly larger geographic area is considered to assure a worst-case analysis.

Existing noise levels in the project vicinity reflect past and current residential and commercial growth in the area. Measured existing noise levels in the project area range from a low of about 53 dBA to a high of about 68 dBA measured as L_{eq} (see Table 4.8-2 and related text in *Section 4.8 Noise*). The levels at the lower end of this range were obtained more than one block from major roadways in the urban portion of the project corridor and probably are indicative of the general level of ambient noise that would have occurred throughout the urban portion of the project corridor before urbanization occurred. The higher existing noise levels were measured adjacent to US 93 in the rural portion of the project area and are an indication that vehicular noise is a primary component of that cumulative noise increase.

Projects that could contribute to cumulative noise impacts include reconstruction of US 93 to the north of Ronan and construction of a planned hotel in Ronan. Although there are no other known future projects that would be close enough to the US 93 project corridor to contribute to cumulative noise impacts, it is likely that other new projects would occur in the area, especially the Ronan area, either during construction or after construction of the US 93 Ninepipe/Ronan improvement project so that noise levels within the project corridor would increase over time. Most of the expected noise increase from these anticipated projects would be due to construction activities and, therefore, would be temporary and localized. Longer term increases in noise due to these new projects are unlikely to result in substantial impacts. Noise in urban areas such as Ronan is predominantly due to vehicular noise. Increases in noise up to 3 dBA (an actual doubling of sound intensity) are generally not noticeable to humans, so that even if other future projects resulted in traffic volumes substantially above the projected volumes used in the noise calculations (presented earlier in this chapter), noise increases would probably not be noticeable.

Water Quality

The geographic area considered for the analysis of cumulative effects on water quality includes the two project watersheds, Mission Creek and Crow Creek. Past actions in the watersheds include agricultural and residential development, leading to degraded water quality due to increased pollutant loads in runoff. The proposed project is expected to contribute to decreases in water quality during construction. Other construction projects within the watersheds that may coincide with the schedule of the proposed project would contribute to cumulative short-term decreases in water quality.

Based on pollutant loading estimates developed for this analysis, the action alternatives would generally improve water quality conditions in highway runoff discharged to receiving waters, with the exception of copper levels estimated for some of the rural alternatives. Because long-term detrimental water quality impacts are not generally expected from the proposed project, no associated cumulative effects are anticipated.

Wetlands

The geographic area considered for the analysis of cumulative effects on wetlands includes all watersheds in the project area, which support wetlands in the project corridor. This includes the Mission Creek watershed and the Crow Creek watershed.

Most past actions have contributed to some degree of loss of wetland area and decreases in wetland functions. Some of these past losses have been offset by the preservation of the Ninepipe National Wildlife Refuge and the subsequent protection of adjacent lands. There is no known quantitative study of historic wetland losses in the project area or the Flathead Indian Reservation as a whole; however, since the time of western development it has been estimated that approximately 27 percent of Montana's wetlands have been lost to filling or drainage, largely as a result of agricultural conversion and infrastructure development (Dahl 1990). Estimates in the Prairie pothole region of North American are even greater with an estimated 65 percent of the original wetland area in the region being drained (Tiner 1984, Dahl 1990). Given the figure of 22,000 acres of wetlands currently existing on the 1,316,871-acre Flathead Indian Reservation (CSKT 1996a), these estimates of historic wetland losses of between about one-quarter to two-thirds of original acreage suggest that approximately 1,000 to as much as 4,000 acres of wetlands may have been lost in the past within the combined Crow Creek and Mission Creek watersheds.

The range of wetland impacts for the rural action alternatives is from approximately 4.7 to 12.1 hectares (11.7 to 29.8 acres) of permanent wetland impacts and 6.2 to 8.7 hectares (15.4 to 21.4 acres) of temporary impacts, and the range of wetland impacts for the urban action alternatives is from 0 to approximately 0.008 hectares (0 to 0.02 acres) of permanent wetland impacts and 0 to 0.008 hectares (0 to 0.02 acres) of temporary impacts. Present and future road and bicycle/pedestrian trail projects in the project area would also likely result in incremental losses in wetland habitat in the project area, with the exception of abandonment of Duck Road, which could yield a net increase in wetlands if the area is used for compensatory wetland mitigation. The US 93 Ninepipe/Ronan project would minimize and avoid impacts on wetlands to the extent feasible and would restore hydrologic connectivity in numerous wetland systems. However, the proposed project would also result in the cumulative loss of wetland habitat within the project corridor. Adverse impacts on wetlands would be mitigated through wetland compensation to restore or create additional wetland acreage.

Private present and future subdivisions and development activities would also likely result in incremental losses in wetland habitat in the project area.

The proposed project would contribute to cumulative effects on wetlands; however, adverse impacts on wetlands would be mitigated through wetland compensation to restore or create additional wetland acreage.

Floodplains and Streams

The geographic area considered for analysis of cumulative effects on floodplains and streams are the two watersheds in the project area, Mission Creek and Crow Creek. Past actions, including historic rural and urban development, has led to development and filling of floodplains in these watersheds. Construction of roads has led to floodplain conveyance barriers. The proposed project would improve the connection of streams with their associated floodplains at the US 93 crossings. For this reason, no detrimental cumulative effects on floodplains and streams are anticipated.

Wildlife and Vegetation

The geographic area considered for the analysis of cumulative effects on vegetation and wildlife habitat includes the area within the home range for species likely to occur in the project corridor. This area varies for all species and may include the area within a 0.8-kilometer (0.5-mile) radius from the construction limits for the US 93 Ninepipe/Ronan project corridor to an area extending east to the Mission Mountains, west to the Flathead River, north to Flathead Lake, and south to the National Bison Range.

Most past actions, with the exception of the establishment of the Ninepipe National Wildlife Refuge and the subsequent preservation of adjacent lands, have contributed to the loss of wildlife habitat and fragmentation of habitat. Because agricultural activities together with residential and commercial development occur throughout the Mission Valley, past development has modified most of the original wildlife habitat and vegetation in the valley. The proposed action, and other development projects, would contribute incrementally to the cumulative loss of wildlife habitat in the project area. This loss of habitat would be partially offset by the Kerr Dam Fish and Wildlife Mitigation settlement, which would acquire and preserve additional lands in the Ninepipe Area and the proposed abandonment of Duck Road. The proposed action, which would widen the roadway corridor, along with present and future actions such as residential and business development in the corridor, would also increase the barrier effect of the roadway, causing wildlife populations to become increasingly isolated. Implementation of wildlife crossing structures as proposed for the US 93 Ninepipe/Ronan project and US 93 Evaro to Polson reconstruction project would facilitate wildlife movement in the project corridor and would reduce some of the cumulative effects of these past, present, and future projects.

Fisheries Resources

The geographic area considered for the analysis of cumulative effects on streams includes all watersheds in the project area, which support wetlands in the project corridor. This includes the Mission Creek watershed and the Crow Creek watershed.

Past road construction has resulted in poorly placed culverts and undersized culverts in the project corridor. The proposed action along with the US 93 Evaro to Polson project would rectify impacts on streams from past actions by replacing several culverts with bridges or enlarged culverts to improve hydrologic connectivity in the system and by restoring streams in the highway right-of-way.

Present and future construction projects may contribute to cumulative downstream sedimentation in project area streams during construction. With implementation of the improved structures, the cumulative effect of these projects on fisheries resources is expected to be an improvement in the existing condition.

Threatened and Endangered Species

The analysis of cumulative effects on Threatened and Endangered Species is also required under the ESA as provided in *Section 5.13 Threatened and Endangered Species*. Because the list of the various projects' impacts considered in the analysis for ESA requirements is generally the same as those considered for this NEPA analysis, the conclusions in *Section 5.13.6 Cumulative Effects* apply to this section and are incorporated by reference herein and will not be repeated in this section.

Cultural and Historic

Archaeological evidence and oral tradition suggest that the Tribal groups culturally affiliated with the landscape within the project area have inhabited the region for 12,000 years. Three main Tribal groups reside on the Flathead Indian Reservation: the Bitterroot Salish, the Kootenai, and the Upper Pend d'Oreille. These groups' continuous interaction with the land has resulted in specific cultural values, traditions, practices, and resources that persist today. Traditional cultural resources comprise an ethnographic landscape, a cultural landscape that mirrors the systems of meanings, ideologies, beliefs, values, and worldviews shared by a group of people who have inhabited a particular place over a long period of time. Changes in land use from Native American subsistence-based practices to Euro-American agrarian practices dramatically altered the western Montana landscape in the last century. The introduction of new political, social, religious, and economic institutions imposed new forms on the land, including farm complexes, fields, pastures, irrigation canals, reservoirs, roads, and small towns. These recent land practices have drastically impacted the natural systems that formed the resource base upon which traditional cultural practices are based, and have altered or destroyed some physical cultural resources.

Past development in the project corridor and the surrounding Mission Valley has resulted in an erosion of the Native American cultural environment of the Salish and Kootenai people. The US 93 project together with other future land use development, in contributing to the continuing urbanization of the valley, would result in cumulative effects on the CSKT's cultural environment.

Several alternatives under the proposed action would require acquisition of a small portion (approximately 0.008 hectares [0.02 acres]) of the historic stagecoach route and all action alternatives would require realignment of culverts and canals in the historic Flathead Irrigation

Project. The US 93 project together with other present and future land use development would likely result in effects on historic resources and result in continuing the gradual erosion of cultural and historic environment in the project corridor.

Parks and Recreation

Although most recreation use of facilities in the US 93 corridor is probably by residents of the lower Mission Valley, the Ninepipe National Wildlife Refuge and Ninepipe Wildlife Management Area is probably used comparatively more heavily by residents from a wider geographic area. Although use data necessary to determine the geographic origin of facility users is unavailable, a reasonable geographic area used for the assessment of cumulative effects related to parks and recreation includes the Mission Valley and areas south to Missoula.

Overall, past effects on recreation resources in the US 93 corridor have been positive with the development over the years of recreational opportunities associated with the Ninepipe National Wildlife Refuge, Ninepipe Wildlife Management Area, and other wildlife areas in the corridor, as well as recreational opportunities associated with parks and similar facilities in Ronan. Additional recreational opportunities have been developed north and south of the US 93 corridor adding to the cumulative recreational opportunities available in the region. Past actions such as land development and agriculture have had little adverse effect on recreation.

Overall, the US 93 Ninepipe/Ronan improvement project would have limited effect on parks and recreation. Continuing urbanization in the Mission Valley area is unlikely to result in substantial direct effects on parks and recreation opportunities, although continuing increases in the region's population is likely to create additional demand on existing facilities and may over time modify the character of the recreational experience at these facilities. The abandonment of Duck Road would benefit parks and recreational opportunities by converting road right-of-way to public lands.

Hazardous Materials

Potential impacts could result from the use of hazardous materials (lubricants, fuels, solvents, etc.) during project construction, and/or from encountering sites with existing soil or ground water contamination. These potential impacts could be both beneficial and adverse and could include: contamination that otherwise would remain in place and potentially migrate, may be discovered and addressed by the proposed project; contamination may be cleaned up faster to accommodate project construction; contamination may be prevented by removing potential existing sources before they release; contaminated materials may be uncovered, allowing more direct exposure to the public; and contamination may be spread as a result of construction.

The proposed action would result in partial acquisition of 12 to 33 contaminated sites. Present and future road building and development activities would likely also result in the acquisition of hazardous material sites; however, impacts to the environment at individual hazardous materials sites cannot be determined without detailed evaluations of site-specific conditions.

Visual

The geographic area of cumulative effects on the visual environment includes the areas visible from the roadway. This generally includes the Mission Valley and the surrounding mountains.

Past agriculture and other land use development, including the construction of the existing US 93, has introduced human-made visual elements into what was formally a visual landscape mostly comprised of natural visual elements. This has resulted in strong visual contrasts and a gradually increasing prominence of the regular geometric lines and forms that characterize human structures and land modification.

The proposed project would result in the highway being more visually evident than the existing highway, with the alternative incorporating the elevated parkway and the alternatives resulting in the widest roadway having the greatest visual effects. Present and future road and bicycle/pedestrian trail projects in the project area would also likely result in additional visual impacts in the project area, with the exception of abandonment of Duck Road, which would result in an improvement to visual environment. The increasing prominence of human-made visual elements is likely to continue as further development occurs in the Mission Valley and would cumulatively add to the visual effects of the US 93 Ninepipe/Ronan project.

Relocations

The proposed action would result in displacement of a maximum of 11 residences and 9 businesses, and two alternatives would displace the Tribal Health facility. Discussions with local realtors confirm that there would be suitable locations and an ample number of listings to satisfactorily relocate displaced renters, homeowners, and businesses whether tenant or owner occupied. Relocation would be feasible in Ronan or within a reasonably close proximity.

Relocations as a result of present and future road and trail projects would be in addition to those predicted for the proposed action. Potential subdivisions may result in the relocation of a small number of residences or businesses, but would provide more housing opportunities within the project area.

Predictions as to what effect the present and future activities would have on property values are difficult to quantify and tend to be unreliable since there are many other market forces involved in establishing property values. In general, it can be assumed that regional highway, city street, and other transportation-related improvements would likely have a positive effect on property values. As traffic increases along US 93 through Ronan, commercial property values are likely to increase as the potential return for commercial investment increases.

Present and future transportation projects and developments in and near the project corridor are expected to cumulatively result in a minor number of relocations.

Geology and Soils

The geographic area considered for the analysis of cumulative effects on geology and soils includes a 0.8-kilometer (0.5-mile) radius extending from the limits of construction in the US 93 corridor, including staging and storage areas, and the same radius extending from material source sites and access roads to those sites. The primary past effects on geology and soils in the project area include development of the existing roadway alignment, and the comparatively limited residential and commercial development that has occurred in the project area. Land uses, such as growing crops and grazing cattle, have also contributed to some erosion of soils in the project area. Future development and construction in and near the project corridor is expected to cumulatively result in minor impacts on geology and soils.

Construction of action alternatives, exposure of cut slopes, and development of material source sites would contribute to incremental cumulative effects on geology and soils, such as erosion and topographical modifications. The proposed project would contribute minor cumulative effects on geology and soils because excavation and grading along the roadway would be designed and executed in accordance with geotechnical standards of practice.

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5.21 Other Considerations

5.21.1 Joint Development

Joint developments are generally defined as a voluntary joining of governmental entities with private organizations to undertake beneficial development in connection with a public infrastructure. There are no joint development activities currently planned in conjunction with the proposed project.

5.21.2 Energy Impacts

Energy impacts relate to the energy consumed by vehicles and equipment used in the construction of the facility and the long-term usage of the facility. The action alternatives would consume more energy over the short term due to the construction of the road and workers traveling to and from the work site. The wider corridor widths would use somewhat more energy because the wider footprint is expected to require slightly longer to construct. If constructed, the operational energy consumed by the action alternatives would be less than that of the No-Action Alternative resulting from the improved level of service enabling traffic to move more efficiently through the corridor. The rural action alternatives, including Alternative Rural 3 (PA), would reduce congestion or slowing of traffic through the inclusion of passing lanes (excluding Alternative Rural 1), channelization and left turn lanes, and wider shoulders. Alternatives Rural 8 and Rural 9 would reduce congestion and slowing of traffic more than the other action alternatives (LOS B to B- for Rural 8 and Rural 9 versus LOS ranging from C- to D- for the other action alternatives) because each provides 4 lanes; however, none of these alternatives were selected because they have greater impacts in other respects. Within the urban portion, all alternatives would include reconstruction of the existing roadway and construction of turn lanes, new signals, and sidewalks on both sides of the roadway. Operation of Alternatives Ronan 1 through Ronan 4 (PA) would reduce congestion and slowing of traffic more than Alternative Ronan 5.

No major changes in long-term usage of the facility are expected as a result of the proposed action. The road is being designed to accommodate the predicted growth of traffic. The proposed action has little, if any, potential for resulting in cumulative energy impacts. Measures to conserve energy that will be implemented as part of the preferred alternatives include the resulting improvements to traffic flow and the provision for a separated pedestrian/bicycle path throughout the length of the project.

5.21.3 Regulatory Impacts on Private Property Rights

The MCA Title 2, Chapter 10, Part 1 (Private Property Assessment Act), requires an analysis of any regulatory impacts on private property rights, including whether alternatives reduce, minimize, or eliminate the regulation of private property rights.

The proposed project would require the acquisition or easement of private property and would result in a permanent physical occupation. The current alignment and road lane widths of US 93 between Dublin Gulch Road/Red Horn Road and the north end of Ronan do not provide adequate public safety and do not meet current standards. Any access control that would be implemented in conjunction with the proposed project is a regulatory impact on access, i.e., where property owners enter and exit their property. Property owners would receive compensation for acquisition of property.

5.21.4 Short-Term Adverse Effects Versus Long-Term Benefits

An evaluation of the relationship between the local short-term uses of the human environment and the maintenance and enhancement of long-term productivity discloses the trade-off between short-term adverse impacts and long-term benefits of the proposed project. Short-term impacts, disruptions, and uses of the local environment may be worthwhile if there are long-term benefits to the environment resulting from the action.

Short-term uses of and impacts on the local environment are associated with the construction of the proposed project and are listed below. Discussions of these impacts are documented in *Part 5, Environmental Consequences*. Many of these impacts could be minimized with the application of mitigation measures, as recommended in *Part 1.9 Summary of Mitigation Measures*.

- Noise and emissions from construction equipment
- Energy and fuel consumption associated with construction equipment
- Temporary stream turbidity
- Increased potential for erosion
- Traffic disruption
- Ground disturbance
- Visual degradation
- Risk of hazardous material exposure
- Wetland disruption or loss
- Aquatic resource disruption
- Displacement of wildlife
- Wildlife habitat alteration.

The long-term benefits to be gained through the implementation of the proposed improvements include:

- Safer and more efficient motorized transportation movement within the corridor resulting in lives saved
- Accommodation of projected transportation growth
- Accommodation for bicyclists and pedestrians
- Improved wildlife movement through the roadway corridor at wildlife crossing structures
- Improved fish passage and water movement at road crossings
- Improved drainage system within Ronan with the installation of curbs and gutters.

5.21.5 Context-Sensitive Design

The principle of context-sensitive design incorporates concepts of quality and excellence in transportation design. These concepts are:

- The project satisfies the purpose and need as agreed to by a full range of stakeholders
- The project is in harmony with the community and preserves environmental, safety, scenic, aesthetic, historic, cultural, and natural resource values of the area
- The proposed project involves efficient and effective use of the resources of all parties involved
- The proposed project is designed and built with minimal disruption to the community
- The proposed project is seen as having added lasting value to the community.

The process contributing to the application of these concepts includes open, honest, and early communication with all stakeholders, and early establishment of a multidisciplinary team. Communication and sensitivity to the landscape, community, and valued resources are at the heart of context-sensitive design.

The US 93 Ninepipe/Ronan improvement project has incorporated the principles of context-sensitive design into planning, public involvement, and design. The project corridor passes through the Flathead Indian Reservation, an area rich in cultural, historical, and natural resources. Tribal representatives were involved in the established committees, providing early and continual input to project development. The project corridor also passes through the

Ninepipe National Wildlife Refuge and numerous lands managed for wildlife and waterfowl production. USFWS and Montana Fish, Wildlife, & Parks representatives have provided early and continual input to project development. The preliminary road designs have been altered to avoid impacts on culturally significant sites and wetlands and to facilitate wildlife crossings. Preliminary project designs were modified at two-lane configurations to avoid losses of refuge and wildlife and waterfowl management lands and were modified at passing lane and four-lane configurations to minimize losses to these resources. The policy and technical committees provided input throughout the process on reducing impacts and enhancing opportunities for multiple resources.

5.21.6 Wild and Scenic Rivers

There are no designated Wild and Scenic Rivers (as designated by P.L. 90-542 as amended and 16 U.S.C. 1271-1287 and administered by the Bureau of Land Management, National Park Service, USFWS, and United States Department of Agriculture Forest Service) within the project area or its vicinity to be affected by any of the alternatives being considered in this SEIS.

5.21.7 Irreversible and Irretrievable Commitment of Resources

Implementation of the action alternatives would involve a commitment of resources constituting an irreversible and irretrievable loss. Implementation of proposed improvements would require additional land for right-of-way. Direct use of this land would remove it from current agricultural, residential, and commercial uses. This is considered to be an irretrievable commitment during the time of use until a future decision was made to convert it to its former use. The right-of-way acquisition requirements for Alternatives Rural 3 (PA) and Ronan 4 (PA) are approximately 23 hectares (57 acres).

Substantial quantities of gravel, steel, concrete, bituminous pavement, and other construction materials would be required to implement the proposed alternative. These materials are generally considered irretrievable; however, they are not in short supply and their use would not have an adverse or cumulative impact on the continued availability of these resources. Some materials, such as gravel, pavement products, and steel may be recycled for future use.

Petroleum products, in the form of fuel and engine oil, would be consumed by equipment needed to construct the proposed project. An improved roadway would enhance transportation efficiency over the long term and would, to some degree, compensate for the irretrievable use of fuel and oil during the construction phase.

Human resources would be used for the design, construction, and maintenance of the proposed project. Economic commitments are also an irretrievable investment. The estimated cost of the Alternatives Rural 3 (PA) and Ronan 4 (PA) is $86,000,000, including the separated bicycle/pedestrian path. Funds have already been committed and spent for planning, preliminary design, environmental studies, and developing the Supplemental EIS.

Some of the rural action alternatives would result in the loss of prime farmland and farmland that is of statewide or local importance. Action alternatives Rural 8 and Rural 9 would result in the loss of some recreation lands associated with the Ninepipe National Wildlife Refuge and wildlife management and waterfowl production areas. In addition, historic and cultural properties would be affected by some of the action alternatives. Loss of these facilities would be mitigated, at least in part, by limiting the roadway profile and footprint, adjusting the horizontal alignment to better fit the landscape, and reducing changes to landscape character. The measures implemented to minimize losses of the facilities identified previously include:

- For the two-lane roadway and two-lane roadway with passing lane, the preliminary design was limited to the area of the existing right-of-way. The final design will further investigate the practicality and feasibility of limiting construction to the existing right-of-way limits.

- The proposed preliminary design for all of the rural alternatives reviewed the possibility for steepened roadway slopes to minimize impacts on key features in the project corridor. Proposed approximate locations are shown in Appendix A. During final design, the areas will be further investigated to determine if the proposed preliminary design is practicable and feasible. If during final design there are areas that slopes can be safely steepened, they would be incorporated into the proposed project's plans. The proposed steepened slopes reduce the size of the roadway footprint and would consequently reduce impacts on prime farmland and farmland of statewide or local importance, wetlands, streams, recreational lands, and historic and cultural properties.

- All of the action alternatives include installation of wildlife crossing structures at major streams, pothole wetlands, and the Ninepipe Reservoir inlet, and construction of smaller box culverts throughout the Ninepipe segment to improve wildlife connectivity of riparian corridors.

The project implementation would result in some loss of fish and wildlife habitat and displacement of fish and wildlife during construction. Stream habitat lost through the realignment of the road would be replaced. Some minor losses of wildlife habitat would occur as a result of the larger footprint of the road on the landscape. This would be an irretrievable loss. Wetland habitats and their associated functions and values lost as a result of the proposed project would be replaced or enhanced.

The commitment of resources is based on the belief that the users of the transportation system (local, regional, state, national, and international) would benefit by the proposed improvements. The primary benefits are increased safety, improved traffic flow, and more cost-efficient road maintenance.

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Part 6 Section 4(f) Evaluation

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6.1 Final Section 4(f) Evaluation

6.1.1 Introduction

The Montana Department of Transportation (MDT), in cooperation with the Confederated Salish and Kootenai Tribes (CSKT) and FHWA, proposes to improve an 18-kilometer (11.2-mile) segment of US 93 in the Mission Valley south of Flathead Lake. The project corridor extends from the US 93 intersection with Dublin Gulch Road/Red Horn Road south of Ninepipe National Wildlife Refuge to the US 93 intersection with Baptiste Road/Spring Creek Road north of the City of Ronan.

Project History

The MDT has proposed to improve U.S. Highway 93 (US 93) for a distance of 90.6 kilometers (56.3 miles), from Evaro at reference post (RP) 6.5 through Polson to RP 62.8 (see Figure 6.1-1). The FHWA and MDT on June 17, 1996 prepared a National Environmental Policy Act (NEPA) *Final Environmental Impact Statement and Section 4(f) Evaluation; FHWA-MT-EIS-95-01-F; F 5-1(9) 6, US Highway 93, Evaro to Polson, Missoula and Lake Counties, Montana* (referred to as US 93 Evaro to Polson FEIS) (FHWA and MDT 1996) to describe the proposed project, alternatives, and the social, economic, and environmental impacts. A Record of Decision (ROD), prepared on August 12, 1996 and modified on February 9, 1998, selected the existing alignment for improvement throughout the length of the proposed project, called for development of a corridor bypassing Ronan (Ronan Alignment 4), and implemented right-of-way acquisition and access control. However, the ROD deferred making a decision on lane configurations, mitigation measures, and a Section 4(f) determination until agreement was reached by the three governments on lane configurations, design features, and mitigation measures. The ROD was modified on February 9, 1998, to allow right-of-way acquisition to proceed on non-Tribal land.

Representatives from the three governments then negotiated and signed the *Memorandum of Agreement-US 93 Evaro to Polson* (referred to as US 93 Corridor MOA) dated December 20, 2000. The US 93 Corridor MOA lays out the preferred conceptual roadway improvements, including lane configurations, design features, and mitigation measures for 49.2 kilometers (30.6 miles) of US 93 from Evaro to the Dublin Gulch Road/Red Horn Road intersection near Saint Ignatius and for 17.4 kilometers (10.6 miles) of US 93 from the Baptiste Road/Spring Creek Road intersection near Ronan to the MT 35 intersection near Polson. The US 93 Corridor MOA does not include the 18-kilometer (11.2-mile) section of US 93 between the Dublin Gulch Road/Red Horn Road intersection and the Baptiste Road/Spring Creek Road intersection, which is called the Ninepipe/Ronan section.

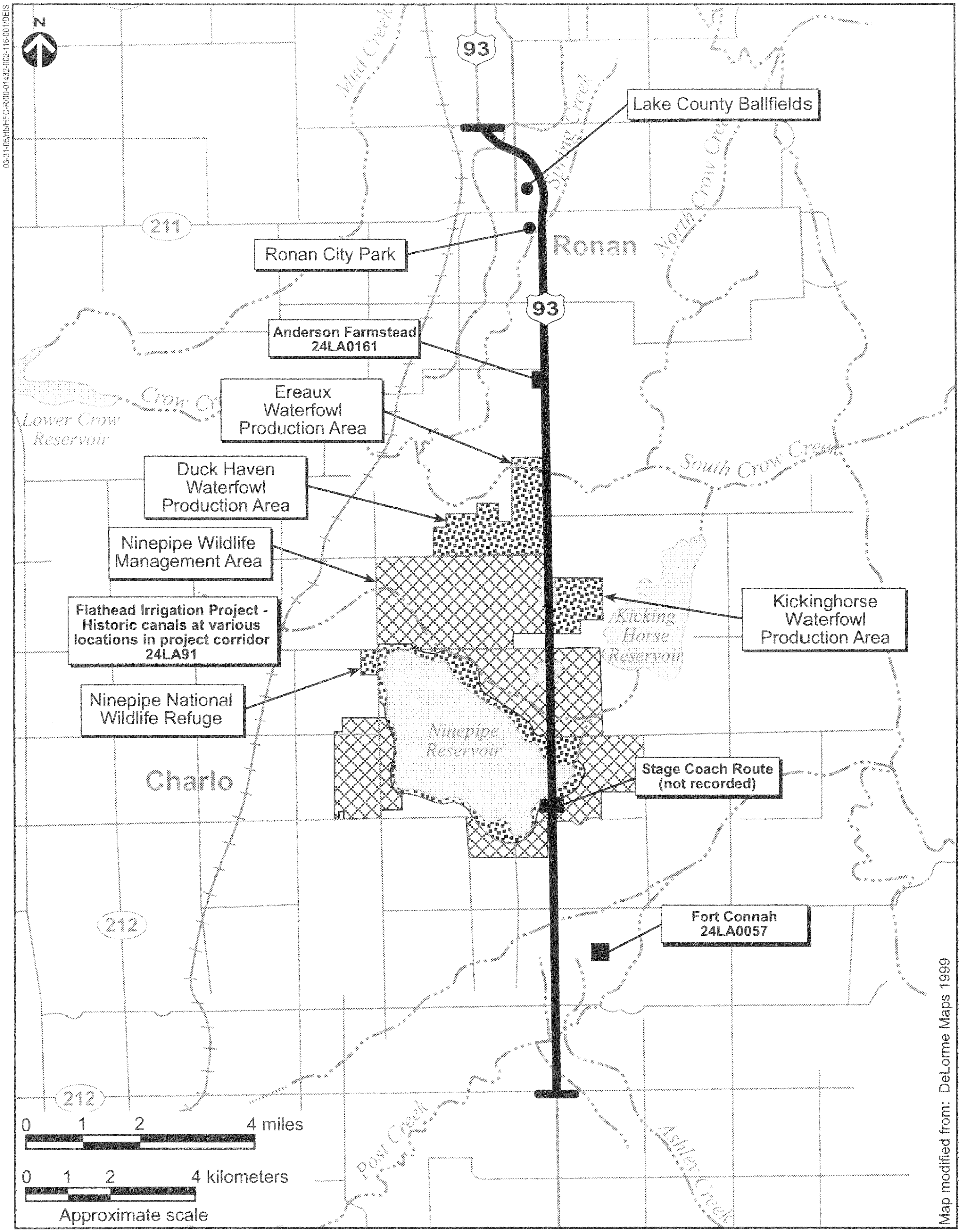

Figure 6.1-1. Section 4(f) resources and other properties evaluated relative to the requirements of Section 4(f).

The US 93 Evaro to Polson FEIS was re-evaluated to compare the impacts of the US 93 Corridor MOA lane configuration, design features, and mitigation measures to what was included in the original US 93 Evaro to Polson FEIS, incorporating changes agreed to by the three governments in the US 93 Corridor MOA. The Re-evaluation was approved on October 22, 2001. The Reevaluation did not include the 18-kilometer (11.2-mile) Ninepipe/Ronan segment, and it was agreed by the three governments to prepare a Supplemental Environmental Impact Statement (SEIS) and Section 4(f) Evaluation.

Section 4(f) Requirements

Requirements to consider the impacts of transportation projects on recreational and historical resources are provided in Section 4(f) of the 1966 U.S. Department of Transportation Act (Title 23 of the Code of Federal Regulations [23 CFR 771.135]). Resources that qualify for protection under Section 4(f) are significant, publicly owned public parks and recreation areas; significant, publicly owned wildlife and waterfowl refuge areas; and historic properties on or eligible for the National Register of Historic Places (NRHP). Section 4(f) requires that no federal approval may be granted for a project using land from a 4(f) resource unless:

- There is no feasible and prudent alternative to the use of such land; and
- The proposed action includes all possible planning to minimize harm to the property resulting from such use.

Publicly owned public parks, recreation areas, and wildlife and waterfowl refuge areas are those that have been "officially designated as such or when federal, state, or local officials having jurisdiction over the land determine that one of its major purposes or functions is for park, recreation, or refuge purposes. Incidental, secondary, occasional, or dispersed recreational activities do not constitute a major purpose" (FHWA 1989a).

Public ownership includes perpetual public easements and may include some lease agreements depending on the terms of the lease. A public easement is considered "publicly owned land for the purpose which the easement exists" (FHWA 1989a).

Use is defined as follows (23 CFR 771.135(p)):

(p) … "use"…occurs:

(i) When land is permanently incorporated into a transportation facility.

(ii) When there is a temporary occupancy of land that is adverse in terms of the statute's preservationist purposes as determined by the criteria in paragraph (p)(7) of this section; or

(iii) When there is a constructive use of land.

> *(2) Constructive use occurs when the transportation project does not incorporate land from a section 4(f) resource, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features or attributes of the resource are substantially diminished.*

Feasible is considered constructible using sound engineering practices.

An alternative is not *prudent* if it involves unique problems or unusual factors, or the cost, environmental impacts, or community disruption reach extraordinary magnitudes.

6.1.2 Alternatives Under Consideration

The proposed project corridor has been segmented into the rural portion and the urban portion, for ease in reporting impacts.

The rural portion of the corridor extends from the Dublin Gulch Road/Red Horn Road intersection, approximate RP 37.1, on the south, northerly to the Ronan south city limits, approximate RP 46. Impacts within the rural section are divided into two additional segments; the Post Creek Hill segment and the Ninepipe segment. The Post Creek Hill segment extends from Dublin Gulch Road/Red Horn Road, RP 37.1, on the south to the top of Post Creek Hill, approximate RP 40, just south of Olson Road/Gunlock Road. The Ninepipe segment then extends from the top of Post Creek Hill, RP 40, northerly to the south city limits of Ronan, RP 46.

The urban portion extends from the south city limits of Ronan, RP 46, northerly through Ronan to the Baptiste Road/Spring Creek Road intersection, approximate RP 48.3, which is the end of the proposed project.

The alternatives evaluated in this section are conceptually similar to the alternatives that were addressed in the US 93 Evaro to Polson FEIS.

In order to meet the purpose and need of the proposed project, the following roadway improvements are proposed.

Description of Alternatives

Additional detail regarding the alternatives under consideration is contained in Part 3.

No-Action Alternative

The No-Action Alternative would maintain the existing highway with no substantial improvements. Any improvements to the existing system would be considered on individual merits and could include spot safety improvements, channelization at intersections, climbing lanes, and signalization as dictated during the coming years. For example, MDT had been planning to construct a northbound climbing lane at Post Creek Hill as a safety improvement project, but has deferred that project until a determination on alternatives is completed for this project. If the No-Action Alternative were selected, it is quite possible that this climbing lane project would be needed as a safety improvement project on its own merit.

Rural Alternatives

The following alternatives are under consideration in the portion of the project corridor extending from the south city limits of Ronan south to Dublin Gulch Road/Red Horn Road at the south end of the project corridor.

<u>Alternative Rural 1</u> is a two-lane undivided highway from Dublin Gulch Road/Red Horn Road to the Ronan south city limits.

<u>Alternative Rural 2</u> is a two-lane undivided highway from Dublin Gulch Road/Red Horn Road to the Ronan south city limits with a northbound passing lane from West Post Creek Road/East Post Creek Road to the top of Post Creek Hill just south of Olson Road/Gunlock Road.

<u>Alternative Rural 3 (Preferred Alternative [PA])</u> is a two-lane undivided highway from Dublin Gulch Road/Red Horn Road to Brooke Lane and a four-lane divided highway from Brooke Lane to the Ronan south city limits, with a northbound passing lane from West Post Creek Road/East Post Creek Road to the top of Post Creek Hill.

<u>Alternative Rural 4</u> is a two-lane undivided highway from Dublin Gulch Road/Red Horn Road to Brooke Lane and a four-lane divided highway from Brooke Lane to the Ronan south city limits, with a southbound passing lane from Dublin Gulch Road/Red Horn Road to Post Creek, a northbound passing lane from West Post Creek Road/East Post Creek Road to the top of Post Creek Hill, and a southbound passing lane from Mollman Pass Trail to Brooke Lane.

<u>Alternative Rural 5</u> is a two-lane undivided highway from Dublin Gulch Road/Red Horn Road to Innovation Lane and a four-lane divided highway from Innovation Lane to the Ronan south city limits, with a southbound passing lane from Dublin Gulch Road/Red Horn Road to West Post Creek Road/East Post Creek Road and a northbound passing lane from West Post Creek Road/East Post Creek Road to the top of Post Creek Hill.

<u>Alternative Rural 6</u> is a two-lane undivided highway from Dublin Gulch Road/Red Horn Road to West Post Creek Road/East Post Creek Road with a 1.6 km (1.0 mile) southbound passing lane from south of the project limits to Post Creek, a four-lane divided highway with independently aligned southbound and northbound travel lanes from West Post Creek Road/East Post Creek

Road to the top of Post Creek Hill, two-lane undivided from the top of Post Creek Hill to Bouchard Road, and four-lane divided from Bouchard Road to the Ronan south city limits.

Alternative Rural 7 is a two-lane undivided highway from Dublin Gulch Road/Red Horn Road to the Ronan south city limits. It includes a southbound passing lane from Dublin Gulch Road/Red Horn Road to just south of Post Creek, two-lane roadway across the Post Creek bridge, and a northbound passing lane from West Post Creek Road/East Post Creek Road to the top of Post Creek Hill. From Olson Road/Gunlock Road to north of Crow Creek the roadway would be a raised parkway with five built-up parking areas located at Olson Road/Gunlock Road, Eagle Pass Trail, MT 212/Kicking Horse Road (both sides), Mollman Pass Trail, and north of Crow Creek. There would also be a northbound passing lane from north of Crow Creek to 0.8 kilometers (0.5 miles) north of Bouchard Road, and a southbound passing lane from 0.8 kilometers (0.5 miles) north of Bouchard Road to the Ronan south city limits. Left-turn lanes would be provided only at Olson Road/Gunlock Road, MT 212/Kicking Horse Road, Mollman Pass Trail, and Eagle Pass Trail in the Olson Road/Gunlock Road to Crow Creek section.

Alternative Rural 8 is a four-lane undivided highway from Dublin Gulch Road/Red Horn Road to the Ronan south city limits.

Alternative Rural 9 is a four-lane divided highway from Dublin Gulch Road/Red Horn Road to the Ronan south city limits.

Alternative Rural 10 is a two-lane undivided highway from Dublin Gulch Road/Red Horn Road to Innovation Lane and a four-lane divided highway from Innovation Lane to the Ronan south city limits, with a southbound passing lane from the top of Post Creek Hill to Eagle Pass Trail and a northbound passing lane from West Post Creek Road/East Post Creek Road to the top of Post Creek Hill. A two-way, left-turn lane would extend north of Dublin Gulch Road/Red Horn Road for approximately 0.8 kilometers (0.5 miles).

Urban Alternatives

The urban portion of the proposed project extends from the south city limits just south of Little Marten Road/Timber Lane Road to Baptiste Road/Spring Creek Road on the north end. Five action alternatives are analyzed in the urban portion of the proposed project.

Alternative Ronan 1 is a four-lane divided roadway with a raised landscaped median and channelized intersections, which transitions between Old Highway 93 and Baptiste Road/Spring Creek Road to a four-lane divided highway.

Alternative Ronan 2 is a four-lane roadway with a continuous two-way, left-turn lane in Ronan, which transitions between Old Highway 93 and Baptiste Road/Spring Creek Road to a four-lane divided highway.

Alternative Ronan 3 is a couplet with a two–lane, one-way roadway northbound on the existing US 93 alignment and a two-lane southbound roadway constructed on the First Avenue SW alignment. The roadway would transition between Old Highway 93 and Baptiste Road/Spring Creek Road to a four-lane divided highway.

<u>Alternative Ronan 4 (PA)</u> is a couplet with a two-lane, one-way roadway northbound on the existing US 93 alignment and a two-lane southbound roadway constructed on the First Avenue SW alignment. The southbound portion of the couplet on First Avenue SW would have a wider neighborhood buffer than Alternative Ronan 3. The roadway would transition between Old Highway 93 and Baptiste Road/Spring Creek Road to a four-lane divided highway.

<u>Alternative Ronan 5</u> would be similar to the existing except that the three lanes would include curb and gutter on the existing alignment, with sidewalks for pedestrians and bicycle lanes for the bicyclists. The lane configuration would transition between Old Highway 93 and Baptiste Road/Spring Creek Road to a four-lane divided highway with depressed median.

6.1.3 Section 4(f) Properties

Recreation, Wildlife Management, and Waterfowl Refuge Areas

Ninepipe National Wildlife Refuge

The Ninepipe National Wildlife Refuge (NWR) adjoins both the west and east sides of US 93 in the vicinity of the Ninepipe Reservoir, and access to portions of the refuge is from US 93 (Figure 6.1-1).

The United States Fish and Wildlife Service (USFWS) manages the facility. The Ninepipe NWR is a popular bird watching and nature photography site, it attracts tour groups for wetland tours, and schools use Ninepipe NWR as an outdoor educational site. Interpretive walks, picnicking, auto touring, and fishing are also activities associated with the Ninepipe NWR. Hunting is not allowed on the refuge.

Waterfowl Production Areas

The USFWS also manages three waterfowl production areas that adjoin US 93 in the project corridor north of the Ninepipe NWR:

- **Duck Haven Waterfowl Production Area (WPA)** (west side of US 93 south of Beaverhead Lane)
- **Kicking Horse WPA** (east side of US 93 south of Mollman Pass Trail)
- **Ereaux WPA** (west side of US 93 north of Beaverhead Lane).

The three WPAs are open to hunting, fishing, wildlife watching, and photography. USFWS manages the WPAs for the conservation of waterfowl and upland game birds. Access to these facilities is from US 93 or from side roads intersecting US 93.

Ninepipe Wildlife Management Area

The Ninepipe Wildlife Management Area (WMA) adjoins US 93 south and north of the Ninepipe NWR. Montana Fish, Wildlife & Parks (MFWP) owns the Ninepipe WMA, and manages the WMA for the conservation of waterfowl and upland game birds. The Ninepipe WMA is open to hunting, fishing, wildlife watching, and photography. Access is from US 93 and side roads intersecting US 93.

Historic Properties

The following sites are shown on Figure 6.1-1.

Stagecoach Route (no record)

The historic stagecoach route roughly followed the US 93 corridor from Ravalli to Polson. The route most likely followed an early Indian trail through the Mission Valley. The stagecoach route is largely buried under the current roadway or has been obliterated by farming. However, portions of the old stagecoach road are still visible in the Ninepipe Area. The dirt route follows the southwest edge of the Ninepipe Reservoir before crossing US 93, and continues in a northeast direction through USFWS wildlife management areas. This property has been determined eligible for listing in the NRHP.

Flathead Irrigation Project (24LA91)

The Flathead Irrigation Project is an extensive system of irrigation canals, structures, and features that crisscrosses the Flathead Indian Reservation. The actual components of the irrigation system include the earthen dams that form the reservoirs, pumping plants, feeder canals, distribution canals, laterals, and floodgates. US 93 crosses or travels parallel to some of these canals, although less than 3 percent of the system is contained within the project area. This property has been determined eligible for listing in the NRHP.

6.1.4 Use of Section 4(f) Properties

Wildlife and Waterfowl Refuge Areas

Ninepipe NWR

Alternatives Rural 1 through Rural 7 (including Alternative Rural 3 [PA]) and Alternative Rural 10 would not require acquisition of any property from this facility. The Rural 8 and Rural 9 alternatives would require acquisition of property from Ninepipe NWR (see Table 6.1-1).

Table 6.1-1 Approximate use (acquisition) of Section 4(f) resources in the US 93 Ninepipe/Ronan project corridor in hectares (acres).

Property Name	Section 4 (f) Resource	Rural 1 – Rural 5 and Rural 10	Rural 6	Rural 7	Rural 8	Rural 9
Ninepipe National Wildlife Refuge	Yes	None	None	None	0.3 (0.8)	1.3 (3.3)
Kicking Horse WPA	Yes	None	None	None	0.7 (1.7)	1.1 (2.6)
Duck Haven WPA	Yes	None	None	0.1 (0.3)	0.5 (1.2)	1.3 (3.2)
Ereaux WPA	Yes	None	None	None	None	0.04 (0.1)
Ninepipe WMA	Yes	None	2.5 (6.2)	1.2 (3.0)	3.6 (8.9)	7.0 (17.4)
Stagecoach Route	Yes, eligible for listing on NRHP	None	None	None	None	0.008 (0.02)
Flathead Irrigation Project	Yes, eligible for listing on NRHP	12 mainline culverts and 8 canals realigned				

Temporary occupancy of a portion of the facility may be required for installation of right-of-way fencing or other construction purposes. However, measures would be implemented to minimize potential impacts during the temporary occupancy.

Compared to the No-Action Alternative, none of the rural action alternatives would result in an increase in traffic. Therefore, under any of the action alternatives, traffic-related effects of noise and air quality would be essentially similar compared to the No-Action Alternative. Wildlife crossing facilities would be incorporated into each of the action alternatives, so that the improved roadway would not be a substantially greater barrier to wildlife movement under any of the action alternatives. Under any of the action alternatives, access to the Ninepipe NWR would be maintained. Based on the above, none of the action alternatives would substantially impair the activities, features, or attributes of the Ninepipe NWR, and no constructive use of this facility would occur under any action alternative.

Duck Haven WPA, Kicking Horse WPA, Ereaux WPA, and Ninepipe WMA

Alternatives Rural 1 through Rural 5 (including Alternative Rural 3 [PA]) and Alternative Rural 10 would not require acquisition of any property from these facilities. Alternatives Rural 7, 8, and 9 would require acquisition of property from Duck Haven WPA; Alternative Rural 8 and 9 would require acquisition of property from Kicking Horse WPA; Alternative Rural 9 would require acquisition of property from Ereaux WPA, and Alternatives Rural 6, 7, 8, and 9 would require acquisition of property from Ninepipe WMA (see Table 6.1-1).

Temporary occupancy of a portion of these facilities may be required for installation of right-of-way fencing or other construction purposes. However, measures would be implemented to minimize potential impacts during the temporary occupancy.

For the same reasons given above for the Ninepipe NWR, none of the rural action alternatives would substantially impair the activities, features, or attributes of these facilities, and no constructive use of these facilities would occur under any action alternative.

Historic Properties

Stagecoach Route (no record)

No acquisition would be required of this site under Alternatives Rural 1 through Rural 8 (including Alternative Rural 3 [PA]) and Rural 10. Alternative Rural 9 would require acquisition of approximately 80 square meters (860 square feet) of this site on the west side of US 93 (see Table 6.1-1). The stagecoach route has lost much of its integrity adjacent to the existing US 93 right-of-way, so that the acquisition of right-of-way under Alternative Rural 9 would have no material effect on this site. Temporary occupancy of a portion of the facility may be required for installation of right-of-way fencing or other construction purposes. However, measures would be implemented to minimize potential impacts during the temporary occupancy. For the same reasons given above for the Ninepipe NWR, none of the action alternatives would substantially impair the activities, features, or attributes of the stagecoach route, and no constructive use of this site would occur under any action alternative.

Flathead Irrigation Project (24LA91)

Under the action alternatives, 12 mainline crossings would be replaced with larger culverts or the existing culverts would be extended. Portions of eight existing canals would be realigned (see Table 6.1-1). As new right-of-way is purchased, the eight canals would require relocation and realignment outside the existing right-of-way. These modifications and realignments would be considered a use of the property. The modifications and realignments would have no material effect on the Flathead Irrigation Project's historic character or eligibility for the NRHP.

6.1.5 Alternatives to Avoid Use of Section 4(f) Properties

Ninepipe NWR; Duck Haven, Kicking Horse, and Ereaux WPAs; and Ninepipe WMA

The preliminary design for the proposed project has reviewed steepened slopes to minimize impacts to wildlife refuge or wildlife management areas within the proposed project limits. Approximate locations where commitments were made in the preliminary design to steepen slopes are shown in Appendix A. These preliminary measures will be carried forward into final design where it is determined to be practicable and feasible and safety is not compromised.

Alternatives Rural 1 through Rural 5 (including Alternative Rural 3 [PA]), and Alternative Rural 10 include limited use of additional preliminary design features such as even steeper slopes, walls, and guardrails to entirely avoid the need to acquire wildlife refuge or wildlife management areas that meet the criteria for Section 4(f) status. This limited use of additional preliminary design features was estimated to cost approximately $400,000 for Alternatives Rural 1 through Rural 5 (including Rural 3 [PA]) and $440,000 for Alternative Rural 10 in 2006.

By contrast, Alternatives Rural 6, 7, 8, and 9 have wider cross sections adjacent to wildlife refuge lands, and preliminary design modifications more substantial than those applied to the alternatives Rural 1 though 5 (including Rural 3 [PA]) and Rural 10 would be required under these alternatives to avoid acquisition of wildlife refuge and wildlife management areas that meet the criteria for Section 4(f) status. To reduce the roadway footprint sufficiently under Alternatives Rural 8 and Rural 9, for example, significantly more side slopes would need to be steepened and additional retaining walls would also be required. For the safety of the traveling public, guardrails would need to be provided at the pavement edge where these steeper slopes and retaining walls are located. Within a distance of about 8 kilometers (5 miles), it is estimated an additional 3.2 linear kilometers (2 linear miles) of retaining walls and 6.4 linear kilometers (4 linear miles) of protective guardrail would be required for the four-lane undivided Alternative Rural 8, and an additional 11.2 linear kilometers (7 linear miles) of retaining walls and 12.9 kilometers (8 linear miles) of protective guardrail would be required for the four-lane divided Alternative Rural 9.

As described earlier, the preliminary design for Alternatives Rural 8 and Rural 9, throughout the wildlife refuge and wildlife management areas, includes steepened slopes. These slopes, which are still considered traversable and which comply with MDT's geometric design standards, create a safe and forgiving roadside for vehicles – should they leave the roadway. The safety of the roadway would be seriously compromised with the use of the significant guardrail discussed above, even though collisions with the guardrail would be safer than allowing vehicles which leave the roadway to pass over non-traversable steep slopes or over vertical faces of retaining walls. It is generally accepted in roadway design that guardrail is a greater hazard than the traversable slopes provided in the standards and consequently in the present preliminary design.

Visual effects resulting from this redesign would be considerably more substantial than the visual effects under other alternatives that would not involve retaining walls. The retaining walls and protective guardrails would be multi-kilometer (mile) long structures visible from nearby properties and considerably out of character with the largely rural surroundings and flat topography. In addition, retaining walls of that length would present a substantial barrier to wildlife movement between refuge areas on opposite sides of the roadway. The extra costs of construction for Alternative Rural 8 would be approximately $2.9 million and for Alternative Rural 9 would be approximately $10.2 million in 2006, which from an engineering perspective would result in an excessive overall project construction cost. While redesign of Alternatives Rural 8 and Rural 9 to avoid acquisition of wildlife refuge properties or wildlife management areas would be feasible from an engineering perspective, it would not be prudent from either an environmental or an engineering perspective.

Stagecoach Route and Flathead Irrigation Project

Because the Stagecoach Route and the Flathead Irrigation Project ditches cross US 93, any road widening or improvements would affect these resources; therefore, no feasible alternative exists to avoid impacts.

6.1.6 Measures to Minimize Harm to Section 4(f) Properties

Although we have made a determination that the proposed project will have no adverse effect to the Flathead Irrigation Project, it is recognized by FHWA and documented in the Memorandum of Agreement (dated February 10, 2004) that an effect will occur (see Appendix C). The MOA stipulates mitigation measures to offset the effect of the road project on the historic irrigation system. The stipulated mitigation measures are the following:

- "The MDT will provide a turn-out and funding for a historical interpretive marker describing the development and significance of the Flathead Irrigation Project on the Flathead Indian Reservation. The Tribal Preservation Office will prepare the text for the interpretive marker and provide it to the MDT for review and production of the marker."

- "The MDT will provide $6,000 to the CSKT Tribal Preservation Office as partial funding for the inventory and evaluation of the Flathead Irrigation Project. The MDT will receive five copies of the completed report. The MDT's contribution to the study will be acknowledged in the report."

6.1.7 Other Park, Recreational Facilities, Wildlife Refuges, and Historic Properties Evaluated Relative to the Requirements of Section 4(f)

Parks and Recreation Areas

The Ronan City Park and the Lake County softball fields (Dorothy Lundvall, Keith Lundvall, Sam Clairmont, and Orville Larson fields) are located in the vicinity of the project corridor (Figure 6.1-1); however, there is no Section 4(f) use of these resources required for the proposed project.

Historic Properties

Fort Connah (24LA0057) and the Anderson Farmstead – Barn (24LA0161) are located in the vicinity of the project corridor (Figure 6.1-1); however, there is no Section 4(f) use of these resources required for the proposed project.

6.1.8 Coordination

Extensive coordination was conducted with owners of potential Section 4(f) properties throughout development and refinement of alternatives under consideration. In particular, due to the potential acquisition of wildlife lands along the corridor, several meetings were held during the alternative development process that were attended by representatives from FHWA, MDT, CSKT, USFWS, and MFWP. During these meetings the participants discussed potential Section 4(f) effects and the need for measures to avoid and minimize these potential effects. USFWS and MFWP requested replacement lands as mitigation for unavoidable uses, if use of refuge and wildlife management lands is required. MDT and the THPO also communicated extensively during alternative development regarding effects on potential Section 4(f) historic properties and the need for avoidance and minimization.

6.1.9 Conclusion

With implementation of feasible and prudent avoidance alternatives, no use of Section 4(f) wildlife lands (Ninepipe NWR; Duck Haven, Kicking Horse, and Ereaux WPAs; and Ninepipe WMA) would occur under Alternatives Rural 1 through Rural 5, Rural 10, or Alternatives Ronan 1 through Ronan 5. Use of these Section 4(f) wildlife lands would be unavoidable under Alternative Rural 6, 7, 8, and 9. Use of a Section 4(f) historic site, the Stagecoach Route, would be unavoidable under alternative Rural 9.

All of the rural and urban alternatives would require realignment of culverts and canals which are part of the historic Flathead Irrigation Project. These modifications will have no material effect on the historic character of the resource or its eligibility for the NRHP. There is no feasible and prudent alternative to the use of this resource due to the proximity of the canals to the highway and the fact that the culverts pass beneath it. Avoidance by realignment would cause environmental impacts of extraordinary magnitude, mainly to wetlands, wildlife, wildlife habitat, and other significant Section 4(f) resources.

The selected preferred alternatives, Rural 3 and Ronan 4, have the least harm to Section 4(f) resources after mitigation. Mitigation measures as outlined in a Memorandum of Agreement between MDT and CSKT are described previously in Section 6.1.6.

Based upon the above considerations, there is no feasible and prudent alternative to the use of land from the Flathead Irrigation Project and the proposed action includes all possible planning to minimize harm to the Flathead Irrigation Project resulting from such use.

FHWA analyzed alternatives to avoid use of the 4(f) resource, the historic irrigation system, as previously discussed in this section, and found no feasible and prudent alternatives. However, in August of 2005, Section 138 of title 23, USC was amended under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Section 6009 of SAFETEA-LU provided new legislative authority to address programs and projects with minor or ‘de minimis’ impacts on a Section 4(f) resource. Pursuant to Section 6009, FHWA has also determined that Section 4(f) would be satisfied by these new de minimis regulations, as there is no adverse effect on the historic irrigation system. A letter notifying the Tribal Historic Preservation Office of this de minimis finding is included in Appendix C.

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Part 7 References and Distribution Lists

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Copies of this final Supplemental Environmental Impact Statement (SEIS) are being furnished to federal agencies that have jurisdiction by law or special expertise with respect to any environmental impact involved and any appropriate federal, state, Tribal, or local agency authorized to develop and enforce environmental standards. This document is also being furnished to any person, organization or agency that submitted substantive comments on the draft SEIS or has requested a copy of the entire document.

These entities include:

- Members and the agencies or organizations they represent, of the project Advisory Committee and Interdisciplinary Team (IDT) as described in Section 7.4 of this SEIS
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7.4 Comments, Consultation, and Coordination

7.4.1 Agency and Tribal Coordination

The Federal Highway Administration (FHWA) and the Montana Department of Transportation (MDT) issued the *Final Environmental Impact Statement and Section 4(f) Evaluation; FHWA-MT-EIS-95-01-F; F 5-1(9)6, U.S. Highway 93, Evaro to Polson, Missoula and Lake Counties, Montana* (referred to as the US 93 Evaro to Polson FEIS) (FHWA and MDT 1996), to describe the proposed project, alternatives, and the social, economic, and environmental impacts for the reconstruction of US 93 from Evaro to Polson. A Record of Decision (ROD) was prepared on August 12, 1996, which selected the existing alignment for improvement throughout the length of the proposed project, called for development of a corridor bypassing Ronan (Ronan Alignment 4), and implementing right-of-way acquisition and access control. However, the ROD deferred making a decision on lane configurations, corridor preservation for an Arlee bypass, corridor preservation or construction of a Polson bypass, mitigation measures, and a Section 4(f) determination until agreement was reached by FHWA, MDT, and the Confederated Salish and Kootenai Tribes (CSKT) on lane configurations, design features, and mitigation measures. The ROD was modified on February 9, 1998, to allow right-of-way acquisition to proceed on non-Tribal land.

Representatives from the FHWA, MDT, and CSKT, the project proponents, then negotiated and signed a Memorandum of Agreement (MOA) dated December 20, 2000, referred to as the US 93 Corridor MOA. The US 93 Corridor MOA lays out the preferred conceptual roadway improvements, including lane configurations, design features, and mitigation measures for 49.2 kilometers (30.6 miles) of US 93 from Evaro to the Dublin Gulch Road/Red Horn Road intersection near St. Ignatius and for 17.4 kilometers (10.8 miles) of US 93 from Baptiste Road/Spring Creek Road near Ronan to the MT 35 intersection near Polson. The US 93 Corridor MOA does not include an 18-kilometer (11.2-mile) section between Dublin Gulch Road/Red Horn Road and Baptiste Road/Spring Creek Road (Ninepipe/Ronan SEIS section). Also excluded from the MOA is a 6-kilometer (3.7-mile) section from the MT 35 intersection in Polson to the north end of the proposed project. The three governments agreed to prepare a supplemental environmental impact statement (SEIS) for the Ninepipe/Ronan section.

7.4.2 Public Scoping Process

The US 93 Ninepipe/Ronan SEIS public involvement process has been designed to give as many stakeholders and members of the public as possible the opportunity to participate in the US 93 Ninepipe/Ronan project evaluation and decision-making process. Initially, the outreach elements in the public involvement plan alerted the public to the program, its purpose and need, and how they could participate. Informational elements enabled members of the public to understand the program vision, goals, and objectives, as well as the issues and the decision-making process.

The interactive components of the plan provided stakeholders with opportunities to participate and provide input into the process. Information on the project background can be found in *Part 1 Summary* and *Part 2 Purpose of and Need for Action* of this final SEIS.

The public involvement process was designed to integrate the elements of outreach, information gathering and dissemination, and interactivity into a well-rounded process with multiple avenues of communication open to all participants.

A primary goal of this public involvement process is to proactively create ongoing opportunities for the public to contribute in a meaningful way to the US 93 Ninepipe/Ronan SEIS.

Notice of Intent

The publication of the Notice of Intent (NOI) in the Federal Register on Friday, June 15, 2001 (66 FR 32661) formally stated the intention of the US 93 Ninepipe/Ronan improvement project Supplemental Environmental Impact Statement and officially started the public involvement process.

Project Committees

A partnership of federal, state, and local elected officials; agency staff; community interest groups; consultants; and independent citizens has guided decision-making for the US 93 SEIS through two project committees: the Advisory Committee and the IDT. Numerous federal, state, regional, and local agency representatives and environmental, business, and local citizen representatives have served on these two committees.

The Advisory Committee and IDT were set up to provide recommendations to the project team, which consists of the FHWA, the MDT, the CSKT, engineering and environmental consultants, and the City of Ronan. Additional resource agencies and government entities have been active on the project team when specific issues necessitated involvement.

Organizational Team Meeting

An initial project team meeting was held on June 13, 2001 to bring together interested parties at the inception of the proposed project. Numerous community stakeholders gathered for a consensus building and project development exercise which identified initial project objectives, reviewed the project history, provided input into the public involvement plan, and proposed the Advisory Committee and IDT along with initial membership suggestions. The membership of the Advisory Committee and IDT was further broadened through invitations to numerous agencies and community organizations.

During the course of the Organizational Team Meeting, project roles and responsibilities were identified and agreed to; a preliminary project purpose and need identified, refined, and articulated; and project success factors stated.

Advisory Committee

The Advisory Committee, made up of local, state, and federal agencies, as well as volunteers representing a wide range of community groups and interests throughout the project area and beyond, was primarily responsible for providing advisory input and recommendations at key points during the development and evaluation of corridor alternatives. The Advisory Committee agreed to operate by consensus and to honor and respect the viewpoints of all members.

The Advisory Committee's participation was integral in keeping the project team informed about public concerns. Committee members spent considerable time with their constituents to reach out and involve them in the decision-making process. Committee members were also active in the outreach, preparation, and attendance of the public scoping meetings. Members reviewed open house materials, many volunteered to facilitate advertising efforts, and many others made efforts to attend and participate in public events.

Advisory Committee Meeting Dates:

- June 13, 2001 – Organizational Advisory Committee Meeting
- July 25, 2001 – Joint Advisory Committee/IDT Meeting
- May 3, 2002 – Joint Advisory Committee/IDT Meeting
- July 23, 2002 – Joint Advisory Committee/IDT Meeting
- September 30, 2003 – Joint Advisory Committee/IDT Meeting
- September 20, 2006 – Joint Advisory Committee/IDT Meeting.

Interdisciplinary Team

The IDT included staff from interested and affected agencies, and was responsible for providing technical guidance and project compliance in areas including threatened and endangered species, permit requirements, social and economic concerns, and compliance with city and state safety and design standards.

Interdisciplinary Team Meeting Dates:

- June 26, 2001 – Organizational Interdisciplinary Team Meeting
- July 25, 2001 – Joint Advisory Committee / Interdisciplinary Meeting
- May 3, 2002 – Joint Advisory Committee / Interdisciplinary Meeting
- July 23, 2002 – Joint Advisory Committee / Interdisciplinary Meeting
- September 30, 2003 – Joint Advisory Committee / Interdisciplinary Meeting
- September 20, 2006 – Joint Advisory Committee/IDT Meeting.

Public Scoping Meetings

Four public meetings on SEIS scoping and alternatives selection were held on the following dates:

- July 18, 2001 – located at the Ronan Community Center from 2:30 to 5:00 p.m. and 6:00 to 8:30 p.m., 160 people attended
- November 1, 2001 – located at the Charlo Old High School Gym from 6:00 to 9:00 p.m., 117 people attended
- May 14, 2002 – located at the Ronan Parish Hall from 6:00 to 9:00 p.m., 37 people attended
- May 15, 2002 – located at the Ronan Parish Hall from 6:00 to 9:00 p.m., 38 people attended.

The public scoping meetings covered a range of topics and issues over the course of the project. All meeting locations were Americans with Disabilities Act (ADA) accessible, and were held at locations easily reached by transit. Every meeting obtained name and address information from all attendees by placing a dedicated "greeter" at the door to welcome citizens to the event, ensure sign-in, distribute a project newsletter, and provide a brief overview. All scoping meeting participants were encouraged to provide verbal and written comments through public speaking opportunities and on comment cards. The comments collected from the scoping meetings were logged into a comment database and were included in subsequent comment reports, which provided a cumulative knowledge base of public opinion for ongoing analysis. Below is a detailed description of each public scoping meeting.

July 18, 2001 Public Scoping Meeting

The first public scoping meeting was held on July 18, 2001, three days after publication of the NOI. The goal of this meeting was to provide the public with an initial overview of the proposed project and to collect feedback and comments to help guide the public involvement process.

Three potential action alternatives were presented at this open house, which were based on information available from the US 93 Evaro to Polson FEIS and input from the Organizational Advisory Committee meeting held on June 13, 2001. The three action alternatives presented at this meeting were a possible US 93 west alternative, a possible US 93 east alternative, and an alternative to improve the existing US 93.

The format for this open house included displays, a project overview by various project team members, and a public comment period. In addition, comment cards and an initial project survey were distributed to each attendee to give the project team an overall understanding of issues important to the public and stakeholders (advisory committee members, and members of state, federal, city, and Tribal agencies). This meeting was the first opportunity the general public had to review the initial potential project alternatives. A majority of the 160 public scoping meeting attendees were in favor of keeping US 93 on the existing alignment. Most people at the July 18, 2001 meeting voiced sentiments similar to the following commentor:

> "I guess my concern at this time is the amount of impact that will occur if we take an alternative route, a route that's never had a highway. If we decide the alternative will be a 4-lane, and that will go around and go through this area that's not had a roadway at all, we are still looking at wide frontage road plus a 4-lane, and the environmental impact will be far more, at least in my estimation, than if we increased the road where it is."

Another commenter stated the following:

> "I live over on the proposed East route. I look here and you say you got wildlife, economics, cultural, traveling public, and social impacts, seems to me if you switch it from the route you're on now, you're just taking all your troubles and putting them in a different spot. It don't make no sense; you've added a few miles, a few dollars, and moved your trouble somewhere else."

Many people also expressed concerns regarding the businesses that have been created along the existing alignment of US 93, and expressed concerns similar to the following:

> "The impact of moving US 93 would be horrendous for wildlife, people, and our culture. The whole valley "System" has evolved around the present location of the highway. Businesses, irrigation, domestic wildlife operations and wildlife would have too great of an impact. An "ecosystem" has built itself around the highway and to change it would be disastrous."

November 1, 2001 Public Scoping Meeting

The second public scoping meeting was held on November 1, 2001 in the town of Charlo. The focus of this meeting was to give the community members and stakeholders a chance to voice their concerns publicly regarding the initial project alternatives. Numerous displays were available showing graphic depictions of the initial project alternatives, potential alignments for US 93 through the Ninepipe/Ronan area, and copies of the US 93 Corridor MOA (the document signed by the FHWA, MDT, and CSKT in December of 2000 to help guide the development of alternatives on the US 93 corridor). In addition, the results of the survey distributed at the July 18, 2001 public meeting were displayed for review.

Because the goal of this scoping meeting was to provide maximum opportunity for the public to openly share their questions, concerns, and issues regarding the US 93 Ninepipe/Ronan SEIS alternatives, this scoping meeting followed an open microphone format, and was audio recorded.

Many of the 117 community members in attendance voiced their concerns regarding the alternatives that were being considered: the US 93 west alternative, the US 93 east alternative, and the alternative to improve the existing US 93 Ninepipe/Ronan corridor. A representative of each of the three project proponents responded to questions and explained the rationale for the alternative alignments. The majority of the people in attendance preferred to improve the existing US Ninepipe/Ronan 93 corridor.

Many of the comments shared at this scoping meeting were similar in tenor to the following comment:

> “I live in the Post Creek Area. I think that all three governments would agree that human safety is the paramount reason that we’re redoing this highway. It is the worst stretch between Missoula and Kalispell, and probably has the highest percentage of accidents, and therefore, it probably should be done first. It looks to me like we are going to improve the highway at both ends, and this would be like a giant funnel for accidents until it gets improved in the last stretch.”

Other community members who lived near the town of Charlo shared their concerns regarding impacts to wildlife if either a western or eastern alternative would be implemented stating comments similar to the following:

> “The wildlife has for many years settled in the established dens, nests, and corridors that are so green in their lives, I can’t imagine how they would adapt to growth being plowed through, destroying the world they know. It would be devastating to their health and security. Then they ask a question about if this road is put through their land, what would the alternative for them be?”

Others voiced concerns about how their way of life would be impacted by re-routing the US 93 corridor to either the west or the east of the existing alignment, and one person stated the following:

> “They ask here, "What would you do?" Well, if the US 93 route went through Charlo along the railroad tracks, it would take most of my land, and I do not wish to live next to a highway. My house would be gone, and I would also.”

Survey Results

A survey was distributed to attendees of the first scoping meeting on July 18, 2001, as well as at the second scoping meeting held on November 1, 2001. The primary goal of the survey was to gauge the interest of community members and stakeholders in the three action alternatives presented for review.

Respondents were asked to rate which alternative they felt provided the greatest benefit to the US Ninepipe/Ronan 93 corridor for each of the five following factors:

- Wildlife
- Economics

- Cultural
- Traveling public
- Social impact.

The project team received a total of 168 survey responses from the two scoping meetings, and most favored the alternative to improve the existing US 93 Ninepipe/Ronan corridor. When asked the question, "Which route do you believe would provide the greatest benefit to the valley for each factor?" the majority of respondents preferred to improve the existing US 93 corridor. Seventy-five percent of respondents preferred to improve the existing US 93 for wildlife; 81 percent of respondents preferred to improve the existing US 93 for economic reasons; 72 percent preferred to improve the existing US 93 for cultural reasons; 82 percent preferred to improve the existing US 93 for the traveling public; and for social impacts, 77 percent voted to improve the existing US 93 corridor.

May 14 and 15, 2002 Public Scoping Meetings

The third and fourth scoping meetings were held in Ronan on May 14, 2002, and May 15, 2002. Although the east and west alternatives were not officially dropped until May 22, 2002, most of the public felt that their voices had been heard, and that alternatives for the US 93 Ninepipe/Ronan SEIS would focus on improving the existing US 93 corridor.

The purpose of the third and fourth scoping meetings was to give community members and stakeholders an opportunity to view and provide input into the formulation of alternatives specific to the Ninepipe and Ronan area. Displays and maps were provided which depicted various alternatives along the existing US 93 corridor. The following urban alternatives for Ronan were presented at the public open houses:

Four-lanes with two-way, left-turn lane on the existing US 93 alignment

This alternative would include bicycle lanes and sidewalks in both directions. Additional right-of-way would still be required on the west side of US 93 between Cleveland and Main streets and on the east side of US 93 from Main Street to approximately three blocks north of Round Butte Road/Terrace Lake Road.

Four-lanes with raised landscaped median and sidewalks on the existing US 93 alignment

This alternative would have more landscaped area than the four-lane with two-way, left-turn lane alternative and would require bicycle lanes to be routed along East and West First streets so the roadway would fit mostly within the existing US 93 right-of-way. Additional right-of-way would be required on the west side of US 93 between Cleveland and Main streets and on the east side of US 93 from Main Street to approximately three blocks north of Round Butte Road/Terrace Lake Road.

A couplet alternative with two southbound lanes on First Avenue SW, and two northbound lanes on the existing US 93 alignment

This alternative would be within the existing First Avenue SW and US 93 right-of-way, but new right-of-way would be acquired at the south and north ends of the couplet to provide connections to First Avenue SW and US 93.

A couplet alternative with two southbound lanes on First Avenue SW with a buffer strip between the proposed roadway and the properties to the west, and two northbound lanes on the existing US 93 alignment

Approximately 9.1 meters (30 feet) of additional right-of-way would be acquired on First Avenue SW to provide a buffer strip between the proposed roadway and the properties to the west of First Avenue SW. The northbound lanes would be within the existing US 93 right-of-way, but new right-of-way would be acquired at the south and north ends of the couplet to provide connections to First Avenue SW and US 93. These alternatives provided the basis for the Ronan alternatives presented in this SEIS.

In addition to the Ronan alternatives, examples of wildlife crossing structures, bridges, and other alternatives in the Ninepipe Area were presented for review.

During the public scoping meetings, several attendees provided input on the Ronan alternatives that were presented. Five commentors supported the four-lane with two-way, left-turn lane alternative, two commentors supported the four-lane with raised landscaped median alternative, one commentor supported the couplet within existing right-of-way, and one commentor opposed both couplet alternatives without stating a preference for the other alternatives.

There were considerable verbal and written comments regarding the Lean Road/McDonald Lake Road and US 93 intersection. Comments indicated that some did not want give up access to Lean Road/McDonald Lake Road for a stock crossing at that location. A cloverleaf and an on ramp were suggested, so both access and a stock crossing could be accommodated. There was general agreement that the existing intersection poses safety problems and that improved sight distance, while maintaining access, is needed. It was also mentioned that if a stock crossing was built, it should be large enough to accommodate farm vehicles.

There was also dialogue regarding West Post Creek Road/East Post Creek Road and the suggestion was made that the road should be raised so traffic can be seen from the south. Another comment regarding West Post Creek Road/East Post Creek Road noted that there is a creek running parallel to US 93 in this area, which is a natural drainage for a large spring to the north.

The Flathead Resource Organization, a local stakeholder and Advisory Committee member, also presented an alternative for public review at this meeting. The project team subsequently developed an alternative based on the Flathead Resource Organizations' presentation (Rural 7 alternative in this SEIS).

Advertising for Public Scoping Meetings

Advertising for public scoping meetings typically included distribution of a press release to local news media sources, notices posted on the project website, and the publication of advertisements in the local/community section of the following newspapers: the Missoulian, the Char Koosta News, the Lake County Leader, and the Lake County Advertiser. Press releases were published a minimum of two weeks in advance of the anticipated events, and project staff worked closely with advertising representatives to achieve maximum exposure. A project newsletter was distributed in advance of public scoping meetings to 1,400 people in the project-wide database to highlight upcoming events.

Local television news media also attended several of the public scoping meetings and camera crews covered events, thereby increasing project exposure and public awareness.

Advisory Committee members publicized upcoming meetings at neighborhood gatherings, local places of business, and other community events. On several occasions, Advisory Committee members volunteered to distribute flyers door-to-door so that local community members could be actively engaged in the public scoping process. One-on-one interaction with local community members contributed to high public attendance at scoping meetings.

Public Scoping Comments

Several hundred comments on transportation improvements were received through public scoping for the US 93 Ninepipe/Ronan SEIS project. In addition, several hundred comments were received during the comment period for the US 93 Evaro to Polson FEIS project, and the subsequent environmental re-evaluation project (FHWA 2001a). Comments covered a wide range of issues that affected all travel modes and were dispersed throughout the study area and beyond. Each comment was recorded and categorized in the project comment collection database, and then each comment was considered and evaluated.

All recorded comments were considered during development of the US 93 Ninepipe/Ronan SEIS and as part of methodology reports, which guided the analysis of technical issues in the SEIS. Project team members were provided with frequent reports detailing project comments and community concerns to further ensure a broad and consistent understanding of relevant issues throughout all phases of the US 93 Ninepipe/Ronan SEIS process.

The identification of issues early in the public scoping process significantly affected the direction of this SEIS. Preliminary meetings and active solicitation of public comments gave a clear indication that there was very little public support for alternatives that proposed realignment of US 93 west or east of the existing alignment. Because the US 93 project team was able to gauge public sentiment early on, and because project proponents responded to that sentiment, additional alternatives that more accurately reflected community values were developed and included in this SEIS.

7.4.3 Public Information Program

Project Newsletters

Six project newsletters will have been distributed to corridor residents and interested parties by project conclusion. The initial project mailing list was created with input from the Advisory Committee combined with countywide assessor data. Numerous mechanisms were subsequently put in place to grow the mailing list to over 1,400 members. People continue to be added to the mailing list from the project website, emails, phone calls, letters, public meetings, and Advisory Committee suggestions.

Neighborhood, Business, Community Organization, Agency, and In-Person Briefings

Project staff gave presentations to interested organizations and community groups. Extensive outreach efforts have been made, and efforts continue to identify organizations that are interested in a presentation or expressing their point of view. Informational materials such as PowerPoint presentations, display materials, overheads, newsletters, and questionnaires were made available to attendees at each presentation. Presentations have included service organizations, chambers of commerce, civic groups, neighborhood organizations, and government agencies (city councils and planning organizations). Feedback from these presentations was passed to the project decision-makers.

Additional meetings were held between the project proponents and the City of Ronan and/or Ronan City Council on the following dates:

- March 11, 2002
- April 7, 2003
- April 9-10, 2003
- May 1, 2003
- May 12, 2003
- September 4, 2003
- September 19, 2006.

The meetings were held to formulate and discuss alternatives and impacts for US 93 improvements within the City of Ronan.

Project Office

A project office located directly on the US 93 Ninepipe/Ronan SEIS corridor was staffed part time since the beginning of the project, through the comment period for the draft SEIS, and was closed at the end of 2006. The office served as a physical location where the public could go and ask questions about the proposed project, view displays and information, pick up newsletters, or return surveys.

Project Web Site

The project website has been a widely accessible and cost effective mechanism of sharing information with the public and the project team throughout the duration of the proposed project. The web site contains interactive features such as an e-mail link for residents to note concerns or ask questions about the proposed project and web pages where residents can view project purpose and need, project alternatives, time lines, upcoming events and meetings, public scoping summaries, meeting minutes, newsletters, and project contacts.

Project information will be available on the US 93 Ninepipe/Ronan SEIS project website at http://www.skillings.com/US93SEIS through the time the Record of Decision is published, and comments could also be submitted to the MDT website at http://www.mdt.mt.gov/pubinvolve/eis_ea.shtml.

Media Coverage

Project information, issues, concerns and opportunities, and public meetings were widely and openly discussed in numerous regional and community newspapers, and on radio and television with a general audience in the region. KPAX and KECI covered project issues and interviewed team members on several occasions and attended project events and open houses. Several on-camera interviews with project staff have been conducted over the course of the project. In addition, meetings with local news media produced articles in advance of public meetings to help facilitate attendance and ongoing awareness.

Comment Collection Database

A project database to collect and categorize all comments was maintained throughout the SEIS process. Several hundred comments as well as meeting transcripts have been collected to date, and this database will continue to serve as a record available to project staff in future phases of the proposed project.

7.4.4 Public Involvement

Public Review of the Draft SEIS

The draft SEIS was available for public review and comment at the following locations:

Ronan City Library
203 Main Street SW
Ronan, MT 59864

Mansfield Library
University of Montana
32 Campus Drive
Missoula, MT 59812

Missoula County Public Library
301 E Main
Missoula, MT 59807

D'Arcy McNickle Library (Salish Kootenai College)
52000 Hwy 93
Pablo, MT 59805

MDT
Missoula District Office
2100 West Broadway
Missoula, MT 59808

Skillings Connolly (Tuesdays & Thursdays)
US 93 Project Office
1317 US 93 South
Ronan, MT 59862

Open Houses and Public Hearing on the Draft SEIS

Two public open houses and one formal public hearing on the draft SEIS were held during the 45-day comment period. The first open house was held in St. Ignatius at the Tribal Fitness Center on September 18, 2006. The second open house was held from 4 to 7 pm in the Ronan Community Center on September 19, 2006 and was followed by the formal public hearing from 7 to 9 pm at the same location.

The availability of the draft SEIS for public comment was posted in the Federal Register on August 18, 2006. The locations where the document was available; locations, dates and times of the open houses; and location date and time for the public hearing were advertised on local radio and by paid advertisements in local and regional newspapers. Copies of the draft SEIS were distributed to agencies with jurisdiction, and individuals and organizations known to have an interest in the project or who had requested one. In addition, over 1,500 notices were mailed to names on the general project interest list advising them of the document's availability.

The purpose of the open houses and public hearing was to explain the information contained in the draft SEIS and to solicit comments from the public on the draft SEIS. Several displays were posted at the open houses and public hearing, including presentation boards on the roadway alternatives under consideration and extent of construction and right-of-way acquisition limits. The public had numerous opportunities to comment on the draft SEIS. The two open houses provided the opportunity for the public to learn more about the project and to obtain comment forms that could be submitted at the open house or by mail. In addition, the public hearing provided the opportunity for the public to submit written or oral comments. Oral comments were recorded during the public hearing. Additional comments were received via email or letter submitted to MDT during the comment period ending October 6, 2006. Written letters were received from the resource agencies.

Appendix J describes the public hearing format and contains the public hearing comments, comments on the draft SEIS, and responses to comments received.

Notice of Availability of the Final SEIS

The final SEIS is being sent to all Federal, State, Tribal, and local agencies and private organizations who received a copy of the draft SEIS, and members of the public who provided substantive comments on the draft SEIS. A Notice of Availability of the final SEIS will be published in the Federal Register.

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7.5 Glossary

100-year flood flow. A flood level with a 1 percent or greater probability of being equaled or exceeded in any given year.

100-year floodplain. The 100-year floodplain is defined by the largest flood that would, on average, occur once within a 100-year period, estimated from historic stream flow records.

Accidents per mile. The number of accidents per mile of highway.

Accident rate. The number of accidents per million vehicle miles.

Accident severity. A measure of the effects of accidents based on the incidence of injuries, fatalities, and costs.

Aggregate**.** Part of the soil structure formed by natural processes, containing fine inorganic materials less than 2 millimeters in diameter that are held together by interaction with each other.

Alluvium. Sediment deposited by running water, especially soil formed in river valleys and deltas from material washed down by the river.

Alluvial fan. A sedimentary deposit located where a fast flowing stream flattens.

Ambient air. The portion of the atmosphere, external to buildings, to which the general public has access.

Ambient air quality. A measure of atmospheric pollution based on the concentration of various contaminants in the ambient atmosphere.

American Association of State Highway and Transportation Officials (AASHTO). A professional organization that provides guidelines and standards, forming policies for individual state design practices.

Aquifer. A layer of gravel, sand, or porous rock capable of holding or conducting water, which can supply wells and springs.

Aquifer recharge. The addition of water to an aquifer as a result of infiltration of rainfall or surface water flow.

Attainment area. A geographic area in which levels of a criteria air pollutant meet the health-based primary standard (national ambient air quality standard) for the pollutant. An area may be considered an attainment area for one pollutant but a nonattainment area for another. Attainment areas are defined on the basis of federal pollutant limits set by the U.S. Environmental Protection Agency.

Average daily traffic. The total number of vehicles passing a point or segment of a roadway, in both directions, during a 24-hour period.

A-weighted decibels (dBA). A measure of sound intensity in which frequencies are weighted differentially to approximate the sensitivity of the human ear.

Bedrock. Solid rock beneath a layer of soil, rock fragments, or gravel.

Best management practices (BMP). The tools used by designers, contractors, construction and maintenance staff to minimize impacts on the natural environment. These tools often include measures to control soil erosion, prevent stormwater erosion, and limit intrusion into native vegetation.

Calculated delay. The average time needed for a vehicle to cross the intersection, including deceleration up to the intersection, queuing at the intersection, and acceleration away from the intersection.

Charette. A planning process that facilitates an open discussion between stakeholders from a variety of disciplines, including project and City staff, community groups, neighbors, and the general public.

Clear zone. An area adjacent to the paved roadway that is kept clear of shrubs and trees.

Cobble. Rock fragment that is smaller than a boulder and larger than a piece of gravel. According to one typical system of classification, a cobble is a rock fragment approximately 2.5 to 10 inches in diameter.

Compensatory mitigation. The replacement or provision of substitute resources or environments to offset an adverse impact on the environment.

Control Delay. The component of delay that results when a control signal causes a lane group to reduce speed or to stop; it is measured by comparison with the uncontrolled condition.

Criteria air pollutant. A pollutant for which the U.S. Environmental Protection Agency has established a national ambient air quality standard under Section 109 of the Clean Air Act. Current criteria pollutants are carbon monoxide, hydrocarbons, lead, nitrogen dioxide, ozone, sulfur dioxide, and total suspended particulates.

Crow Creek watershed. The total area of land draining into Crow Creek, including its tributaries. This includes the Mud Creek and Ronan Spring Post Creek drainage areas.

Cumulative impact. The impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of the agency or person undertaking such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Curvilinear horizontal alignment. An alignment that provides subtle curves or meanders to follow the form of the landscape.

Depressional wetland. A wetland in an enclosed hollow or low area in the terrain, such as a pothole wetland or pond, typically receiving most of its moisture from precipitation.

Design-hour volume. The volume of traffic on a given roadway during the hour of the day selected for the purpose of roadway design. The forecasted highest 1-hour volume during the day, referred to as the peak-hour volume, is typically selected as the design-hour volume.

Direct effects. Direct effects are those that are caused by the action and occur at the same place and time (40 CFR 1508.8). Direct effects are further defined as, those impacts that are actually caused by project activities (FHWA 2003).

Dispersion. The mixing of air containing a high concentration of pollutants with the ambient air, thereby reducing the pollutant concentration.

Drift. A geologic term for rock material picked up and transported by a glacier and deposited elsewhere.

Easement. A right held by one person to use another person's property for a limited purpose.

Emergent vegetation. Plants that have their roots in shallow water, with stems and leaves above the water surface.

Endangered species. As defined by the Endangered Species Act, any species that is in danger of extinction throughout all or a significant portion of its range.

Equivalent sound level (L_{eq}). The equivalent steady-state sound level that in a stated period of time contains the same acoustic energy as the actual measured time-varying sound level during the same time period.

Ethnographic landscape. A cultural landscape that mirrors the systems of meanings, ideologies, beliefs, values, and worldviews shared by a group of people who have inhabited a particular place over a long period of time.

Fee land. Land in private ownership. As defined by CSKT 1996, land that is neither in trust status, nor federally, Tribally, or state owned.

Flathead Valley. See Mission Valley.

Fluvial. Produced by or found in a river or stream.

Forb. An herbaceous plant with broad leaves, excluding grasses and grasslike plants.

Free-flow speed. The average speed of vehicles over an urban street segment without signalized intersections, under conditions of low volume.

Fugitive emissions. Airborne emissions of pollutants that are not caught by a capture system.

Gradient, or grade. The slope of a land area (or streambed) in degrees or percentage, calculated as the rate of elevation change per unit of length.

Ground water. Water below the ground surface, which may move underground by streams and seepage. Ground water is stored in aquifers, and the boundary between aquifers and overlying unsaturated soils is the water table.

Habitat type. An area of land that supports or has the potential to support the same climax vegetation type or association.

Hazardous material. Any material that poses a threat to human health or the environment, typically having one or more of the following characteristics: toxicity, corrosivity, ignitability, explosivity, or chemical reactivity.

Hazardous waste. Byproducts that can pose a substantial or potential hazard to human health or the environment when improperly managed, having at least one of four characteristics: toxicity, corrosivity, ignitability, or chemical reactivity.

Herbaceous. Related to vegetation that is usually forbs, grasses, or leafy plants.

High wing-load. (as applied to birds) Birds requiring sufficient open water for take-off and landing.

Horizontal curve. The flat component of a roadway curve.

Human environment. Those attributes, including but not limited to biological, physical, social, economic, cultural, and aesthetic factors, that interrelate to form the environment.

Hydric soils. Soils that are wet, saturated, or ponded long enough during the growing season to develop conditions in which there is a lack of oxygen.

Hydrology. The movement of water over and beneath land surfaces; wetland hydrology is indicated by flowing water, standing water, and saturated soils.

Hydrophytic vegetation. Plants characterized by an ability to grow in water, typically found in wetlands.

Indirect effects. Indirect effects, also called secondary impacts, are caused by the action but occur later in time or are farther removed in distance (40 CFR 1508.8). Indirect impacts are further defined as, those [effects] caused by another action or actions that have an established relationship or connection to the project. These induced actions are those that would not or could not occur except for the implementation of a project. These actions are often referred to as 'but for' actions and generally occur at a later time or some distance removed from the original action (FHWA 2003).

Infrastructure. Roads, utility lines, sidewalks, traffic signals and signing, street lights, and other public facilities.

Invasive species. A plant or animal species that is not native to an ecosystem and that does or is likely to cause harm to the health of the environment, economy, or humans.

Isolated wetlands. Those wetlands that are hydrologically isolated from waters of the United States.

Kettle pond. See pothole wetlands.

Landscape character. The aesthetic nature of a landscape, which is affected by topography, type and distribution of vegetation, and human activity, structures, and land modifications, among other factors.

Landscape unit. A geographic area that is generally homogeneous in its visual characteristics.

Lead agency. The agency that is designated to supervise the preparation of environmental documentation for a proposed action.

Level of service (LOS). A qualitative measure describing operational conditions along a roadway or at an intersection based on measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. Rankings range from LOS A (indicating free flow), to LOS E (indicating full capacity), to LOS F (indicating forced flow).

Liquefaction. Transformation of soil or sediment into a liquid state.

Listed species. Plant and animal species, subspecies, and distinct population segments designated as threatened or endangered under the Endangered Species Act.

Lithic. Consisting of or relating to stone or rock.

Major structure options. See wildlife crossing structures.

Millennia. Thousand-year periods.

Minor arterial. An arterial that interconnects with and augments the principal arterial system, carrying an intermediate volume of traffic.

Mission Creek watershed. The total area of land draining into Mission Creek, including its tributaries. This includes the Post Creek, Sabine Creek, and Pistol Creek drainages, of which only Post Creek is in the US 93 Ninepipe/Ronan improvement project area.

Mission Valley. The land area south of Flathead Lake. The Mission Valley is flanked on the east by the Mission Mountain Range and on the west by the lower Salish Mountains. *Note. Some publications and agencies refer to this area as the Flathead Valley because it is associated with the Flathead River. The majority of references for this document call this area the Mission Valley, so that is the term used in this document.*

Mitigation. Mitigation includes (40 CFR 1508.20):

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.

Mitigation measure. Action taken to reduce impacts on resources in the environment.

National ambient air quality standards (NAAQS). Air quality standards established by the U.S. Environmental Protection Agency that apply to outside air.

No-action alternative. An alternative that includes no project construction, but would include short-term minor maintenance activities (for example, safety and roadway surface improvements) that maintain continuing operation of the existing roadway.

No-build alternative. See no-action alternative.

Nodal habitat. A habitat patch leading to or from a landscape linkage, such as a corridor of similar habitat type.

Nonattainment area. Any geographic region of the United States that the U.S. Environmental Protection Agency has designated as not attaining the federal air quality standards for one or more air pollutants, such as ozone and carbon monoxide.

Nonpoint source. An activity that contributes pollutants to water or air from a broad area rather than a point source.

Noxious weed. Defined in the Plant Protection Act as any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment. (Often used interchangeably with invasive species although their federal definitions differ slightly). A plant that is undesirable, troublesome, and difficult to control or eradicate.

Palustrine wetland. A wetland system dominated by trees, shrubs, persistent emergent plants, and emergent mosses or lichens, traditionally called by names such as marsh, swamp, bog, and fen.

Parameter. One of a set of measurable factors, such as temperature and oxygen content, that define a system and determine its condition or behavior.

Particulate matter. Fine liquid droplets or solid particles, such as dust, smoke, mist, fumes, or smog, in the air. The sources of particulates are many, including windblown dust and sand from roadways, fields, and construction; and automobile exhaust. Two categories of particulate matter are monitored and regulated by the U.S. Environmental Protection Agency: total suspended particulates, having a diameter of less than 10 micrometers (abbreviated as PM_{10}), and fine particulate matter, having a diameter of less than 2.5 micrometers (abbreviated as $PM_{2.5}$).

Permeability. The ease with which water or air can pass through the soil, determined by the size, arrangement, composition, and degree of compaction of soil particles.

Platoon. A group of vehicles or pedestrians traveling together as a group, either voluntarily or involuntarily because of signal control, geometrics, or other factors.

Pleistocene glacial deposits. Sediments deposited by the action of glaciers within the past two million years.

Point source. An identifiable, confined location from which a pollutant is discharged.

Pothole wetland. Also commonly called a kettle, prairie pothole, seasonal wetland, or depression. A pothole wetland is a depression left in a mass of *Glacial Drift*, formed by the melting of an isolated block of glacial ice. Pothole wetlands are typically shallow depressions. For the purposes of the proposed project, the two largest and deepest depressions in the project corridor are called "kettle ponds."

Principal arterial. A high traffic-volume corridor serving major activity centers of an urban area. A principal arterial system serves the major centers of activity of an urban area, includes the highest traffic volume corridors, and should carry a high proportion of the total urban traffic on a minimum of mileage.

Project area. The areas immediately adjacent to the project corridor that have the potential to be affected by actions within the project corridor.

Project corridor. The area to be directly disturbed by the project reconstruction.

Project vicinity. The regional area, which influences the conditions within the project area.

Reach. A specified section of a stream.

Right-of-way. Public land acquired for or devoted to the passage of people or goods, including freeways, roadways, bicycle paths, alleys, trails, and walkways.

Riparian zone. The area connected with or immediately adjacent to the banks of a stream or other body of water.

Riverine. Related to all wetlands and deepwater habitats contained within a natural or artificial channel that periodically or continuously contains moving water or that forms a link between two bodies of standing water.

Scoping. The process for determining the scope of issues and alternatives to be addressed in the environmental impact statement and for identifying the significant issues related to a proposed action.

Section 4(f) evaluation. An assessment of the effects of transportation projects on recreational and historical resources, as required by Section 4(f) of the Federal Department of Transportation Act during project evaluation. Section 4(f) recreational and historic resources include significant publicly owned public parks, recreation areas, and wildlife or waterfowl refuge areas, and significant archaeological and historic sites that are eligible for listing on the National Register of Historic Places.

Seral plant community. A plant community that has not attained a steady state and successively occupies and replaces other communities over time.

Stakeholder. A person or group with a direct interest, involvement, or investment in an issue or action.

Stopping sight distance. The length of roadway ahead, visible to the driver, and required to enable a vehicle traveling at or near the design speed to stop before reaching a stationary object in its path.

Substrate. The nonliving material forming the bed of a stream, lake, or ocean, with particles described in terms of size as boulders, cobbles, gravel, sand, silt, or clay.

Superelevation. The tilt of a curved roadway where the roadway edge at the outside of the curve is high, with a downward slope toward the inside of the curve.

Suspended particulates. Fine liquid droplets or solid particles that range in diameter from 0.1 to 45 micrometers and that do not settle out of the air.

Take. As defined by the Endangered Species Act, to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. The U.S. Fish and Wildlife Service further defines *harass* as actions that contribute to the likelihood of injury to threatened and endangered species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering; and *harm* to include significant habitat modification or degradation that results in death or injury to threatened or endangered species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering.

Thalweg. The longitudinal profile of a stream or river, i.e., a line connecting the deepest points along the streambed.

Threatened species. As defined by the Endangered Species Act, any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Toxic substance. A chemical or mixture that may present an unreasonable risk of injury to human health or the environment.

Trust land. Land to which the federal government holds title as a trustee for the landowner.

Unconsolidated deposits. Relatively young sediments that have not turned into rock.

Uniform crown. As used in this document for a two-lane rural roadway, a raised roadway profile where the highest part of the profile (the crown) extends along the roadway centerline and both lanes slope down from the centerline at equal inclinations—typically a 1.5 to 2 percent slope. The 1.5 to 2 percent cross slope is constructed to provide roadway drainage.

Vernacular landscape. The primarily agricultural landscape influenced by Euro-American culture.

Vertical curve. A curve in the vertical alignment of the roadway designed to effect a gradual change between different vertical grades. (The up and down component of a roadway curve).

Vertical grade. The steepness of a road measured in a vertical plane.

Visually sensitive resources. Areas with special visual characteristics identified on the basis of Federal Highway Administration *Visual Impact Assessments for Highway Projects* (Publication FHWA-HI-88-054).

Waterfowl Production Areas. Public lands purchased by the federal government for the purpose of increasing the production of migratory birds, especially waterfowl.

Waters of the United States. Waters adjacent to navigable waters and other waters the degradation or destruction of which could affect interstate or foreign commerce. They include essentially all surface waters, including all navigable waters and their tributaries, all interstate waters and their tributaries, all impoundments of these waters, all wetlands adjacent to these waters and certain isolated wetlands.

Water regime modifier. General term used to describe hydrologic characteristics of wetlands and deepwater habitats in terms of the duration and timing of surface inundation and ground water fluctuations.

Watershed. The total area of land between hilltops or mountain ridges draining into a water system.

Wetland. A general term used to describe areas of land that are inundated by surface water or groundwater.

Wildlife crossing structures. A bridge, culvert, or other similar structure generally placed underneath the roadway surface for the purpose of providing wildlife with an alternative to crossing over the roadway.

Wisconsin. A geologic name for the most recent major glacial period in North America that began about 85,000 years ago and ended about 15,000 years ago.