U.S. Department of Transportation
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Western Federal Lands Highway Division
Vancouver, Washington

U.S. Department of Transportation
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Little Joe Road Improvement Project
MT PFH 84-1(1)
Environmental Assessment

August, 2008

Little Joe Road Improvement Project
Mineral County, Montana
Environmental Assessment

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U.S. Department of Transportation
Federal Highway Administration
Western Federal Lands Highway Division

Cooperating Agencies
U.S. Department of Agriculture, Forest Service
Mineral County
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Date Approved

Robert B. Lale, III
Director of Project Delivery
Western Federal Lands Highway Division

The following person may be contacted for additional information:

Denise Steele, Environmental Protection Specialist
Western Federal Lands Highway Division
Federal Highway Administration
610 East Fifth Street
Vancouver, Washington 98661-3801

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List of Abbreviations

AASHTO – American Association of State and Highway Transportation Officials
ADT – average daily traffic
AOP – Aquatic Organism Passage
APE – area of potential impacts
BFE – Base Flood Elevations
BMP – best management practices
BO – Biological Opinion
BST – bituminous surface treatment
CFR – Code of Federal Regulations
CMP – corrugated metal pipe
CMT – culturally modified tree
DEQ – Department of Environmental Quality
EA – Environmental Assessment
EO – Executive Order
EPA – U.S. Environmental Protection Agency
ESA – Endangered Species Act
FEIS – Final Environmental Impact Statement
FEMA – Federal Emergency Management Agency
FHWA – Federal Highway Administration
FR – Federal Register
FS – U.S. Forest Service
FWP - Montana Department of Fish, Wildlife and Parks
HUC - Hydrological Unit Code
IGBC - Interagency Grizzly Bear Committee
INFISH – Inland Native Fish Strategy
LAU – Lynx Analysis Unit
LCAS - Lynx Conservation Assessment and Strategy
LJR – Little Joe Road
LOS – Level of Service
LNF – Lolo National Forest
LSI – Lolo National Forest Land Systems Inventory
LWD – large woody debris
MBF – million board feet
MBTSG – Montana Bull Trout Scientific Group
MDT – Montana Department of Transportation
MP – milepost

MPDES – Montana Pollutant Discharge Elimination System
MPH – miles per hour
MTDEQ – Montana Department of Environmental Quality
MTFWP – Montana Department of Fish, Wildlife, and Parks
NAAQS – National Ambient Air Quality Standards
NCDE – Northern Continental Divide Ecosystem
NEPA – National Environmental Policy Act
NFSR - National Forest Service Roads
NOAA – National Oceanic and Atmospheric Administration
NRHP – National Register of Historic Places
PAH – Polycyclic Aromatic Hydrocarbon
PCE – primary constituent element
PIR - WFLHD Project Identification Report
RCA – Resource Conservation Area
RHCA - Riparian Habitat Conservation Areas
SADT – seasonal average daily traffic
SAFETEA-LU – Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SEE – Social, Economic, and Environmental Team
SHPO – State Historic Preservation Officer
T & E – Threatened and Endangered
TMDL – Total Maximum Daily Load
USFS – U.S. Forest Service
USFWS – U.S. Fish and Wildlife Service
WFLHD – Western Federal Lands Highway Division

1 Project Description

1.1 Location of the Proposed Project

Western Federal Lands Highway Division (WFLHD) of the Federal Highway Administration (FHWA), in cooperation with the Lolo National Forest (LNF) of the U.S. Forest Service (FS), the Montana Department of Transportation (MDT) and Mineral County, proposes to upgrade a 16.2-mile segment of Little Joe Road (LJR), also known as Montana Forest Highway 84 (MT FH 84). LJR begins at the intersection of Camels Hump Road and connects to the St. Joe Forest Highway at the Montana-Idaho state line, providing a transportation link between St. Regis, Montana and St. Maries, Idaho, passing through the communities of Calder and Avery, Idaho. The first 1.9 miles of the route provide private property access for residents, mail delivery, and school buses. The project begins at mile post (MP) 0.0 and ends at MP 16.2 at the Idaho-Montana state line. (figure 1). Additional National Forest System roads feed into the forest highway from adjacent National Forest System lands. The route provides the principal access for the protection, administration, and utilization of the Little Joe watershed within the Superior Ranger District of the LNF.

LJR provides access to national forest (NF) recreational areas including dispersed camping sites, trailheads, fishing and hunting access, and scenic vistas. The connecting forest highway in Idaho (St. Joe River Road;figure 1) has been designated as a National Forest Scenic Byway. Although LJR on the Montana side is not a designated scenic byway, it has been designated by the FS as a thoroughfare through an area that is highly sensitive to visual disturbance and is being managed to protect views of natural-occurring landscapes (http://www.fs.fed.us/r1/wmpz/documents/existing-forest-plans/lolo_forest_plan.pdf; project runs through Management Areas 16-22, as indicated on map with in-text references).

***Lolo National Forest Plan* or Forest Plan**

> The proposed project resides in the Middle Clark Fork Geographic Area as defined in the Forest Plan (USDA 1986). Most of this area has been managed with a timber emphasis for many decades. Placer mining operations were common in valley bottoms earlier in the twentieth century. The area has a fairly well-developed road system and contains a number of inventoried road-less areas that offer non-motorized recreation opportunities and quality habitat for fish and wildlife. Approximately 29 percent of this geographic area is within recommended wilderness or other primitive settings. About 71 percent offers opportunities for higher intensities of resource management activities).

In accordance with the National Environmental Policy Act of 1969 (NEPA), Council on Environmental Quality Regulations, 40 CFR parts 1500-1508, and Executive Order (EO) 12114, this Environmental Assessment (EA) of the proposed action was developed through review of available technical and environmental documentation, an analysis of impacts by an interdisciplinary staff of environmental professionals, and consultation with local authorities.

The purpose of this EA is to aid in the determination of an alternative and evaluation of effects of proposed improvements to LJR. This EA introduces four alternatives ranging from no action to improving the existing roadway.

This EA is intended to review the proposed LJR improvement project in sufficient detail to determine the effect of the proposed actions to: threatened and endangered (T and E), proposed or sensitive species; cultural resources; wetlands; and social, and economic health.

1.2 Scope and Nature of the Proposed Action

The scope of the proposed improvements to LJR would include:

- constructing a more consistent road width than currently exists;
- placement of aggregate base and asphalt concrete pavement;
- culvert replacement and bridge construction;
- drainage improvements;
- clearing and grubbing;
- addition of guardrails, signs, and striping;
- stream and floodplain enhancement;
- riparian and cut slope vegetation improvements; and
- soil stabilization and sediment delivery reduction measures.

It is anticipated the proposed project would take two years to complete. More specific information on the project alternatives is presented in Chapter 3 of this EA.

Initial scoping for NEPA

In 1998, WFLHD drafted a Project Identification Report (PIR) that characterized LJR project as requiring a categorical exclusion (CE). After a considerable number of responses in opposition of the project from wildlife organizations and governmental agencies, the required NEPA document was elevated to an environmental assessment.

1.3 Jurisdiction

Currently three agencies have jurisdiction over Little Joe Road. The Montana Department of Transportation has, and will retain, jurisdiction and maintenance responsibility for Little Joe Road from mile post 0.0 to 1.1. Mineral County currently has jurisdiction and maintenance responsibility from mile post 1.1 to 1.9. The remainder of the road is under Forest Service jurisdiction. Mineral County has signed an agreement to accept jurisdiction and maintenance of the road from mile post 1.9 to 16.2 upon completion of the proposed forest highway project. LJR is classified by the FS as a rural major collector[1]

In 1998, the proposed project was programmed in the Forest Highway Program by the Tri-Agency, which consists of WFLHD, the FS, and the Montana Department of Transportation (MDT). WFLHD, which administers the Forest Highway Program in partnership with the FS and MDT, is designated as the lead agency and is responsible for project development and construction.

[1] *Collector Route. A low or moderate capacity route which does not provide a highway or arterial road level of service. A collector route often leads traffic to arterial roads or directly to highways. Occasionally a collector route will fill gaps in a grid system between arterial roads. Traffic volumes and speeds are typically lower than those of arterial highways.*

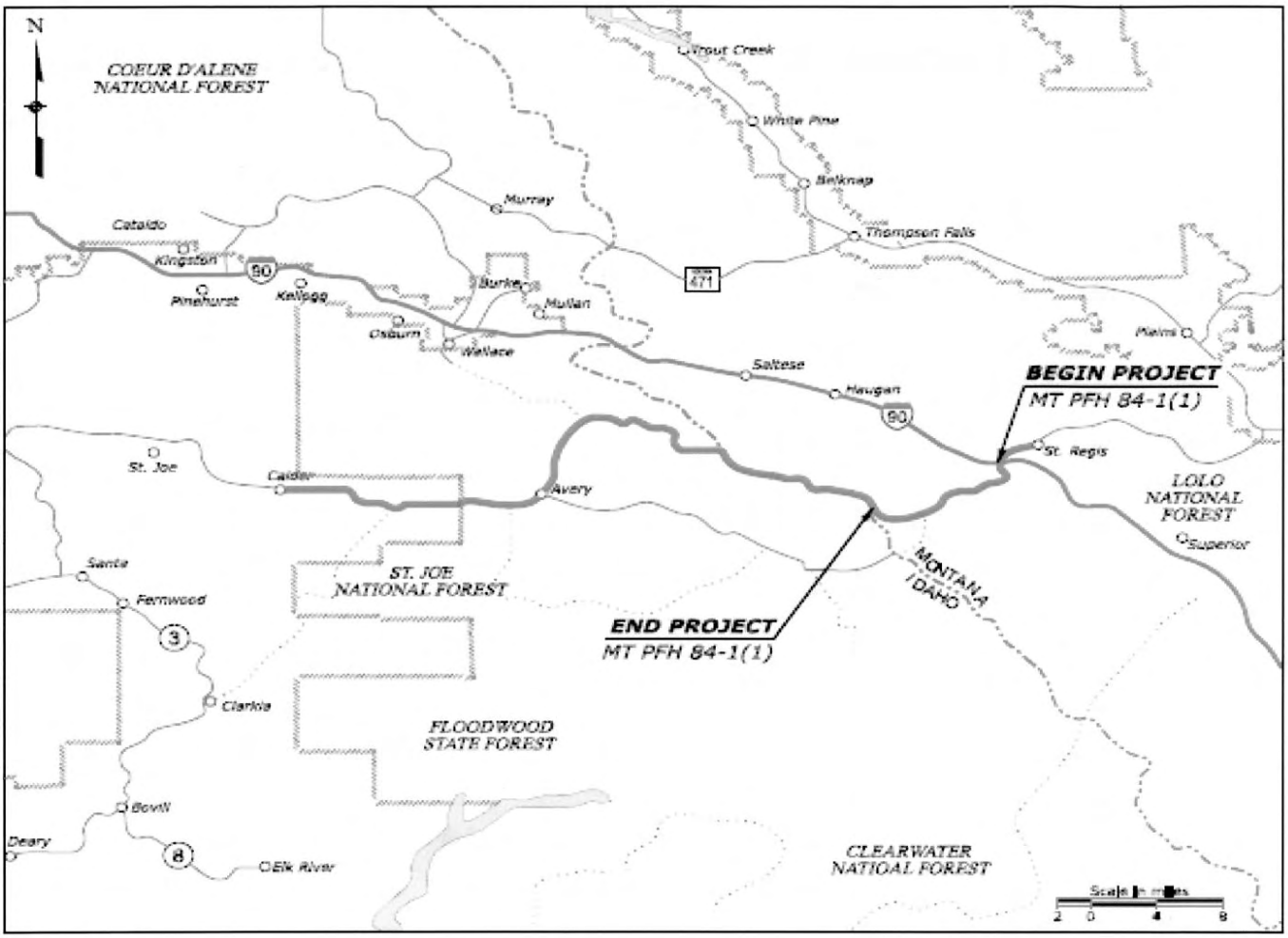
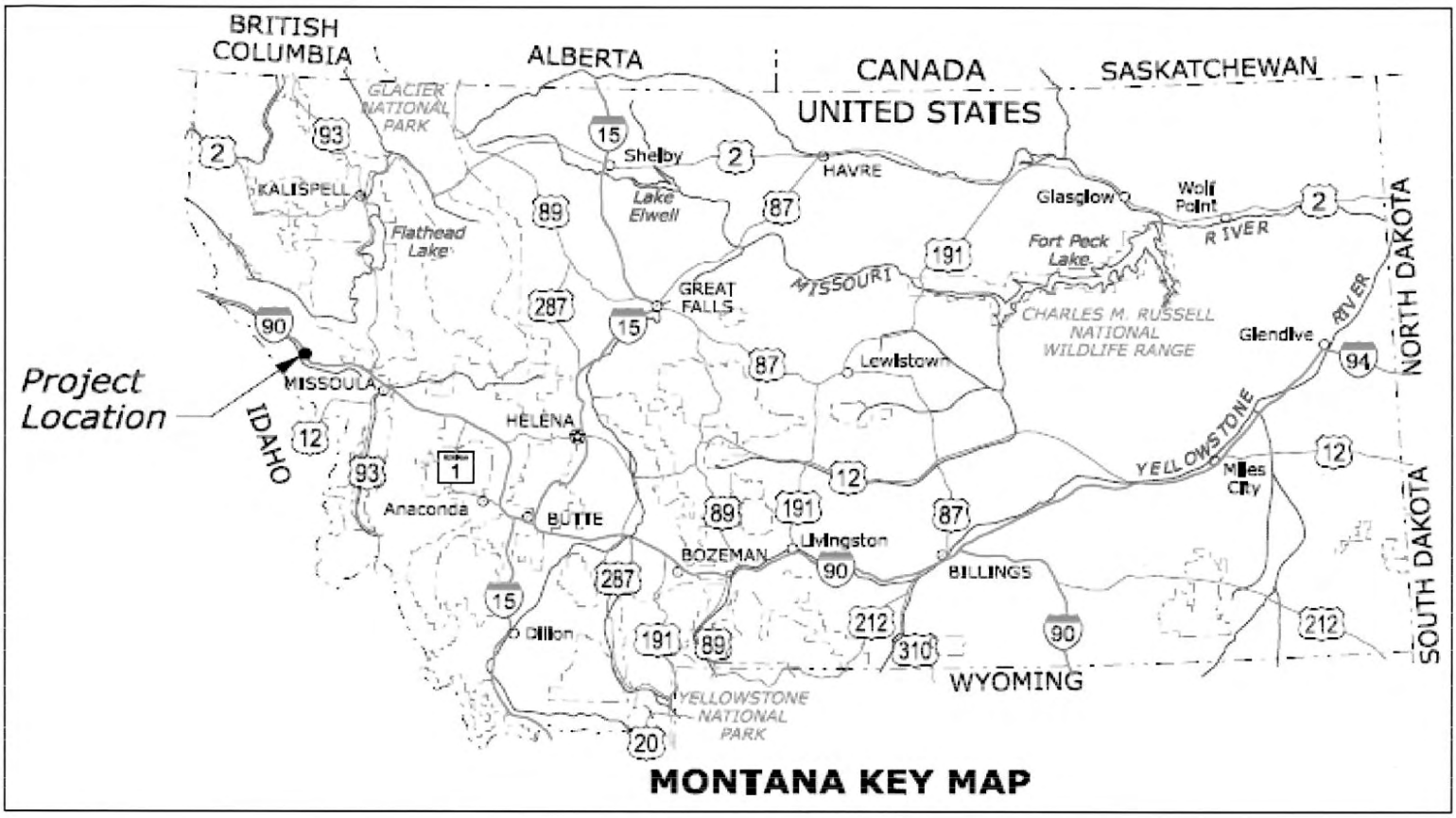


Figure 1 Project location map



MONTANA KEY MAP

1.4 Social, Economic, and Environmental Team

A Social, Economic, and Environmental (SEE) Team (also referred to as the Inter-Agency team) was set up in the early stages of project development to identify environmental issues, coordinate public participation, develop project alternatives, and confirm engineering design criteria. The SEE team, composed of representatives of the LNF, Mineral County, MDT, and WFLHD, acts as a steering committee for project development activities during the conceptual and design phases of the project.

1.5 Funding

The proposed project is funded through the Forest Highway category of the Federal Lands Highway Program, which is part of the Federal Highway Trust Fund. Funding from this program aids public agencies such as county and state transportation departments in providing safe, efficient public roads that serve national forest-related traffic. To qualify for this program, a road must be located within or adjacent to a national forest and be essential for the protection, administration, and utilization of the forest and its resources. In Montana, WFLHD, the FS, and the MDT jointly select projects to be funded under the Forest Highway Program. The MDT represents the interests of counties that have nominated projects for funding.

Additional funding for the project is provided through the Aquatic Organism Passage (AOP) program. This program sets aside a specified amount of money per year that will be used specifically to improve aquatic organism passage in streams, rivers, and creeks on forest highways and is managed by the FS.

As administrator of the Forest Highway Program, WFLHD is responsible for the development of the proposed project and is the lead agency for compliance with requirements of the National Environmental Policy Act of 1969 (NEPA).

The proposed project was nominated jointly by Mineral County and the FS. It is currently expected to begin construction in 2009 or 2010. Federal funding available for this project is approximately $12 million.

2 Purpose of and Need for Project

The purpose of the proposed Little Joe Road Project is to improve recreational and commercial driving comfort; reduce annual maintenance efforts, costs and impacts; improve safety; improve AOP[2] at stream crossings; and reduce sediment delivery to Little Joe Creek and the North Fork of the Little Joe Creek.

To accomplish the purpose, the following conditions require relief:

- Little Joe Road has a rough driving surface.
- The existing surface washboards under traffic loads, requiring continual, costly and time-consuming maintenance. This irregular road surface contributes to safety concerns to the traveling public and the FS.
- Safety features such as signs, guardrails, road widths, curve radii, and cut slope stability are inadequate for a road that receives public use and is classified as a FS Level Of Service (LOS) 5[3].
- Two curves with narrow driving surfaces and curve radii are safety concerns to the FS.
- Dust and runoff from the gravel surface result in sediment delivery to Little Joe Creek, degrading water quality and aquatic habitat in a state-listed impaired stream segment that is home to federally-listed bull trout. Sediment is delivered into Little Joe Creek and North Fork Little Joe Creek.
- Airborne dust from the gravel surface hinders sight distance.
- Upstream migration of aquatic organisms and federally-listed bull trout is impaired at two locations where the existing alignment crosses North Fork Little Joe Creek (figure 4).
- Ongoing maintenance practices threaten to widen the driving surface, causing road encroachment on Little Joe Creek and North Fork Little Joe Creek.
- The clear zone is obstructed along portions of the route, increasing the potential for vehicle collision with roadside objects.
- Roadside drainage (figure 5) is void or deficient, causing rainwater to carry sediment from the road surface to Little Joe Creek and North Fork Little Joe Creek.

[2]*Aquatic organism passage describes the passage of species such as amphibians, reptiles, and, mollusks http://www.stream.fs.fed.us/news/streamnt/jan02/jan02_01.htm*

[3]*Level Of Service 5. Assigned to roads that provide a high degree of user comfort and convenience. These roads are normally double lane, paved facilities. Some may be aggregate surfaced and dust abated. The appropriate traffic management strategy is "encourage.*

Figure 4. Culvert with no room at the edges of the water for aquatic organism passage

Figure 5. Lack of roadside drainage

2.1 Existing Road Conditions and Deficiencies

MP 0.0 to 1.1 From MP 0.0 to the St. Regis River Bridge (MP 1.1) the road is paved and is in generally good condition. The first 1.1-miles of the route conforms to the projected American Association of State Highway and Transportation Officials (AASHTO)[4] geometric dimensions, however there are some physical and operational deficiencies. The pavement has localized areas of minor longitudinal and thermal cracking.

[4] *The American Association of State Highway and Transportation Officials is tasked with providing tools, information, and support to improve the quality and safety of our nation's 4 million miles of streets and highways and 600,000 bridges.*

Rehabilitation and resurfacing will improve the longevity of the pavement without having to reconstruct the base. Some guardrail is damaged and is not safely connected to the existing bridge structures.

MP 1.1 to 1.9 From MP 1.1 to MP 1.9, the road has a bituminous surface treatment (BST)[5] that was in poor condition when last inspected June 2007. From MP 1.1 to MP 1.9, the BST surface has numerous areas of moderate to severe distress, mainly in the form of fatigue cracking (figure 6) which, if not corrected, may lead to the extra expense of repairing the underlying road. There are no centerlines or other pavement markings on this section.

Figure 6. Fatigue cracking

MP 1.9 to 16.2 The FS constructed the remainder of the route from MP 1.9 to MP 16.2 in 1972 as a gravel road. It had been recently graded and was in relatively good condition when it was last inspected in 2007. From MP 1.9 onward, the gravel road becomes dusty and experiences washboarding during the summer months. Periodic grading of the gravel is performed to reduce these problems. Occasional rock fall from unstable slopes present safety hazards to drivers.

MP 0.0 to 16.2 The clear zone[6], defined as the area along the side of the traveled way (including the shoulder) available for recovery of an errant vehicle, is obstructed along portions of the route.

[5] *In appearance, a BST looks much like an asphalt concrete pavement used on state highways. The BST provides a hard riding surface like an asphalt surface; however the surface texture is rougher due to exposure of the aggregate through the asphalt application. In addition, a BST has a shorter service life, it's more flexible, and it's less expensive than standard asphalt concrete pavement. BST is constructed with two or three applications of the following; a layer of liquid asphalt covered with aggregate for a total thickness of 1± inches.*

[6] *The Roadside Design Guide defines a* ***clear zone*** *as the total roadside border area, starting at the edge of the traveled way, available for safe use by errant vehicles. http://www.fhwa.dot.gov/programadmin/clearzone.cfm*

The current gravel roadway width is variable and ranges between 24 and 32 feet. At MPs 12.2 and 14.5, the curves are too narrow and sharp for safe vehicle maneuvering, which increases the probability of collision or driving over the edge. In other areas the driving surface is wide and approaches Little Joe Creek and North Fork Little Joe Creek, eliciting airborne dust and gravel side-casting by passing vehicles, exacerbating the high sedimentation levels or Total Maximum Daily Load (TMDL)[7] values. Airborne dust inhibits a driver's ability to see ahead, which increases the potential for vehicle to vehicle or vehicle to obstacle collision. http://www.mountain-plains.org/pubs/html/mpc-04-156/pg6.php#safe.

Speed limit signs, curve-warning signs with advisory speed plates or other driver information devices are lacking in most areas. The absence of such devices could result in personal injury or damage to, or loss of, property.

The current speeds range from 27 miles per hour (mph) at curves to 45 mph. Currently approximately one-third of the route is 45 mph, another one-third is 40 mph and the final third of the route is 35mph.

Where the road crosses the Little Joe Creek stream channel, two culverts limit the passage of aquatic and semi-aquatic species. The culverts are too narrow to allow for back and forth mobility of aquatic species like salamanders and frogs and they were not originally designed to allow for the upstream and downstream mobility of resident trout. The crossings are located at MP 7.5, also referred to as the lower crossing, and MP 10.7, also referred to as the upper crossing.

Much of LJR is void of roadside drainage channels (figure 5) that serve to drain the road base and sub grade of water and carry collected water to a sufficient outfall. Because the gravel-surfaced road closely parallels Little Joe Creek, there is potential for runoff from the road surface to flow directly into the creek, introducing sediment and increasing turbidity.

Many of the deficiencies described above require frequent costly maintenance efforts by the agencies responsible for road maintenance. Loose gravel, potholes, and wash-boarding require frequent grading of the graveled portion. The fix is temporary and must occur regularly to maintain a smooth surface. Stream crossing structures require maintenance to keep the road and structures stable and functioning properly. Regardless of the costs, the Forest Service available funding and staffing for maintenance roads has been decreasing over the years, which further exacerbates the deficiencies on this and other roads in the national forests.

Maintenance Costs
The 2006 values for maintenance:

Re-graveling (last graveling occurred about 1993) 34,000 cubic yards (yd^3)at \$20/ yd^3	\$ 680,000
Approximately \$52,307/year at today's rates	\$ 52,307/yr
Brushing ~every 8 years at \$4000	\$ 500/yr
Blading	\$ 8,000/yr
Water truck	\$ 2,000/yr
Dust abatement (\$50,000 when performed, dependant upon weather)	\$ 50,000/yr
Slides/ditch lines/culvert cleaning	\$ 5,000/yr
Approximate maintenance costs	*\$ 117,807/yr*

The above values do not maintain the road at an LOS 5. To maintain the road at the LOS 5 level the maintenance cost would substantially increase.

The manner in which the road is maintained increases the potential for sediment into Little Joe Creek and North Fork Little Joe Creek. Currently, gravel is brought in and spread across the surface of the road where, when driven on, it is broken into smaller pieces and gradually pushed to the edges where it encroaches on Little Joe Creek. Without constant and vigilant maintenance, drainage features fail, allowing the surfacing material to be transported off the road and into the adjacent creek.

Pressure from vehicle weights combined with rain water can cause the road to form weak spots or divots in the gravel, creating traffic hazards referred to as potholes. Potholes can cause damage to vehicle suspension systems and tires, and can become a safety hazard when a driver attempts to recover control of a vehicle after driving into a pothole.

2.2 Road Uses

LJR serves residential, commercial forest and recreational traffic within this segment of the Lolo National Forest and connects with other National Forest Service Roads (NFSRs) accessing adjacent NFS lands. It links the communities of St. Regis, Montana; and St. Maries, Calder, and Avery, Idaho. The first 1.9 miles of the route provide private property access to approximately eight residences (*pers comm.*, Tim Read, Mineral County planner, April 2008). The road corridor also provides access to NF recreational facilities including dispersed camping sites, trailheads, fishing and hunting access, and scenic vistas.

[7] *Total Maximum Daily Load (TMDL) is the amount of a particular pollutant that a particular stream, lake, estuary or other waterbody can 'handle' without violating state water quality standards.*

The principal commercial use on the forest and private lands served by LJR is timber harvest and hauling. LJR is a timber haul route for a portion of the Lolo National Forest, as well as areas of the Idaho Panhandle NF. WFLHD 1998 Project Identification Report recorded an annual average of 23 million board feet (MMBF) of timber hauled over LJR for the previous 10-year period. The annual average volume hauled has dropped in the 10 years since 1998. Forest Capital, a private landowner in Idaho, currently hauls an average of 3-8 MMBF of timber over LJR annually. There are no foreseeable changes in quantity (*pers comm.*, David Gabrielson, Forest Capital, January 2008).

The Idaho Panhandle NF's are composed of three forest zone's; the Kaniksu, the Coeur d'Alene, and the St. Joe. The LJR joins Idaho State Highway #3 at the Montana/Idaho border, in the St. Joe NF. Idaho State Highway #3 is designated as a Wild and Scenic route. State Highway #3 adjoining the LJR is used for timber haul, access to campgrounds in the St. Joe NF, and Idaho resident use.

The project portion of the forests is closed to new mineral entry, but mining under existing valid claims may continue as long as the objectives outlined in the Forest Plan are not impaired.

National Forest System roads classification

The FS uses the Forest Service Handbook to classify roads and has determined LJR is classified a Level 5. A level 5 classification is the highest standard of classifications and is assigned to roads that provide a high degree of user comfort and convenience. These roads are normally double lane, paved facilities. Some may be aggregate surfaced and dust abated.

2.3 Traffic Volumes

Seasonal Average Daily Traffic (SADT), or the average number of vehicles that travel in both directions over the route each day when the road is not closed due to snow, was calculated from data taken May through October 1997. During this time period, the SADT was 93, of which 45 percent were trucks. A consideration of the maximum future traffic volumes is needed to accommodate the design life of the road. A design life of 20 years is the industry standard for highways, so project traffic volumes were projected from the conceptual construction date of 2009. Future traffic volumes are computed by applying an annual growth factor to the most current traffic counts. Using 3 percent as the annual growth rate, projected traffic volumes are estimated to be 129 SADT in 2007 and 247 SADT in 2029. The number of logging trucks using this corridor is not expected to increase proportionally over this period.

2.4 Accident History

An accident report received from the Montana Department of Transportation in June of 2007 states there have been four reported accidents along LJR within the last 17 years (MDT July 2007, see appendix). Table 1 summarizes the contributing circumstances of the accidents.

Table 1 Accident history for Little Joe Road

Accident number	Vehicle	Contributing Circumstance
1	a	Shoulder left, snow or slush
2	a	Shoulder right, snow or slush
3	a	Icy, too fast for conditions
4	a	Icy

Average accident rate information for low volume roads is difficult to attain

1) range 28W, township 18N, section 35 in November 1996 - Listing #1 Sequence # 1
2) range 28W, township 17N, section 5 in May 2001 - Listing #2, Sequence # 4
3) range 29W, township 17N, section 14 in October 1998 - Listing #3, Sequence # 3
4) range 29W, township 17N, section 13 in October 1993 - Listing #3, Sequence # 4

3 Alternatives Considered

Background

In 2003, WFLHD considered a broad range of alternatives to address the needs of this project but several were eliminated early in the evaluation process. The existing roadway was constructed with a sub-grade width that anticipated future paving; therefore alternatives on new locations were determined not feasible or prudent due to the extraordinary costs and environmental impacts associated with not utilizing the existing road and sub-grade. The number of alternatives was reduced to three; the "no action" alternative, a modified reconstruction alternative (Preferred Alternative), and a full reconstruction alternative. The full reconstruction alternative did not meet the anticipated funding available and has been eliminated from consideration.

The above three alternatives were presented to the public around June 2003 in the *Project Checklist for Little Joe Road* (FHWA 2004; Project Checklist). The Project Checklist was used by WFLHD as part of its early coordination and data gathering process during the project development phase. The checklist described why the project is needed, the scope of the needed improvements, and the alternatives being considered at that time. It also identified potential issues relative to the project and study area, and it helped WFLHD determines the type of environmental analysis required to comply with NEPA and applicable environmental laws.

The Preferred Alternative was identified and defined by the SEE team after a 2004 meeting. The meeting goal was to address project objectives and issues raised by the public and other government agencies.

In 2003 and 2004, resource surveys were completed for the action area.

In 2004 a Fisheries Report and Biological Assessment (USDA FS 2004, Fisheries Report) was completed. That report used the guidance in the 2002 Federal Register proposed bull trout critical habitat that included the effects along the entire LJ creek, that would have been affected had the full reconstruction project alternative been implemented. However, in 2005 the Federal Register Final Rule for bull trout critical habitat the Federal Register (50CFR part 17, Sept., 24, 2005) designated required analysis on private lands only (excluding the previously studied forest service lands). Under this ruling, the affected area for the LJR project has been scaled back; thus the current preferred alternative effects would be fewer than were found in the Fisheries Report and Biological Assessment.

After the 2005 ruling, the LJR project was put on hold; it was reinitiated in the spring of 2007.

An additional alternative to maintain a gravel road surface and improve AOP by repairing the crossing structures was proposed after the 2007 reinitiation of the LJR project based on feedback from concerned agencies. However, this additional alternative was dropped from further consideration when it was determined that it would only remedy two out of the eight conditions requiring relief as discussed in the purpose and need.

The two remaining alternatives, the No Action and Preferred, are discussed in the following sections along with the alternatives considered but rejected from further evaluation.

3.1 No-Action Alternative

Under the no-action alternative, no improvements would be made to Little Joe Road between MP 0.0 and 16.2. Mineral County, the FS, and the State of Montana would continue routine road maintenance on their respective portions of the road, such as reshaping of the gravel surfacing at periodic intervals. Potential safety concerns such as sharp curves, washboarding, hindered sight distance, signs, guardrails, road widths, curve radii, and cut slope stability would remain. This alternative does not serve the needs of present and future road users or solve any of the current maintenance problems or safety concerns as stated in the purpose and need. This alternative would have minimal new environmental impacts because there would be no new disturbance from construction. However, the probability of sediment from the gravel road reaching Little Joe Creek and its north fork would still exist. The no-action alternative would do nothing to reduce high TMDL levels.

Maintenance, safety, and environmental considerations would not be addressed. With this alternative, maintenance costs and efforts would continue to increase. The maintenance costs would not address the FS goal to maintain the road at an LOS 5. There would be a lack of guardrail and other roadside safety features. Speed signs would not be posted, and there would be no road markings. There would be no investment of construction dollars, and no change in scenic values. The two existing culverts would remain in place, thereby not providing increased potential for AOP.

3.2 Preferred Alternative

Under this alternative, the final paved width would be a design width of 22-feet for the majority of the route except at curves where roadway width is required to be wider. Ten-foot lanes and one-foot shoulders would be constructed and an appropriate clear zone would be built into the alignment. The design speed would be 45 mph from MP 0.0 to MP 5.3 and 30 mph from MP 5.3 to MP 16.2. Warning signs recommending speeds less than 30 mph would be posted at curves.

Safety and environmental considerations would be addressed. Existing damaged and substandard guardrail would be replaced in essentially the same location. Delineators may be placed in other areas to warn drivers of hazards and obstacles. Signs, pavement striping, and other roadside safety improvements would be added. Existing ditches would be cleaned, restored, reshaped or rebuilt, and wider ditches would be constructed in heavy rock fall locations. Settling basins would be constructed to allow any suspended sediment to settle prior to reaching ditch outlets.

Revegetation would be performed to preserve and protect the aesthetic native plant values and habitats associated with the area, enhance scenic qualities, reduce erosion potential, and reduce the potential for undesirable plants to establish.

Bridges

This alternative proposes the replacement of two culverts with bridges at MPs 7.5 and 10.7 to address the existing culvert conditions requiring AOP relief. This would expand the flow openings at the crossings on North Fork Little Joe Creek. Pile driving would be necessary at the two proposed bridge sites.

Table 2 Existing and proposed crossing structures.

MP location	Crossing	Existing Structure	Proposed Structure
10.7 (Upper crossing)	9.5-foot-wide culvert	Structural plate open bottom arch culvert on spread footings	single span, concrete girder bridge
7.5 (Lower crossing)	10-foot-wide culvert	Structural plate open bottom arch culvert on spread footings	single span, concrete girder bridge

Riprap. Riprap would be installed at each bridge crossing to protect the road abutments and bridge foundations from scour during flood events.

A natural streambed channel over the riprap up to the ordinary high water (OHW) elevation would be created. Features such as large boulders, root wads, or/and rock weirs may be installed in the channel to promote the natural flow and function of the stream. Revegetation with a native species would occur above the OHW.

Detour for the Upper Crossing. To accommodate the bridge installation at the upper crossing, a temporary detour would be constructed within the existing right-of-way or temporary easements. The detour would require the construction of a diversion channel consisting of a pipe culvert placed in North Fork Little Joe Creek with temporary fill placed over the culverts for traffic to pass. The detour would be placed adjacent to the existing crossing structure and would be removed when the new bridge could be used.

At the lower crossing, no detour would be necessary because the road would be temporarily closed during construction.

Sharp Curves. In order to minimize earthwork and ground disturbance, numerous curves would not be corrected to meet current AASHTO standards. Signs, pavement striping, and other roadside safety improvements would be added to warn motorists of the other approaching curves as needed. However, there would be some road widening at MP 12.2 and MP 14.5 where two sharp curves exist. Excavation into the slope would be required to slightly straighten the road and increase curve radii at the "switchback's"[8] (MP 12.2 and 14.5). Also, the curves would have a wider driving surface to accommodate vehicle maneuvers and improve potential safety concerns at these sharp turns.

[8] *A road, trail, or railroad track that follows a zigzag course on a steep incline*

Shifting the road. Where feasible and where the road is in close proximity to the creek, the road would be moved slightly away from the creek and the new buffer would be planted with vegetation to allow for the filtering of more sediment from storm-water runoff before entering Little Joe Creek and North Fork Little Joe Creek.

Blasting. Except for the bridge sites, blasting would be necessary at MP 12.2 and 14.5 to make the required excavation possible. The blasting would occur at a distance no closer than 0.22-miles (about 1,200-feet) from Little Joe Creek and North Fork Little Joe Creek and, with an explosive charge less than 350-pounds, would be far enough away to cause no impacts to fish. Currently no decision has been made whether blasting would be required at the bridge sites.

Ancillary Sites

Aggregate would be available from an existing FS material source pit at MP 2.2, and excess excavation material would be hauled and placed at this site as well. Use of the FS pit would necessitate crossing Little Joe Creek over an existing corrugated metal pipe (CMP) culvert. The CMP is grossly undersized and misaligned, presenting a potential fish passage barrier at high flows but, more importantly, impacting channel morphology up and downstream from the site. As this project is expected to use all the remaining suitable material from the material source, the pit would no longer be needed in the future. The CMP would be removed upon completion of the use of the pit and the pit would be restored to it's function before use as a material source pit.

There may be some construction activities that will take place outside the construction limits that will require ground disturbance, occupation, clearing, or could result in some environmental impacts. Such activities may be material extraction, material wasting, water retrieval, staging, etc. These activities will take place at either commercial or non-commercial sources. Commercial sources are established, have provided material to public and private entities on a regular basis over the last two years, have appropriate state and local permits, and do not require expansion outside their currently established and permitted area.

Should a non-commercial source be used, documentation will be submitted that use of the area: (a) will result in a "no historic properties affected" determination for properties on or eligible for listing to the National Register of Historic Places (NRHP) and a "de-minimus" determination under Section 4(f) applies; (b) will result in a determination of no more than a "may affect, not likely to adversely affect" to species or habitat listed as threatened or endangered under the Endangered Species Act (ESA) and (c) will not encroach into waters of the U.S. or wetlands protected under Executive Order 11990.

Water for compaction and dust reduction during construction would be required. Potential sources are Little Joe Creek, North Fork Little Joe Creek, and/or the St. Regis River.

Correlation with Purpose and Need and Deficiencies

Several features of this alternative would improve the operational safety of Little Joe Road. A paved surface would provide an even surface, free from washboarding and loose gravel and would be more resistant to potholes, affording greater vehicle control. A

paved surface would also substantially reduce airborne dust, improve visibility and sight distance, decrease stopping distance, and reduce sedimentation in Little Joe Creek and North Fork Little Joe Creek. Clearly-designated lane markings on the paved surface would provide drivers with an improved sense of travel space and reduce the tendency for travel near the edge or the center of the roadway, which is particularly important when maneuvering through curves where sight distance may be limited. A clear zone free of obstacles would provide a recovery area for vehicles that depart the roadway. Improved road signage would help drivers anticipate road conditions by informing them of appropriate travel speeds and potential travel hazards. Improving substandard curves would improve safety by making the curves less sharp for the design speed of the road, potentially reducing road departures. Although these curves would be improved, an overall curvilinear design of the road would be retained, helping to deter excessive vehicle speeds.

Several features of this alternative would help reduce sedimentation resulting from Little Joe Road. Providing a paved surface would eliminate the production of sediments created by the crushing of a graveled surface from road use. Where the road is close to the creek, the driving surface of the road would be moved slightly away from the creek and the new buffer would be planted with vegetation to filter sediment from storm-water runoff before entering Little Joe Creek and North Fork Little Joe Creek. Sediment from storm-water runoff could be captured before reaching the creek with improved drainage ditches and settling basins.

Several features of this alternative would reduce maintenance efforts of Little Joe Road. A paved surface requires less frequent maintenance because it is more durable than a graveled surface; it eliminates the problem of washboarding and is less prone to potholes. Installing appropriately-sized stream crossing structures and moving the road away from the creek where feasible would reduce the potential for flooding and better protect the stability of the road, reducing the need for future costly maintenance. Additionally, the consistent road width and designated travel lanes would concentrate the pavement load (tire tracks) farther from the road edges, protecting the pavement and reducing the need for surface and shoulder maintenance.

Replacing two existing culverts with bridges would provide aquatic organism passage, and restore mobility of federally listed bull trout and sensitive westslope cutthroat trout. The new bridge passage openings may encourage some terrestrial species to pass under the road.

3.3 Alternatives Considered but Not Advanced

The SEE team, or Tri-Agency, deliberated on other alternatives during planning and scoping for this project. Many design options were considered, and most consisted of variations on the preferred alternative described above.

In addition to the preferred and no-action alternatives, two other alternatives were considered but rejected subsequent to the Project Checklist and the scoping process. The alternatives included a Full Reconstruction alternative – full resurfacing, restoration, rehabilitation, and reconstruction with AASHTO compliance, and a Gravel with Aquatic

Organism Passage (AOP) alternative. The following sections include descriptions of the two alternatives.

3.3.1 Full Reconstruction Consistent with AASHTO Standards

Under this alternative AASHTO standards would be met, creating a roadway width of 24-feet with 10-foot lanes and 2-foot shoulders. The road would be realigned where numerous curves exist which would depart from the current roadway. All existing culverts would be replaced with bridges.

The increased road width required to be consistent with AASHTO standards would demand the addition of road material along the side of the road that boarders the LJ creek. The addition of material, referred to as fill, would be placed on the slope between the road and the creek, and sometimes into the creek. To make certain no loss of function to the creek, the fill action would necessitate shifting the location of the creek farther from the road. This would result in animal displacement, animal population and habitat fragmentation, and loss of wildlife habitat. Straightening the alignment to be consistent with AASHTO standards would encourage increased speeds, potentially leading to increased collisions and human and wildlife injury or mortality.

Additional potential impacts include: increased construction impacts, increased environmental impacts, increased costs, and an irrevocable commitment of resources. Reclamation of the existing roadbed and reconnection of adjacent access roads and intersections would be necessary.

Although this alternative would meet the purpose and need for the project, after initial public input, the SEE team decided against further consideration of the alternative due to higher costs and environmental impacts.

3.3.2 Gravel Road with AOP

Proposed surfacing is dependent on a variety of factors including:

- existing location and design,
- existing and projected types of traffic and speeds,
- structure stability,
- safety,
- climate,
- environmental issues,
- dust abatement and maintenance costs, and
- Average Daily Traffic (ADT).

Below is a discussion of the graveled option and its elimination from further consideration.

Little Joe Road has an anticipated SADT in the year 2029 of fewer than 250, and there are no plans to open the road to year-long use. The FS currently blades the road at least two times per year, which does not maintain the current LOS 5. The agency would have to blade the road every 3 to 4 weeks to reach the Level of Service that Little Joe Road is classified, and the FS cannot fund that amount of effort.

The use of gravel roads results in washboarding and potholes. To address these conditions, the Forest Service responds by grading the gravel road to provide a smoother surface. As average counts of traffic increase, this maintenance frequency would increase. Responding to the increased maintenance demand becomes cost prohibitive for the Forest Service, and the county will not take over complete maintenance of LJR if it remains gravel. Additionally, grading of gravel roads generally results in an increasing width as road shoulders are widened by side-casting. Gains realized by relocation of the road away from Little Joe Creek and North Fork Little Joe Creek may be lost through these routine maintenance activities as the road surface widens.

Also, the project would not address the problem of air-borne dust if a gravel surface were maintained. While there are alternative methods of dust abatement such as the application of dust suppressants, they are expensive to purchase, apply, and maintain, requiring additional equipment, labor hours, and fuel. Additionally, there is limited and conflicting information about the effectiveness of these products and their potential to increase environmental impacts.

A gravel road can compromise driver safety. Loose gravel, washboarding, and potholes may hinder a driver's ability to keep a vehicle safely under control. Airborne dust reduces driver visibility and sight distance. Also, a gravel surface prevents the placement of pavement markings on the road to designate driving lanes and shoulders, eliminating the opportunity to provide important safety elements.

For the above safety, maintenance, and environmental reasons, and the consideration that this option would not completely meet the project's purpose and need, the gravel option with AOP was eliminated from further consideration.

4 Affected Environment and Environmental Consequences

This chapter describes the existing environment for each resource potentially affected by the no-action and preferred alternative. The no action information is used as a baseline on which to determine the environmental consequences of the preferred alternative. Each resource heading includes a description of the affected environment followed by a discussion of the effects to the resource. Also included are mitigation measures proposed to avoid, minimize, and/or compensate negative impacts to resources that would be caused by the project.

4.1 Soil and Geology

Bedrock underlying the project corridor consists of meta-sedimentary rocks of the Wallace Formation. The Wallace Formation consists primarily of argillite, quartzite, shale, limestone, and sandstone. Bedrock outcrops occur intermittently both naturally and in roadway cuts for all but the fist few miles of the project.

Superficial deposits for the first 1.2 miles of the project consist of sand, gravel, and cobbles as the roadway crosses alluvial terrace deposits of the St. Regis River. For the remainder of the project, deposits consisting of angular gravel, cobbles, and boulders in a brown sandy silt matrix overlie bedrock on the hill slopes. This material classifies primarily as a GM [9] in the Unified Soil Classification System. Material consisting of sand, gravel, cobbles, and silt deposited by Little Joe and North Fork Little Joe creeks, of varying thickness and extent, occur in the valley bottoms. Additional geologic and geotechnical information is contained in the WFLHD geotechnical reports.

According to Natural Resource Conservations Service (NRCS) soil survey maps, the major soil type in the area has a silt loam surface layer 7-14 inches thick formed in volcanic ash-influenced loess. The sub-soils and sub-stratums are very gravelly or very cobbly sandy loams or silt loams.

Included are up to 15 percent dissimilar soils. These soils are somewhat poorly drained and are seasonally wet. They occur in depressions, swales, and along low-gradient drainages. They have a dark silt loam surface layer containing volcanic ash-influenced loess and have high organic content.

Sub-soils and substratum are mottled and have very gravelly loam or silt loam textures. These soils support moist meadow forest openings.

GM[9] *A letter classification used in the Unified Soil and Classification System that designates the soil as: silty gravels, gravel-sand-silt mixtures*

4.1.1 Affected Environment

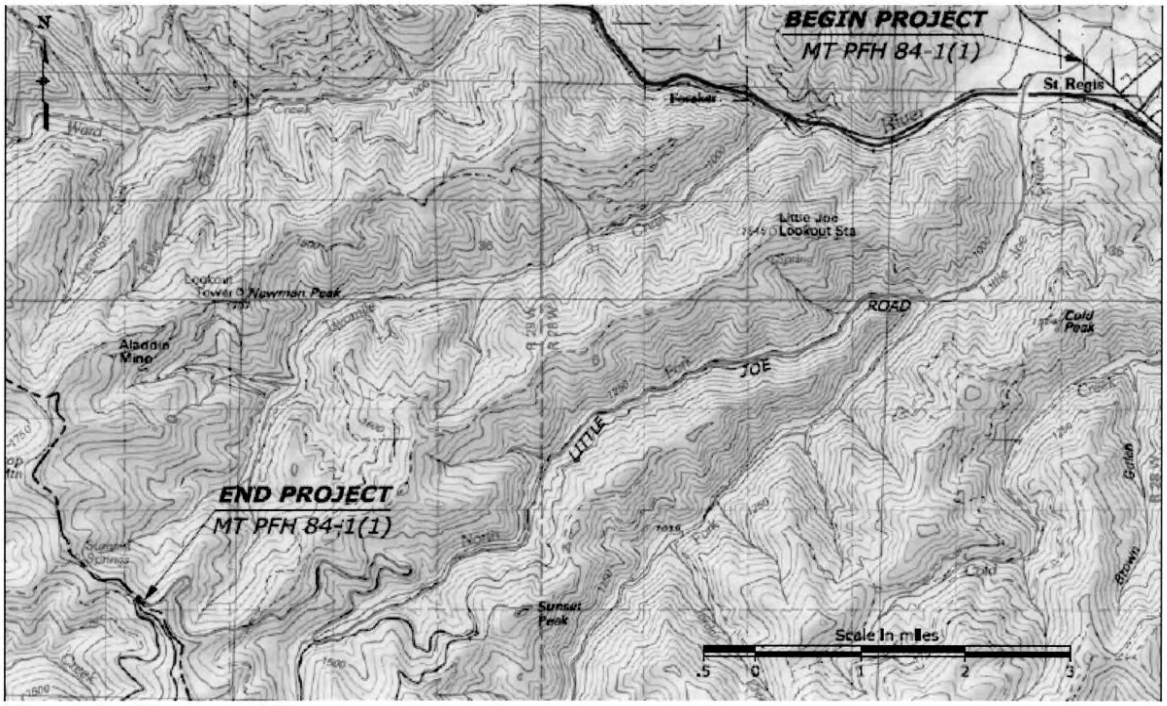


Figure 3. Topographic map

1. Geomorphology (terrain, geology, hydrology)

The project corridor is located in predominantly mountainous terrain of the Bitterroot Mountains of western Montana. Elevation at the project initiation is approximately 2,550 feet above sea level and approximately 5,760 feet above sea level at the highest point near the project terminus.

From the project initiation point to just past the St. Regis River, approximately 1.2 miles, the roadway crosses a relatively flat, broad valley created dominantly by the Clark Fork and St Regis rivers. The roadway then enters a mountain valley and climbs gradually following Little Joe Creek and North Fork Little Joe Creek for approximately 9.5 miles. At this point the roadway leaves the North Fork Little Joe Creek Valley, gains elevation, and traverses mountain slopes for another 5.5 miles to the Idaho state line and the project terminus (figure 3).

Mountain slopes rise between 1,500 and 2,000 feet above, and on either side of, Little Joe and North Fork Little Joe creeks. Throughout the roadway corridor there exist broad, gently sloping draws and convex side-slopes influenced by the structure of underlying bedrock. At the higher elevations near the west end of the project, there are concave alpine basins (cirques), as well as concave moderate to moderately steep slopes and basins.

Fluvial landforms include recent floodplains, perennial streams, and low stream terraces 2 to 10 feet above the existing stream channel. Floodplains and terraces have fluctuating water tables and are subject to flooding.

Most drainages are intermittent or perennial, first and second order streams (Strahler 1957). Small lakes are common on the benches between steeper features. There are glaciated mountain slopes and steep sub-alpine ridges and headwalls. Slopes are vegetated with forbs where springs surface seasonally and overland flow is common.

2. Vegetation

Vegetation consists of dense stands of western larch, Douglas fir, lodgepole pine, Engelmann spruce, western redcedar, western white pine, subalpine fir, and mountain hemlock. Understory vegetation includes blue huckleberry, fool's huckleberry, queencup beadlily, beargrass, elderberry, and mountain maple. Moist meadow forest openings occur in depressions or swales throughout the unit and adjacent to some low gradient drainages. They occupy about 15 percent of the map unit. Moist meadow openings support bluejoint, elderberry, horsetails, sweetscented bedstraw, fase hellebore, coneflower, sedges, and cow parsnip (USDA 2003).

4.1.2 Project Impacts

No-Action Alternative. Because the no-action alternative would not expose new soils or rock cuts, it would not result in new impacts to the soils and geology of the area. The existing cuts would remain and continue to undergo the effects of erosion.

Preferred Alternative. Due to the proximity of the existing road to Little Joe Creek and North Fork Little Joe Creek, plans to move the road away from the creek or soften some curves would require minor cuts into some of the hillsides. Exposed cut-slopes would be subject to wind and water erosion over the short term until vegetation is reestablished. Due to steep slopes and harsh growing conditions, vegetation would not establish on 100% of the cut-slope areas. However, measures would be taken to maximize revegetation of the cut slopes by using a variety of methods that could include staked wattle rolls, scattering wood debris, mulching, seeding, fertilizing, and planting native shrub and tree species where appropriate and feasible. Native species would be used for revegetation which would improve the rate of revegetation over the long term. The design of the cut-slopes, which would be similar to naturally-occurring slopes, as well as vegetation pockets would serve to lessen erosion. With best management practices (BMPs) in place, short-term erosion at the construction site would be minimized.

The proposed material source is located at MP 2.2. Mitigation will include reclamation of the pit after use. Approximately 27 acres of impact will occur with the proposed action, including the actions associated with the material source pit.

The materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no impacts to Soil and Geology.

4.1.3 Cumulative Impacts

The analysis area for cumulative impacts on soils and geology for this project is the Little Joe Creek watershed. In addition to the identified impacts associated with the preferred

alternative, other past, present, and future impacts to the soils and geology have been identified and are discussed below.

Past activities include construction, seasonal recreational use, and maintenance of the existing LJR; construction and uses of eight residential properties; timber sales and related road building, minor agricultural activities; and seasonal recreational use. Present and future activities include: seasonal recreation, maintenance, use of about eight residential properties and roads, minor agricultural activities, use of recreational trails, and about 8 MBF of annual timber sales and associated logging activities.

Along with the proposed project, all of these activities would continue to contribute to erosion when vegetated areas are exposed or disturbed for long periods of time. Some of these activities increase the amount of impervious surfaces in the area, resulting in more storm-water runoff with potentially higher velocities, further contributing to erosion. The incremental impacts from this project when added with the past, present, and future activities described above, would not result in substantial impacts to the soils and geology of the Little Joe Creek watershed or affect the ability of these resources to sustain themselves.

4.1.4 Mitigation

See Summary of Mitigation Measures Chapter 5

4.2 Water Resources

4.2.1 Affected Environment

The project area contains three main streams: the St. Regis River, Little Joe Creek, and North Fork Little Joe Creek. Additionally, there are several unnamed minor streams which flow through the area. The road parallels Little Joe Creek or North Fork Little Joe Creek for approximately 9.5 miles, crossing at two locations along the 16.2-mile route.

Little Joe Creek has reaches low in the watershed where flows commonly go subsurface due to low water tables. Thus, the watershed has only a seasonal connection with the St. Regis River, and portions of the creek are a barrier to passage during low flows. Fish and other aquatic organisms are naturally confined to smaller reaches and the upper portion of the watershed by the dry reaches. Restoring connectivity within the reaches that flow year round (and the upper reaches) is important to the resiliency of fish populations (Technical Review and Exchange, January 2007).

The lower site is the only crossing on the main stem of Little Joe Creek to its confluence with the St. Regis River. There are two crossings of North Fork Little Joe. One of them is a bottomless arch on North Fork Little Joe Creek near the beginning of the South Fork Little Joe Road. The flow at this site was subsurface during a November 2003 site visit. This arch, though slightly narrower than bankfull width, appears to be fully passable to aquatic organisms when water is flowing, but not when flows are low and subsurface.

Little Joe Creek is a third order tributary to the St. Regis River. Little Joe Creek is on the 303d list for impaired water quality and probable sources are sediment, physical

substrate, habitat alterations, alteration in stream-side or littoral vegetative covers from highways, roads, bridges, infrastructure, natural sources, and streambank modifications/destabilizations activities. The following link is to the Montana Department of Environmental Quality and shows the Little Joe Creeks listing and causes of the listing, (http://www.deq.mt.gov/CWAIC/).

4.2.2 Project Impacts

No-Action Alternative. The no-action alternative would do nothing to reduce the amount of sediment generated from the gravel surface of the existing roadway. The no-action alternative would not address the raveling occurring from the steep slopes. Soil erosion and sedimentation has the potential to increase with continued maintenance that requires the addition of gravel each time the road has grading and maintenance activities. The no-action alternative would conversely not have the short-term impacts associated with in-stream work.

Preferred Alternative. With the preferred alternative, there is a potential for localized short-term increases in sedimentation and turbidity in areas where in-water work would take place. Temporary sedimentation is anticipated to occur downstream from the project area, and turbidity is anticipated to extend slightly upstream and downstream from the project area. The extent of the area affected would be dependent on flow conditions, stream gradient, and water depth. Over the long term, sedimentation and turbidity are expected to improve relative to the existing condition as a result of paving the roadway (thereby decreasing the exposure of soil and gravel to the elements and vehicular disturbance). In addition, the bridges and roadside drainage improvements, scaling and stabilization of existing rock slopes, and correction of the road and creek proximity would help reduce future sedimentation. However, given that the project proposes paving the existing graveled roadway, which already has a relatively high storm water runoff coefficient compared with the surrounding vegetated land, paving is expected to increase runoff only slightly more than the runoff from a graveled surface.

It is anticipated that paving the road would reduce the amount of available sediment for transport to the waterways in the long term. Also, where feasible, the driving surface (newly paved surface) of the existing gravel roadway would be shifted away from Little Joe Creek and North Fork Little Joe Creek to further decrease the potential for gravel entering Little Joe Creek. The area between the road and creek would be planted with appropriate shrub seedlings and cuttings, seeded, and mulched. Some of the areas next to the creek currently consist of riprap. To reduce sedimentation, the riprap would be left in place and seedlings would be planted between the riprap, thereby reducing disturbance while providing a vegetative buffer and stream shade. These actions are anticipated to have overall long-term beneficial effects on the water quality of the Little Joe drainage.

Increased impervious surface, and new cut-slopes may result in increases in pollutants to Little Joe Creek, but they would be offset by eliminating the available sediments generated from a gravel surface, improving drainage and stream crossing structures and adjusting the driving surface away from Little Joe Creek, which reduces side-casted gravel and encroachment.

Sediment vs. asphalt pollutant: Current sediment in the Little Joe Creek is documented in the Montana DEQ findings. Sediment, as a form of pollutant, will decrease with the proposed action, http://www.epa.gov/nps/education/runoff.html

Short-term Effects

The short-term effect of the preferred alternative would be a temporary increase in suspended sediment in Little Joe Creek and North Fork Little Joe Creek in the area where it runs immediately adjacent to the project route and downstream from the two bridge installation sites. Approximately 0.50 acres of in-water work would occur to accommodate the removal of the two culverts and the placement of the two bridges. With implementation of appropriate erosion and sediment control BMPs, sediment is not expected to adversely affect water quality or water quality-related values. Impacts would be temporary and limited to the time when soil-disturbing activities were taking place immediately adjacent to Little Joe Creek. and North Fork Little Joe Creek The St. Regis River may also experience a temporary increase in suspended sediment during bridge installation, however, with BMPs and sediment capture devices in place, downstream movement of sediment would be minimal. Also, new cut-slopes would increase sediment transport, but revegetative activities such as mulching, planting native vegetation, and sediment control measures such as staking straw wattles or constructing erosion berms where appropriate would reduce erosion.

Through consultation with the Montana Department of Environmental Quality (MT DEQ) and in compliance with applicable permitting and regulatory requirements, a water turbidity-monitoring plan would be developed and implemented to ensure the project would not degrade water quality conditions in Little Joe Creek. As part of this plan, procedures would be put in place to address unplanned discharge and to comply with permit conditions.

Paving of the road would increase the amount of impervious surface that is currently in the project corridor. This would lead to increased storm-water runoff and potential for increased sediment/pollutant transport to the surrounding waterways. However, given that the project proposes primarily paving the existing graveled roadway, which already has a relatively high storm-water runoff coefficient (0.70) compared with the surrounding vegetated land, paving is expected to increase the runoff to 0.95. With the construction of drainage ditches and runoff directed into buffering areas, these effects would be minimized. Also, the surface runoff at the bridge installation sites would be captured and carried to the ends of these structures to run down the embankment back to the stream. Currently, the runoff at these crossings dumps directly into the stream.

It is anticipated that restoring the ditches and providing settlement basins along with paving the road would reduce the amount of available sediment for transport to the waterways. Also, where feasible, the road would be moved away from Little Joe Creek and North Fork Little Joe Creek, and the area between the road and creek would be planted with appropriate shrub seedlings and cuttings, seeded, and mulched. Some of the areas next to the creek currently consist of riprap. To reduce sedimentation, the riprap would be left in place.

The materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no impacts to water resources.

Thus, upgrading/removing the three culverts as discussed to fully passable stream simulation structures would remove all unnatural barriers in the lower portions of this stream system (Adapted from Technical Review and Exchange, January 2007).

4.2.3 Cumulative Impacts

The analysis area for cumulative impacts on water resources for this project is the Little Joe Creek watershed. In addition to the identified impacts associated with the preferred alternative, other past, present, and future impacts to the water resources of the project area have been identified and are discussed below.

Past activities include construction, recreational use, and maintenance of the existing LJR, construction and uses of eight residential properties, about 8 MBF of annual timber sales and related road building, and seasonal recreational use. Present and future activities include: seasonal recreation, maintenance, use of about eight residential properties and roads, minor agricultural activities, use of recreational trails, and about 8 MBF of annual timber sales and associated logging activities. Road use and timber haul activities contribute other pollutants such as petroleum products.

The cumulative effects of these activities have or would potentially contribute to slight water quality degradation by adding sediment to water bodies. However, the incremental impacts from this project, when added to all past, present and future events would not result in substantial cumulative impacts to the resource, or affect the ability of the resource to sustain itself.

4.2.4 Mitigation

See Summary of Mitigation Measures Chapter 5

4.3 Wetlands

4.3.1 Affected Environment

The FS completed a wetlands inventory and delineation using the Lolo National Forest System Inventory and field reconnaissance in December 2003, in which nine small wetlands having a cumulative area of 3 to 4 acres were evident.

Wetlands are scattered throughout the route, mostly in areas that are adjacent to the toe of the fill on the riverside of the road. Most of the wetlands are classified as forested wetlands.

The FS revealed "The concerns the Lolo NF has for these small areas relate to slope stability, sediment production and road drainage. We believe these concerns can be adequately addressed by proper design and implementation of Best Management Practices."

4.3.2 Project Impacts

No-Action Alternative. Under the no-action alternative, minor amounts of sediment may continue to be transported to wetlands due to the graveled surface, erosion, and existing poor drainage, which would continue to reduce the functionality of the wetlands.

Preferred Alternative. No river encroachments, fill into or removal of wetlands is expected as the project would primarily stay within the limits of the existing road prism.

In fall 2003, areas adjacent to the proposed Little Joe Forest Highway within 150-feet of the existing roadway were surveyed for wetlands that might be affected by the project. The method of survey was field reconnaissance and the use of the Lolo National Forest Land Systems Inventory (LSI). The LSI is a correlated, Order 3-4 soil survey that also integrates landform, geologic parent material, and vegetation. Several LSI map units define potential wetland indicators and can suggest a wetland presence. The alignment of LJR relative to the Lolo LSI was reviewed and several mapping units with wetland potential were noted. Field reconnaissance confirmed seven small wetlands adjacent to the road on these mapping units. This same field reconnaissance detected wetland indicators at two additional locations that the LSI would not have suggested. The largest individual wetland (about 0.25 acres) is located adjacent to the "big switchback" at mile-post 5.45.

There are no more that 3 or 4 acres of wetlands along LJR. It is not anticipated that there would be any impacts from the preferred alternative because wetlands will be avoided during construction.

The materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no impacts to wetland resources.

Wetlands Finding

In accordance with Executive Order 11990, Protection of Wetlands, WFLHD evaluated the proposed improvements and its wetland impacts. Potential wetland impacts have been consciously reduced through avoidance.

4.3.3 Cumulative Impacts

The analysis area for cumulative impacts to wetlands for this project is the Little Joe Creek watershed. In addition to the identified impacts associated with the preferred alternative, other past, present, and future impacts to the wetlands in the project area have been identified and are discussed below.

Past activities include construction, use, and maintenance of the existing LJR, construction and uses of residential property, timber sales and related road building, agricultural activities, and recreational trail construction and use. Present and future activities include: seasonal recreation, maintenance, use of about eight residential properties and roads, minor agricultural activities, use of recreational trails, and about 8 MBF of annual timber sales and associated logging activities.

These activities have and would likely continue to impact wetlands through the filling of wetlands, altering their hydrologic functions, contributing to sediment loading, and/or altering their vegetation. To offset these impacts, the federal government has implemented a policy of no net loss of wetlands. All federal actions are required to avoid and/or minimize impacts to wetlands. FHWA's policy is to mitigation at least a 1.5 to 1 acre mitigation ratio. This means that for every acre of wetland lost, at least 1.5-acres, depending on the type of wetland, must be preserved or replaced. Therefore, impacts associated with activities requiring a federal action are anticipated to result in a no net loss of wetlands. However, it is understood that some activities, particularly private activities, may result in unmitigated wetland impacts. It is anticipated that these impacts would be minor in nature and that this project, when added to other past, present, and reasonably foreseeable future actions, would not incrementally result in substantial adverse impacts to the wetlands of the Little Joe drainage, because the wetlands exist primarily on public lands with no anticipated planned change in use.

4.3.4 Mitigation

See Summary of Mitigation Measures Chapter 5

4.4 Vegetation

4.4.1 Affected Environment

Dominant forest types in the Little Joe drainage are the mixed xeric forest, mixed mesic forest, Douglas-fir forest, and mixed subalpine forest as described in the Montana Land Cover Atlas (Fisher *et. al.* 1998).

Vegetation along LJR corridor includes riparian communities, disturbed roadside vegetation communities, upland communities, and subalpine communities. A summary description of the vegetation communities is given below and a detailed description is available in the survey notes.

<u>Disturbed Roadside Vegetation</u>

From the start of the project to just after the St. Regis Bridge (MP 0.0 to 1.2) vegetation within approximately 98 feet of the road edge consists of grasses and herbs. The south side of the road also has an open shrub/tree layer over a distance of approximately 3,280-feet; otherwise the vegetation is generally lacking this layer. Dominant species include: orchard grass (*Dactylis glomerata*), barnyard grass (*Echinochloa crus-galli*), timber oat grass (*Danthonia intermedia*), cheatgrass (*Bromus tectorum*), spotted knapweed (*Centaurea maculosa*), common tansy (*Tanacetum vulgare*), black medick (*Medicago lupulina*), alfalfa (*Medicago sativa*), clover (*Trifolium longipes*), and oxeye daisy (*Leucanthemum vulgare*). Dominant trees and shrubs present include common snowberry (*Symphoricarpos albus*), ponderosa pine (*Pinus ponderosa*), and Douglas fir (*Pseudotsuga menziesii*).

In general, areas immediately adjacent to the road are repeatedly disturbed by road maintenance activities. Species described as dominant (above) include these roadside species, which are often only present within around 10 feet of the road's edge. For example, in riparian zones, ponderosa and white pines are rarely growing more than 32

feet from the edge of the road. The distance that this community extends from the road edge varies and appears to be defined by the closeness of the creek, elevation above the creek, and the distance to the top of the slope that leads down to the creek.

Riparian Vegetation

Riparian communities begin on the south side of the road after the St. Regis Bridge, and continue to the first culvert (MP 7.5) as North Fork Little Joe Creek moves closer to the road. The riparian community is also present on the north side of the road between the first and second (MP 10.7) culverts. Between the St. Regis Bridge and MP 11, the distance of the creek from the road ranges from 3 to 330 feet. Dominant species within these riparian zones include: Douglas fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis*), western redcedar (*Thuja plicata*), cottonwood (*Populus balsamifera*), lodgepole pine (*Pinus contorta*), ponderosa pine (*Pinus ponderosa*), western white pine (*Pinus monticola*), Engelmann spruce (*Picea engelmannii*), western larch (*Larix occidentalis*), common snowberry (*Symphoricarpos albus*), red alder (*Alnus rubra*), thimbleberry (*Rubus parviflorus*), redosier dogwood (*Cornus stolonifera*), Douglas maple (*Acer glabrum*), alfalfa (*Medicago sativa*), common tansy (*Tanacetum vulgare*), black medick (*Medicago lupulina*), and orchardgrass (*Dactylis glomerata*).

Low Elevation Upland Vegetation

Upland (non-riparian, lower elevation) communities are present on the north side of the road from the St. Regis Bridge to the first culvert crossing (MP 1.2-MP 7.5) and on the south side of the road between the first and second culvert crossings (MP 7.5-MP 10.7). Dominant species in these areas include: ponderosa pine (*Pinus ponderosa*), lodgepole pine (*Pinus contorta*), Douglas fir (*Pseudotsuga menziesii*), western larch (*Larix occidentalis*), grand fir (*Abies grandis*), western redcedar (*Thuja plicata*), redosier dogwood (*Cornus stolonifera*), serviceberry (*Amelanchier alnifolia*), snowberry (*Symphoricarpos albus*), red alder (*Alnus rubra*), common tansy (*Tanacetum vulgare*), clover (*Trifolium longipes*), lupine (*Lupinus caudatus*), and orchardgrass (*Dactylis glomerata).*

High Elevation Upland Vegetation

Upland communities (drier, higher elevation) exist on both sides of the road from just beyond the second culvert crossing to the area of excavation and curve widening (MP 12.2 and MP 14.5). The creek leaves the road corridor after the second culvert crossing, and the vegetation becomes drier as a result. Western redcedar (*Thuja plicata*) becomes less dominant and then disappears, common beargrass (*Xerophyllum tenax*) and thinleaf huckleberry (*Vaccinium membranaceum*) become increasingly common and then dominant in the subalpine community.

Subalpine Vegetation

Subalpine communities begin near the proposed excavation and curve-widening area (MP 12.2 and MP 14.5) with the increase in elevation (1,061 feet in elevation gained from the second culvert to the area of excavation and curve widening). Dominant species in the subalpine community are: subalpine fir (*Abies lasiocarpa*), mountain hemlock (*Tsuga mertensiana*), Douglas fir (*Pseudotsuga menziesii*), and lodgepole pine (*Pinus contorta*)

with an understory of thinleaf huckleberry (*Vaccinium membranaceum)*, and common beargrass (*Xerophyllum tenax*).

Threatened, Endangered and Sensitive Plant Species

The FS, Superior Ranger District, and the U.S. Fish and Wildlife Service (USFWS) species lists are provided in Chapter 4 of this document. One FS sensitive plant species, the clustered lady's slipper (*Cypripedium fasciculatum*), is potentially present in the project area. The clustered lady's slipper was reported by the Superior Ranger District as "known to occur" in the Little Joe drainage (need citation). The Superior Ranger District is the main area where this species occurs. It is known to occur in the Little Joe drainage, predominantly in Douglas fir/Ninebark, Grand fir/Ninebark, and Grand fir/Twinflower habitats.

The clustered lady's slipper prefers a filtered light environment under canopy cover. It is the only orchid with a hairy stem and is found in boreal habitats from 3,000 to 4,700-feet (*pers. comm.,* Darlene LaVelle, Forest Botanist Lolo NF, June 26, 2003). No individuals or communities of this species were observed during the field survey nor were its common habitat associations observed.

Based on the above information, it is concluded that the species is unlikely to be present within the project area. The area of the excavation and curve widening is higher in elevation than the species range; no species or habitat associations were observed within the project footprint at lower elevations. However, as this species was not specifically surveyed for using approved FS survey protocol, its potential presence in the project area cannot be discounted.

Noxious Weeds

Exotic plants and noxious weeds were noted during the field survey. The INVADERS data system was queried for Mineral County, Montana; 96 species were listed as exotic, and 32 as noxious. Sporadic to common occurrences of the following species listed in the INVADERS data base were observed in the field: black medick (*Medicago lupulina*), clover species (*Trifolium spp.*), common tansy (*Tanacetum vulgare*), spotted knapweed (*Centaurea maculosa*), oxeye daisy (*Leucanthemum vulgare*), mustard species (*Sisymbrium spp.*), orchardgrass (*Dactylis glomerata*), barnyardgrass (*Echinochloa crus-galli*), curly dock (*Rumex crispus*), and common mullein (*Verbascum thapsus*).

The Forest Service reports that spotted knapweed, common tansy, St. Johnswort (*Hypericum spp.)*, common mullein and oxeye daisy are the only noxious species along LJR. Weeds are currently controlled by tordon spraying when the creek is over 50 feet from the spraying area and by amine 4 when the spraying area is within 50 feet of the creek (*pers. comm.,* Ron Schlader, Land Use/Realtor, July 2, 2003).

Vegetation: Table 3 provides a compilation of the existing vegetation

Table 3 Vegetation within the LJR drainage

	Disturbed Roadside	Riparian	Low Elevation	High Elevation	Subalpine	FS Sensitive	Noxious Weeds
Orchardgrass	X	X	X				X
Barnyard grass	X						X
Oatgrass	X						
Cheat grass	X						
Spotted knapweed	X						X
Common Tansy	X	X	X				X
Black medick	X	X					X
Alfalfa	X	X					
Clover	X		X				X
Oxeye daisy	X						X
Common Snowberry	X	X	X				
Ponderosa pine	X	X	X				
Douglas fir	X	X	X		X		
Grand fir		X	X				
Western redcedar		X	X	X			
Lodgepole pine		X	X		X		
Western white pine		X					
Englemann spruce		X					
Western larch		X	X				
Red alder		X					
Thimbleberry		X					
Redosier dogwood		X	X				
Douglas maple		X					
Serviceberry			X				
Red Alder			X				
Lupine			X				
Beargrass				X			
Thinleaf Huckleberry				X	X		
Subalpine fir					X		
Mountain hemlock					X		
Clustered lady's slipper*						X*	
Mustard species							X
Curly dock							X
Common Mullein							X

*One FS sensitive plant species, the clustered lady's slipper, is potentially present in the project area. The clustered lady's slipper was reported by the Superior Ranger District as "known to occur" in the Little Joe drainage. The Superior Ranger District is the main area where this species occurs.

4.4.2 Project Impacts

No-Action Alternative. Under the no-action alternative, it is anticipated that inadvertent side casting of road material would continue to encroach on roadside vegetation as the FS continues to grade the existing gravel road. No other impacts to vegetation are anticipated with the no-action alternative.

Preferred Alternative. The project would involve cutting back slopes, placing fill in numerous locations, and establishing clearing limits. A revegetation plan would be used to establish vegetation on these cut and fill slopes. To enhance revegetation success, a number of techniques would be employed, for example revegetating with native seedlings that are adapted to the existing conditions. Native vegetation, which is expected to have a greater survival rate due to its natural adaptation to the environment, would be used. Topsoil would be conserved and stockpiled for later use on disturbed sites. A mulch or tackifier would cover seeded areas to prevent erosion prior to reestablishment of vegetation. A fast-germinating annual plant may be added to the seed mix to provide quick ground cover. Grass seed would be planted using hydro seeding or drilling. Where appropriate, erosion berms would be constructed or straw wattles would be staked at appropriate spacing. Also, appropriate sediment and erosion control BMPs would be put into place before construction began and would be maintained in working order throughout the construction period and until vegetation was established.

Soil disturbance and removal of vegetation resulting from road construction could increase the risk of noxious weed invasion and the spread of weeds already existing in the project area. Construction machinery could serve as a carrier for the dispersal of weed seed from outside the project area and between sites within the project route. There is also the possibility that weed seed may be imported from infested rock and aggregate sources. Weed control within the project limits would be of limited utility absent a regional control effort by Mineral County. However, mitigation techniques, described below, would be utilized to prevent and control the spread of noxious weeds as a result of the project as best as possible. These techniques would be included in the revegetation plan.

Noxious Weeds Potential Effects
Exotic plants are often early-successional, pioneer species that are very successful at colonizing disturbed areas. Some exotic plants, in particular many noxious weeds, can become established without soil disturbance. Once introduced into an area, these species can invade intact vegetative cover and displace native plants. Disturbed areas such as the road edge often harbor exotic plant species, including noxious weeds.

Short-term effects of construction could result in an increase in noxious weeds within the project area. Soil disturbance during project activities could encourage the establishment of weed species, and construction equipment could introduce new species from residue remaining from previous project sites. An increase in weed species would affect species composition, generally including any rare plant populations present in the project area. However, employing the use of appropriate prevention measures (such as staying within the current road footprint, cleaning equipment before it enters the site, and revegetating

with an approved weed-free mix), the risk factor for the spread of noxious weeds would be minimized.

Long-term impacts could occur at the area of excavation and curve widening as new soil would be exposed to potential noxious weed invasion. Long-term effects could occur from the increased number of vehicles traveling the road, as the vehicles could transport noxious weed seeds.

Subalpine Vegetation Potential Effects
Terrestrial habitat would be affected by the preferred alternative from loss of habitat and potential increased recreational use. Potential short-term effects to vegetation would be trampling, uprooting, and covering individual plants during construction. Primarily the roadside vegetation community would be affected by these actions. Long-term impacts are expected at the area of excavation and curve widening as approximately 3.7-acres of vegetation would be permanently displaced. Rehabilitating the proposed bypassed section of roadway would minimize this affect; however, a long-term net loss of vegetation is expected due to the increased size and angle of the cut bank. Long-term impacts of trampling, uprooting and covering could potentially occur if the project results in increased human use of the area. The introduction of weed species during construction could decrease the species richness and diversity of the area.

FS Sensitive Species Potential Effects
If present in the project area, the clustered lady's slipper could be affected by the preferred alternative from loss of habitat and potential increased recreational use. Short-term impacts would occur if individuals are trampled or covered during construction activities. Long-term impacts could occur if a large number or community of individuals were uprooted, trampled or covered. Weeds may be inadvertently introduced on tires and shoes, and affect populations located within or adjacent to the project area.

The materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no impacts to vegetation resources.

4.4.3 Cumulative Impacts
In addition to the identified impacts associated with the preferred alternative, other past, present, and future impacts to vegetation have been identified and are discussed below.

Past activities include construction, use, and maintenance of the existing Little Joe Road, construction and uses of residential property, timber sales and related road building, agricultural activities, and recreational trail construction and use. Present and future activities include: seasonal recreation, maintenance, use of about eight residential properties and roads, minor agricultural activities, use of recreational trails, and about 8 MBF of annual timber sales and associated logging activities.

Along with the proposed project, these activities have (or would potentially) contributed to removal of vegetation, loss of available habitat, or spread of noxious weeds. However, the large amount of public land in the Little Joe drainage restricts residential development and its associated vegetation impacts along approximately 88 percent of the route. Land

management, revegetation efforts, and efforts to control the spread of noxious weeds by local, state, and federal agencies would aid in minimizing impacts to vegetation. Additionally, there are efforts to avoid, minimize, and mitigate impacts to vegetation associated with the proposed project. Therefore, this project, when added to other past, present, and reasonably foreseeable future actions, would not incrementally result in substantial impacts to the vegetation of the Little Joe drainage.

4.4.4 Mitigation

See Summary of Mitigation Measures Chapter 5

4.5 Fish and Wildlife Species

An inventory was conducted by Widener and Associates in November 2003 (Widener 2003; updated in June 2008) that examined the potential presence of threatened and endangered species (Table 4) and Forest Service special status species (Table 5). A "Determination of Effects" (Table 5) was included in the report. Additional wildlife information was obtained from field reviews and correspondence with the Lolo National Forest, Montana Fish, Wildlife and Parks, the Montana Department of Environmental Quality, and the U.S. Fish and Wildlife Service.

Formal consultation with the USFWS was initiated for bull trout on January 25, 2008. The biological opinion was expected in June 2008. Informal consultation was requested in conjunction with formal consultation for the effects determinations described below for bull trout critical habitat, gray wolf, and Canada lynx. USFWS will address these species in the biological opinion. The analysis area is 50 feet on either side of the existing centerline.

Species Lists

See tables 4, 5, and 6 for the species that may occur in the project area.

Table 4. Threatened, Endangered, or Candidate Species and Critical Habitat within Little Joe Road project influence area

Common Name	Scientific Name	ESA Status	Presence
Gray wolf	*Canis lupus*	Endangered	Known
Canada lynx	*Lynx canadensis*	Threatened (4/24/2000)	Known
Bull trout	*Salvelinus confluentus*	Threatened	Clark Fork, Flathead, Kootenai, St. Mary and Belly River basins; cold water rivers & lakes
Bull trout critical habitat		Threatened	Streams, lakes and reservoirs in the Clark Fork, Flathead and Kootenai River basins

Table 5. Determination of threatened, endangered, or candidate species and critical habitat within Little Joe Road project influence area

SPECIES	DETERMINATION		
	No effect	**May affect, not likely to adversely affect**	**May affect, likely to adversely affect**
Gray wolf		X	
Canada lynx		X	
Bull trout			X
Bull trout critical habitat		X	

Table 6. . List of terrestrial special status species for the Lolo National Forest. Species may be present or have suitable habitat in the project area.

Common Name	Scientific Name	Presence
Coeur d'Alene salamander	*Plethodon vandykei idahoensis*	Likely
Harlequin duck	*Histrionicus histrionicus*	Known until recently
Black-backed woodpecker	*Picoides arcticus*	Known
Flammulated owl	*Otus flammeolus*	Not Likely
Townsend's big-eared bat	*Plecotus townsendi*	Known
Fisher	*Martes pennanti*	Known
Wolverine	*Gulo gulo*	Known
Gray Wolf	*Canis lupus*	Known
Northern bog lemming	*Synaptomys borealis*	Not likely
Western toad	*Bufo boreas*	Likely
Northern leopard frog	*Rana pipiens*	Likely
Bald Eagle	*Haliaeetus leucocephalus*	Likely
Peregrine falcon	*Falco peregrinus*	Not likely
Common Loon	*Gavia immer*	No habitat

Source: Kristi Swisher, FS Regional Office, June 2008

4.5.1 Bull Trout and Westslope Cutthroat Trout

4.5.1.1 Affected Environment

The USFWS listed the Columbia River and Klamath River distinct population segments of bull trout (*Salvelinus confluentus*) as threatened on June 10, 1998 (63 FR 31647). Bull trout are native to the Pacific Northwest and Canada, and were historically abundant and widespread throughout Pacific Northwest drainages. Even though their numbers and distribution have been reduced, bull trout still occur throughout much of the Columbia River basin, in the Klamath River in Oregon, in the headwaters of the Saskatchewan River in Alberta, and the Mackenzie River system in Alberta and British Columbia, Canada.

The Little Joe Creek provides an important habitat component for the St. Regis River sub-populations of native bull trout. Montana Fish, Wildlife and Parks (MFWP) 2002

survey of fish populations in the St. Regis River only identified bull trout in the Little Joe watershed. Bull trout were present in all reaches sampled within Little Joe watershed indicating its importance to bull trout recovery in the St. Regis River. MFWP and Forest Service personnel identified twelve bull trout redds[10] during a 2003 survey in North Fork Little Joe Creek. Seven redds were located in South Fork Little Joe Creek. In addition, one large fluvial bull trout was identified in South Fork Little Joe Creek. These bull trout spawning locations are the only verified redds identified in the entire St. Regis River system. The Little Joe watershed is classified as a bull trout priority watershed and is proposed as critical habitat by the United States Fish and Wildlife Service (USFWS). Forest Service and MFWP surveys have identified bull trout in the project area.

Bull trout habitat and sub-population integrated status for the Hydrological Unit Code (HUC) is 'Functioning at Unacceptable Risk' (FUR) (USDA, 2000).

Table 7 shows the number of bull trout that were counted in North Fork Little Joe Creek from 2001 to 2006.

Table 7. St. Regis River Fish Sampling 2001-2006

Little Joe Cr. (North Fork)Section	Location (T,R,S)	Physical Description of Location	Date Sampled	Section Length	Species	Total # captured	Range of Le (mm)
1	17N,28W,4	~1mi. Upstream	11/12/1999	~75m	DV	2	156-168
2	17N,28W,5	~2 mi. upstream	8/29/2002	~200m	DV	13	108-232
3A	17N,28W,5	~2.1mi. Upstream	6/15/2005	~ 600m	DV	22	74-285
4	17N,28W,7	~4mi. Upstream	8/29/2002	~200m	DV	3	92-104

DV=bull trout

Above data provided by Ladd Knotek, Montana Fish, Wildlife and Parks, June-06, 2007

Extinction Risks for Sensitive Fish Species:

Using the methodology outlined by Rieman and McIntyre (1993), risks of extinctions for bull trout were estimated at the local level. Table 8 shows the risks of extinction for bull trout.

Table 8: Extinction Risks for Bull Trout
Little Joe Watershed – HUC: 170102040811

Sensitive Species	Temporal Variability in Recruitment & Survival	Population Size	Growth & Survival	Isolation	Overall Extinction Risk
	1/2/3/4*	1/2/3/4*	1/2/3/4*	1/2/3/4*	1/2/3/4*
Bull Trout	2	3	3	4	4

* 1: Low Risk of Extinction
2: Moderate Risk of Extinction
3: High Risk of Extinction
4: Extreme Risk of Extinction

These risks were analyzed with respect of the three general mechanisms of extinction: deterministic, stochastic, and senetic. Deterministic extinctions occur when there is a cumulative loss of critical components in a species environment not related to chance events (e.g., loss of pool habitat due to harvesting of riparian forests). Stochastic processes are those risks that are a result of chance events (e.g., forest fires, mud slides, and so on).

The genetic extinction mechanism is the loss of genetic diversity within a population. Depending on the nature of individual effects, the result is usually an increase in the risk of extinction. For example, a culvert that is a fish passage barrier has separated a population in half. Therefore, the population upstream of the culvert is isolated and has a higher risk of extinction based on its` inability to recruit from downstream populations. In addition to being isolated, the continuation of the deterministic effect continues to deplete the population unless stabilized (or changed). Any given individual effect has the ability to become synergistic in relation to the three mechanisms identified above, therefore increasing the overall risk of extinction.

Fish surveys within the watershed indicate that bull trout and westslope cuttthroat trout are well-distributed throughout the watershed. Of concern is a lack of documented bull trout spawning activity upstream of culverts along LJR despite apparently suitable habitat. The stream crossing at milepost 7.2 is a fish passage barrier and is assumed to be limiting upstream habitat use.

Environmental Baseline

Based on the site-specific environmental baseline conditions of bull trout habitat for Little Joe Creek, and linkage to the primary constituant elements (PCEs) (attachment 4) considering those habitat indicators and other factors as necessary, all PCEs for Little Joe Creek throughout the study corridor are in less than optimal condition.

[10] *A spawning nest made by a fish, especially a salmon or trout*

Forest Plan Standards The Forest Service lists bull trout as a sensitive species, primarily to emphasize habitat protection and prevent population declines that would lead to a threatened designation. Bull trout were subsequently listed as threatened by USFWS.

The Inland Native Fish Strategy (INFISH; USDA 1995) amended the Lolo Forest Plan on August 30, 1995.

This interim strategy was designed to provide additional protection for existing populations of native trout, outside the range of anadromous fish, on 22 national forests in the Pacific Northwest, the Northern and the Intermountain regions. Implementing this strategy was deemed necessary as these species were at risk due to habitat degradation, introduction of exotic species, loss of migratory forms and over-fishing. As part of this strategy, the regional foresters designated a network of priority watersheds. Priority watersheds are drainages that still contain excellent habitat or assemblages of native fish, provide for metapopulation objectives, or are watersheds that have excellent potential for restoration. INFISH also established Riparian Management Objectives (RMOs) and Riparian Habitat Conservation Areas (RHCA). RMOs are habitat parameters that describe good fish habitat. Where site-specific data is available, these RMOs can be adjusted to better describe local stream conditions. The RHCAs are areas where specific management activities are subject to standards and guidelines in INFISH in addition to existing standards and guidelines in the Lolo Forest Plan.

In addition to the standards and guidelines found in INFISH, Lolo National Forest Plan standards applicable to aquatic resources and this project include the following: (numerical designation indicates actual Forest Plan Standard from pages II-8 to II-20, and are included for easy reference)

1) All cooperative agreements for occupancy and use of Lolo National Forest lands would be made consistent with the Forest Plan.
8) Provide for quality hunting and fishing opportunities on the forest
15) The application of BMPs would assure water quality is maintained and meets or exceeds federal and state standards.
19) Human-caused increases in water yields would be limited so that channel damage would not occur as a result of land management activities.
24) All threatened and endangered (T&E) species (bull trout) would be managed for recovery to non-threatened status.
27) Management practices in essential (i.e., critical) habitat of T&E species must be compatible with habitat needs of the species (bull trout), consistent with the goal of recovery to non-threatened status. Manage to maintain population viability for sensitive species as well (westslope cutthroat).
28) Land management practices shall be designed to have a minimum impact on the aquatic ecosystem, free from permanent or long-term unnatural imposed stress.
49) Lolo National Forest roads would be the minimum number and meet the minimum design standards possible while still meeting safety, user, and resource needs.
50) During road design, special emphasis would be placed on minimizing soil movement.

4.5.1.2 Project Impacts.

No-Action Alternative.

Increases in fishing use may proceed more slowly with a gravel surface, because the gravel surface may discourage access.

The no-action alternative would continue to negatively impact bull trout. Little Joe Road's close proximity to Little Joe Creek, its insufficient vegetative buffer in various areas, and its gravel surface would continue to transport sediment to Little Joe Creek and its tributaries. Additionally, maintenance activities such as grading of the graveled road surface would persist in encroaching on Little Joe Creek and may further contribute to sedimentation and high TMDL that are currently causing the stream to be listed as a 303d impaired stream (MTDEQ 2006).

The existing crossing structures provide inadequate passage for all life stages of bull trout. These conditions would not be improved with the no-action alternative, and the structures would continue to restrict available habitat for bull trout at some life stages.

Preferred Alternative.

Direct, and Indirect Effects
Effects were analyzed by sixth code HUC, with a determination being made for the watershed based on the activities proposed.

The direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, stream hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the watershed, affecting ecological functions and contributing to stream or riparian habitat degradation. As such, the action area for the proposed activities include the immediate portions of the watershed containing the project and those areas upstream and downstream that may reasonably be affected, temporarily or in the long term.
The proposed action(s) have the potential to cause the following impacts to the threatened bull trout or their critical habitat in the project area:

1. In-water work would be necessary at the two culvert replacement locations. Stream banks would be excavated below scour depth at the sites and log, rock and natural vegetation would be incorporated into structures that arrest erosion and maintain channel stability.. Excavation and installation poses a minor risk to individual rearing fish that may be present. The proximity of machinery to the creek increases the potential for petroleum product spills into the waterway. Any such spill would likely result in the take of bull trout. Potential for a spill is thought to be low.

2. In-water work has the potential to increase turbidity over the short term. Larger juvenile and adult trout appear to be less affected by temporarily high concentrations of suspended sediments that occur during most storms and episodes of snow melt than younger fish (USDA Fisheries Biological Assessment). However, other research

demonstrates that feeding and territorial behavior can be disrupted by short-term exposure to turbid water (USDA Fisheries Biological Assessment). Localized increases of turbidity during in-water work would likely displace bull trout and westslope cutthroat trout in the project area and disrupt normal behavior. The period of disturbance would be less than eight (8) hours in any one day. Impacts to fish at that time are expected to be temporary and localized.

Effects would be greatest during the approximately six (6) weeks of in-water work and would be extended at a lower level until the sites stabilized.

3. Due to the proximity of the streams to the road surface, the paving operation may result in small amounts of asphalt dropping into stream in several places. In locations where there is the potential for this to occur, a barrier (e.g., erosion berms, straw bales, silt fences) would be erected to prevent paving materials from rolling down the bank into the stream. The asphalt concrete pavement mixtures contain polycyclic aromatic hydrocarbon (PAH) compounds, many of which are known to adversely affect aquatic organisms. Elevated concentrations of PAHs have been associated with changes in physiology, abnormal fin development, occurrence of hepatic lesions and tumors, cataracts, reduced reproductive output, and decreased juvenile survival in fish (Cooper et al. 1996). Asphalt material that drops into the stream during paving could release PAHs. The amount of asphalt and concentration of PAH would likely be very low, if any, and dilution by the flowing waters would minimize bioaccumulation in any aquatic organisms.

4. Staging activities during construction may result in a spill of hazardous materials. In addition, operation of machinery within and near the creeks would increase the risk of a hazardous spill in the creeks.

5. The proposed material source is located at MP 2.2. The end of the material pit is within 130 feet of Little Joe Creek. Extreme flood events may have the potential to cause channel migration into the pit, resulting in a loss of channel stability and complexity and potentially increasing course bed load availability to the channel. However, because of the terrain in the area, it is extremely unlikely that any sort of channel migration into the source pit would occur due to an extreme storm event.

6. The pavement processing facility would be located within the material source pit and is likely to utilize water from Little Joe Creek. Potential spills from pavement mixing are possible and close proximity to the creek may result in direct inputs of toxic chemical. Mitigation, including straw bales and silt fencing, would be used to ensure pavement mixing spills would not occur.

7. Scaling of over-steepened cut slopes involves manual and mechanical removal of loose rock and debris. This material is removed from the roadway and ditches following scaling operations. There is a very low possibility that some of the rock fall may roll across the road and into the channel, affecting stream hydraulics and capacity. Unexpected rainstorms during this activity would likely transport material freshly deposited in the ditch to the adjacent creeks And freshly disturbed cut slopes would likely produce elevated sediment. Ditch and cut slope sediment introductions would create

localized turbidity increases and effects similar to those discussed in number 2 above. These cut slopes would be revegetated after excavation has occurred in order to stabilize the fill.

8. Paving of 16.2 miles of road is likely to increase ditch runoff during storm events and snowmelt periods due to the impermeable road surface. Increased ditch runoff may affect peak flows in Little Joe and North Fork Little Joe creeks. Increased peak flows have potential to elevate bank erosion and sediment transport resulting in degraded habitat conditions throughout the downstream reaches.

Increased ditch flows are likely to result in increased flow velocities within drainage ditches and at cross-drain locations (especially outlets). To reduce sedimentation, mitigation may include using erosion berms, silt fencing, settling basins, and slash filter windrows in drainage ditches.

9. Increased traffic counts and traffic speeds are anticipated following completion of typical paving projects. With increased speeds and traffic volumes the potential for a toxic chemical spill into the adjacent channels is elevated. Depending on the size and type of chemical spilled into the stream, fish populations could be irretrievably harmed. WFLHD is mitigating the potential for increased speeds with paving by maintaining a curvilinear road, narrowing the driving surface, and signing and striping the road.

10. Increased traffic has the potential to result in increased recreational fishing pressure on Little Joe and North Fork Little Joe creeks. Increased fishing pressure introduces increased possibility that bull trout would be inadvertently caught and perhaps killed as they are incorrectly identified by anglers. Intentional poaching of bull trout is not expected to increase, since road access currently exists, and paving the road would not provide additional access.

11. Straightening the curve of the road at MP 14.5 has potential to contribute sediment to stream courses via overland flow. Excavation at the site would occur on unstable soils that are prone to failure and landslides. No stream courses are present in the immediate vicinity of the activity although a small spring/seep exists at the bottom of the fillslope. The hillside is extremely well vegetated with alder and false huckleberry that provides a very suitable vegetative filter. Hillslope gradient exceeds 60 percent at this location. The combination of the activity and physical characteristics of the site results in a moderate potential for sediment delivery.

12. Utilization of Forest Service material source at MP 2.2 is within the Riparian Habitat Conservation Areas (RHCA; 164-984 feet from channel). There is potential for minor tree removal from the pit margins to facilitate gravel extraction and the placement of crushing equipment. Although not likely, there is some potential for large woody debris removal, but the amount of removal will not to be enough to have a detrimental effect on stream shade, bank condition, or future large woody debris recruitment. No substantial effect to water temperature is likely to occur with the use of the pit, and there would be no pumping or discharge of heated surface water to the stream.

13. Multiple pieces of machinery would be located in the material source pit resulting in high potential for minor fuel and fluid spills or leaks. A locally high water table due to the proximity of the creeks creates a potential for water contamination in the event of a spill or several leaks. Spills are likely to be small enough to be contained with mitigation so that no adverse effect would be realized in the Little Joe Creek fish populations.

14. Use of the Forest Service material source pit necessitates crossing Little Joe Creek at MP 2.2 over an existing corrugated metal pipe (CMP) culvert. The CMP is grossly undersized and misaligned, presenting a potential fish passage barrier at high flows but, more importantly, impacting channel morphology up and downstream from the site. As this project is expected to use all the remaining suitable material from the pit, it would no longer be needed in the future. Removal of the pit and the CMP would be included as mitigation for the use of the pit.

Cumulative Effects
The cumulative effects analysis area applies to the St. Regis River sub-population of bull trout. Also considered in the cumulative effects analysis is the potential impact to the St. Joe River sub-population of bull trout across the state line in Idaho.

Past activities include construction, use, and maintenance of the existing Little Joe Road, construction and uses of residential property, timber sales and related road building, agricultural activities, and recreational trail construction and use. Present and future activities include: seasonal recreation, maintenance, use of about eight residential properties and roads, minor agricultural activities, use of recreational trails, and about 8 MBF of annual timber sales and associated logging activities. The cumulative effects to bull trout are beneficial, because of the increased potential for mobility, and habitat access with the construction of fish passage crossings.

Mitigation
See Summary of Mitigation Measures Chapter 5

4.5.2 Bull Trout Critical Habitat

Critical habitat consists of physical and biological features that are essential to the conservation of the species and that may require special management considerations or protection.

In September 2005, the USFWS issued a final ruling designating critical habitat for the Klamath River, Columbia River, Jarbridge River, Coastal-Puget Sound, and Saint Mary-Belly River populations of bull trout pursuant to the Endangered Species Act (70 FR 56212).

In regards to Little Joe Creek, Jennifer Mickelson, Fisheries Biologist Lolo National Forest said in a personal communication on January 16, 2008:

> "When the fisheries BA was written in 2004, proposed critical habitat was designated in Little Joe Creek on federal and private land. When the final ruling came out in 2005, critical habitat was only designated

on private land, which is one-mile of Little Joe Creek from the confluence with the St. Regis River upstream."

Habitat surveys were completed during the 2002 field season for one reach of Little Joe Creek and two reaches of North Fork Little Joe Creek. Reach 1 of the North Fork, (lower reach) and reach 4 (upper reach; figure 7) were surveyed previously (1992 and 1996 respectively). Data for previous surveys is available upon request but is not presented in this report.

Reach 4 on North Fork Little Joe Creek is located upstream of the last creek crossing made by LJR and is less affected by a valley bottom road than Reach 1 and the remainder of the downstream habitat appears to be.

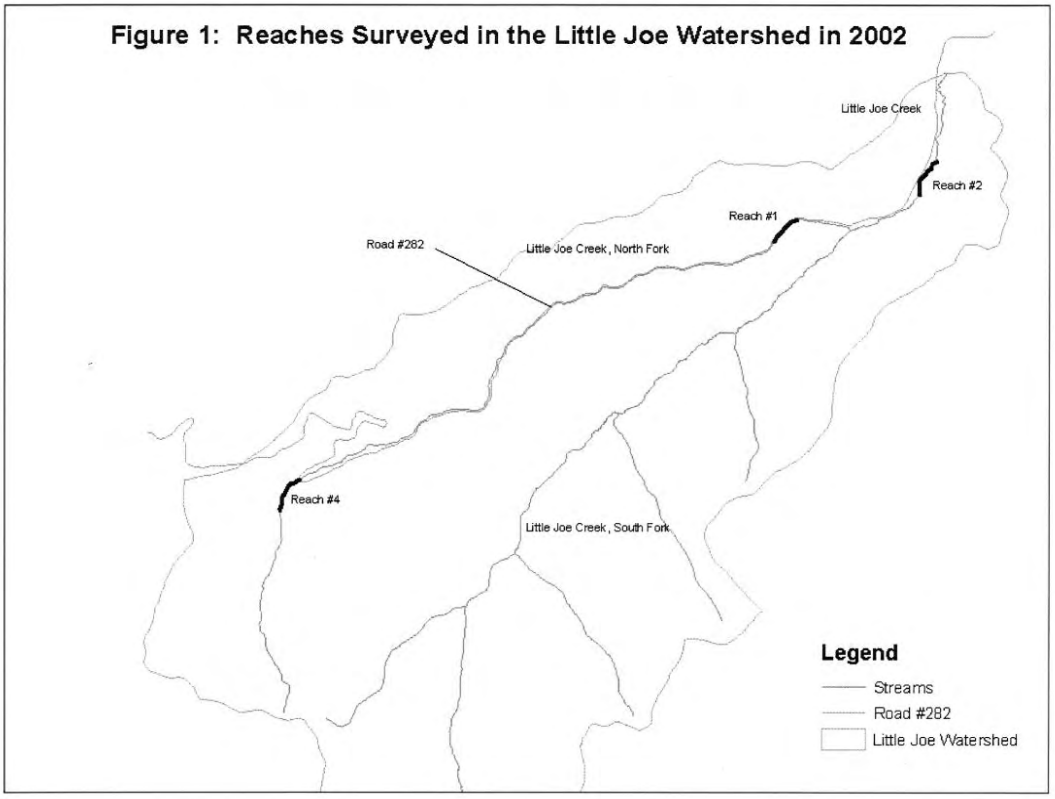


Figure 7 Reaches surveyed in the Little Joe Road (also know as road #282) Watershed

No-Action Alternative.

The no-action alternative would continue to affect bull trout critical habitat, because the existing culverts would continue to be fish migration barriers, there would continue to be an unnatural streambed with a concrete floor that does not replicate bull trout critical habitat.

The existing crossing structures inadequately provide habitat for all life stages of bull trout. These conditions would not be improved with the no-action alternative, and the structures would continue to restrict available habitat for bull trout at some life stages.

Preferred Alternative.

Project Impacts
The proposed action would have a temporary impact to bull trout critical habitat during the removal of the existing culverts, the construction of the bridges, and reconstructing to a stream simulated river bed. The proposed action would remove three existing fish migration barriers. Two would be replaced with structures to accommodate fish passage, while one would be removed and no structure would be replaced. Removal of these culverts would open approximately 11.5 miles of habitat in Little Joe and North Fork Little Joe creeks.

Removing these three barriers would open up the entire North Fork Little Joe watershed and restore connectivity between Little Joe Creek and the St. Regis River. Populations would benefit from improved habitat access. All life history forms of native fish would benefit due to the improved habitat availability.

Integrated species and habitat conditions within the Little Joe 6th code HUC are "functioning at unacceptable risk". Adverse effects resulting from implementation of this project include increased surface fines throughout the proposed project area and may extend downstream of the project area as well. Sediment contribution levels would likely peak during instream and bank stabilization work and would decrease after vegetation stabilized the slopes, probably within 3 to 5 years. Long-term benefits to the watershed include the removal of three fish passage barriers, opening up approximately 11.5 miles of suitable habitat for bull trout and the stabilization of eroding banks along North Fork Little Joe Creek

Cumulative Impacts
Past activities include construction, use, and maintenance of the existing Little Joe Road, construction and uses of residential property, timber sales and related road building, agricultural activities, and recreational trail construction and use. Present and future activities include: seasonal recreation, maintenance, use of about eight residential properties and roads, minor agricultural activities, use of recreational trails, and about 8 MBF of annual timber sales and associated logging activities. The cumulative effects to bull trout are beneficial, because of the increased potential for mobility, and habitat access with the construction of fish passage crossings.

4.5.3 Gray Wolf

Recent Developments. The gray wolf was delisted from the threatened and endangered species list March 28, 2008. The federal register reference for the delisting is as follows:

> *The U.S. Fish and Wildlife Service (Service, we or us), hereby establishes a distinct population segment (DPS) of the gray wolf (Canis lupus) in the Northern*

Rocky Mountains (NRM) of the United States (U.S.) and removes this DPS from the List of Endangered and Threatened Wildlife. The NRM gray wolf DPS encompasses the eastern one-third of Washington and Oregon, a small part of north-central Utah, and all of Montana, Idaho, and Wyoming. Based on the best scientific and commercial data available, the NRM DPS is no longer an endangered or threatened species pursuant to the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 et seq.). The NRM DPS has exceeded its biological recovery goals, and all threats in the foreseeable future have been sufficiently reduced or eliminated (USFWS 2008).

Since delisting, the wolf is still considered a FS special status species. For the purposes of continuing the effort for conservation of the gray wolf, the evaluation of effects are included as if the wolf were still an ESA-listed species.

4.5.3.1 Affected Environment

Although historically present throughout much of the West, the gray wolf's current distribution is confined to portions of Washington, Idaho, Montana, and Wyoming. As a result of natural recovery and introduced packs, the latest population estimate for the combined MT, ID, and WY area is 1,545 wolves. (USFWS 2008).

There is a 1987 Northern Rocky Mountain Wolf Recovery Plan emphasizing gray wolf recovery through natural processes (USFWS 1987). Further Deputy Secretary of the Interior Lynn Scarlett announced that the U.S. Fish and Wildlife Service is removing the western Great Lakes population of gray wolves from the federal list of threatened and endangered species and proposing to remove the northern Rocky Mountain population of gray wolves from the list. The two separate actions are being taken in recognition of the success of gray wolf recovery efforts under the Endangered Species Act (http://www.fws.gov/mountain-prairie/species/mammals/wolf/, October 12, 2007)

Recovery is achieved through an increase in a species' numbers and distribution and a reduction in threats to the extent that a viable population is ensured for the foreseeable future. When both of these occur, ESA protection is no longer necessary.
Critical habitat for the gray wolf has not been proposed or designated.

4.5.3.2 Project Impacts.

No-Action Alternative. The proposed Little Joe Road project is outside the central Idaho experimental gray wolf population area. However, individuals from that population could disperse into the project area, as the population boundary is only a few miles from LJR. The current potential of wolves traveling through the LJR corridor would not change with this alternative. Therefore, the no-action alternative would likely have no effect on the gray wolf.

Gravel roads may promote slower driving speeds and less overall use than paved roads, which would then be an advantage for the gray wolf from a poaching and habitat fragmentation standpoint.

Preferred Alternative. As stated above, the proposed Little Joe Road project is outside the central Idaho experimental gray wolf population area. However, individuals from that population could disperse into the project area, as the population boundary is only a few miles from LJR. Although the project area is small in comparison with wolf territories, prey species are present, and wolves may utilize the project area as part of their range, therefore, it is assumed that wolves may occur there. Ruediger (1996) identifies five (5) factors in which highways negatively affect carnivores, including wolves:

1) *direct mortality*: auto collisions with individual carnivores;
2) *displacement and avoidance*: carnivores tend to avoid highways, thereby potentially avoiding suitable habitat that may be adjacent to those highways;
3) *habitat fragmentation*: highways often act as boundaries that may cut off segments of traditional or potential habitat, and populations may become isolated from each other, thereby reducing genetic diversity;
4) *direct habitat loss*: highways may physically occupy space that was once carnivore habitat; and
5) *associated human development*: which potentially exacerbates the four previous factors.

As an example of factor 1, two wolves from the Superior Pack were hit and killed by vehicles on I-90 west of the town of Superior from April to May 2007. (*pers. comm.* Beth Kennedy, FS Biologist, June 05, 2007 and *pers. comm.* Scott Jackson, FWS Biologist, January 15, 2008)

Regarding factor number 3, fragmentation occurs when an expanse of habitat is broken into two or more patches separated by different types of habitat (Wilcove et al. 1986). Both natural processes and human activities can fragment habitat. Fire, windstorms, and insect and disease outbreaks are all natural processes that fragment vegetation in this area. Timber harvest, road construction, conversion to agriculture, and subdivisions are some of the human activities that also cause fragmentation.

Fragmentation is a description of a particular type of habitat alteration. In some areas, fragmenting forest habitat can be detrimental to some wildlife species. As areas of continuous forest habitat are reduced, the remaining areas may not have enough food or cover to support that species. Predation and competition with other species may also increase. The end result of habitat fragmentation could be a temporary or permanent loss of a species in that area. For example, certain species of songbirds are absent from small, fragmented woodlots in the northeastern United States (Freemark and Merriam 1986). The effect of habitat fragmentation is highly dependent on the particular species and scale being considered.

The main sources of fragmentation from human activity on Forest Service land in the analysis area have been timber harvest and roads. These produce a change in habitat mainly through loss of cover. Roads are a linear loss of cover, but open roads have the additional factors of motorized disturbance and no recovery of the vegetation destroyed by the road. On private land within the project area, the main causes of fragmentation

have been road construction, timber harvest, clearing for agriculture, residential subdivisions, and commercial developments.

There are no generally-accepted methods of measuring fragmentation, and no recommendations for levels of fragmentation for different forest types.

According to Drs. Tony Clevenger and Paul Paquet Ruediger, Claar, and Gore state in their 1999 Forest Service report (Ruediger et al. 1999):

> *It is known that some highways are not barriers or significant mortality factors for carnivores. These highways generally have low traffic volume and long pauses between traffic pulses. They are also two lane roads, often with minimal clearing distances. At approximately 2,000-3,000 vehicles per day, highways usually have adverse impacts on wildlife due to habitat fragmentation and mortality.*

Considering that: 1) there are no known rendezvous or den sites within one mile of the project area, 2) the projected seasonal average daily traffic is relatively low, 3) the design speed will essentially remain the same, 4) there would be no change to the available prey base as a result of the project, and 5) current use of the area by wolves is anticipated only as movement between packs or territories, it is not anticipated that the proposed project would result in adverse effects to the gray wolf. Therefore, it is WFLHD's determination that the project would have a may affect, not likely to adversely affect the gray wolf.

The materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no impacts to the gray wolf.

4.5.4 Canada Lynx

4.5.4.1 Affected Environment

The Canada lynx is federally listed as threatened in the project corridor. The population distribution, life history, habitat status and recovery objectives for Canada lynx in Montana are detailed in Ruggiero et al. (1999), Ruediger et al. (2000), USDA (2001, 2005, 2007), and USFWS (2007).

The range of the Canada lynx is the Northern Taiga. In the conterminous U.S., lynx range has typically been depicted as marginal or peninsular extensions of the Northern Tiaga into the western mountains, the Great Lakes, and the Northeast. These regions represent southern extensions of boreal forest. Prior to listing, lynx distribution in Montana and other western states was based on historical data and trapping records. Following listing, a national lynx survey was conducted, and the results indicated that lynx were less common than historic records indicated. Intensive track surveys conducted by the Rocky Mountain Research Station across western Montana have shown that lynx are uncommon to absent in many parts of this region with the Yaak and the Clearwater valleys near Seeley Lake being the primary strongholds in Montana (Squires et al. 2006).

In 2006, the USFWS classified the Lolo National Forest as occupied/core lynx habitat due to strong recent and long-term evidence of lynx reproduction. About 53 percent of the Lolo National Forest is comprised of mapped lynx habitat (1,110,000 of 2,082,784 acres) indicating potential habitat for the species is abundant and well distributed. A summary table is provided to show habitat status.

Table 9 Canada Lynx habitat status in the analysis area.

Lynx Analysis Unit (LAU)	Canada Lynx Activity	Project Within Lynx Elevation	Occupied Lynx Habitat
Little Joe	Assumed due to occupied habitat	Yes	Yes

Existing Lynx Habitat within Project Area

Although no recent lynx locations or sightings exist, the entire Lolo National Forest is considered occupied lynx habitat. Therefore lynx presence in the project area is likely due to habitat presence, known historical occurrences, and the large range of the species. There are no mapped trapping records in the Little Joe drainage, but there is one record from a site approximately six (6) miles from the project area, well within lynx range. Most of the project corridor is located within the Little Joe Lynx Analysis Unit (LAU) as mapped by the FS. The project enters the Little Joe LAU at approximately MP 5. The project corridor is within the Deer Ward LAU just before the slump excavation and curve widening area (MP 14.5), approximately 1.5 miles from the end of the project.

Habitat conditions within this LAU vary with elevation and aspect. They are generally good at elevations above 6,000 feet. Stands at lower elevations are comprised primarily of Douglas fir, larch, and lodgepole pine that have relatively open understories and, as such, do not represent high-quality lynx foraging habitat. With increasing elevation, the forest become more dominated by subalpine fir intermixed with Douglas fir, larch, and lodgepole pine. These stands have more complex understories with small, shade-tolerant trees and shrubs such as sitka alder (*Alnus* viridis ssp. *sinuata*) and rusty menziesia (*Menziesia ferruginea*) providing structural complexity. In general, snow compacting activities are limited to existing roads, and foraging habitat is present in both young stands and mature, multi-storied stands.

Existing conditions for lynx within the LAU are within tolerances as described in the Lynx Amendment (Northern Rockies Lynx Management Direction (Lynx Amendment), USDA Forest Service, 2007). Suitable habitat is not lacking and connectivity is not compromised. Limited snowmobile use does occur but there are no major snowmobile play areas near the project area.

In regard to a mosaic of habitat conditions, disturbance on the landscape over the past 80 years has occurred primarily in the form of timber harvest. Much of this harvest was in the form of clear cutting in the 1960s. The stands adjacent to the road are quickly becoming too mature and too dense to provide suitable snowshoe hare habitat.

Direct, Indirect, and Cumulative Effects Analysis Parameters

The Northern Rockies Lynx Management Direction (a.k.a. Lynx Amendment, USDA Forest Service, 2007) provides updated standards and guidelines from the Lynx Conservation Assessment and Strategy (LCAS; Reudiger et. al. 2000) The LCAS outlines the process for analyzing project effects to Canada lynx productivity, mortality

risk factors, movement, and dispersal through the delineation of LAUs. LAUs continue to be the analysis units under the new Forest Service direction. Since the Lolo National Forest is considered occupied lynx habitat, all standards and guidelines in the Lynx Amendment will apply to treatment units located within the mapped LAU for this project.

The Lynx Amendment represents a fairly substantial change from the LCAS. The Northern Rockies Lynx Management Direction Summary aids in understanding these changes. One noteworthy change is that some standards became guidelines. This is important in that standards are more rigid, and deviation from a standard requires amendment of the existing Forest Plan. Deviation from a guideline requires documentation but not a plan amendment.

Table 10 summarizes the guidelines from the Lynx Amendment which are germane to the effects analysis of this project.

Action Alternative Direct and Indirect Effects

The proposed project is evaluated under the guidelines found in the Lynx Amendment in Table 10.

Table 10. Guidelines applicable to highway projects and human use projects (Northern Rockies Lynx Management Direction 2007).

Guidelines	Pre-Treatment Compliance
Guideline ALL G1: Apply to highway or forest highway projects on federal lands.	
Methods to avoid or reduce effects on lynx should be used when constructing or reconstructing highways or forests highways across federal land. Methods could include fencing, underpasses, or overpasses.	Current gravel road has no fences, underpasses or overpasses but the road has very low ADT and is not plowed in the winter.
HUMAN USE PROJECTS (HU): Apply to special uses, recreation management, roads, highways, and mineral and energy development projects in lynx habitat in LAUs only (does not include grazing or vegetation management projects)	
Guideline HU G3: Apply to recreational developments (lynx movement)	
Recreation developments and operations should be planned in ways that both provide for lynx movement and maintain the effectiveness of lynx habitat.	The project has minimal recreation facilities.
Guideline HU G6: Apply to road upgrades (disturbance)	
Methods to avoid or reduce effects on lynx should be used in lynx habitat when upgrading unpaved roads to maintenance levels 4 or 5, if the result would be increased traffic speeds and volumes, or a foreseeable contribution to increases in human activity or development.	Current road is unpaved.
Guideline HU G8: Apply to roadside brush removal	
Cutting brush along low speed, low-traffic-volume roads should be done to the minimum level necessary to provide for public safety.	Roadside maintenance currently occurs.
LINKAGE AREAS (LINK): Apply to all project in linkage areas, subject to valid existing rights. Standard LINK S1: Apply to highway or forest highway	
When highway or forest highway construction or reconstruction	Project area is in a larger area of connectivity

Guidelines	Pre-Treatment Compliance
is proposed in linkage areas, identify potential highway crossings.	between habitat to the north to habitat in the south in Idaho.

Direct and indirect impacts to habitat would be a loss of connectivity within the LAU and to more quality habitat north of I-90. Lynx do not require dense forests as travel corridors but use a variety of forest cover types. The forested nature of stands on either side of the road would remain in tact, thus maintaining the suitability of these stands from the standpoint of lynx travel.

Improvements to roads in general, particularly paving, make them more attractive to potential developers, thereby having the potential to increase the amount and/or rate of development. However the private land ownership along the Little Joe Road corridor exists only within the first 1.9 miles of the proposed route, which is already paved. There is no potential for private land development on the National Forest System lands adjacent to the remainder of the road. The FS has no planned future for new recreational developments along LJR or for upgrades to any existing recreational facilities along LJR. LJR is currently open and available to public travel when weather permits. Mineral County would not increase snow plowing once the paved portion of the road increases from 1.9 miles to 16.2 miles, so there would continue to be little recreational access during the time of the year that the lynx may be present. No new groomed snowmobile routes would be created so the project should not contribute to increased snowmobiling/compaction in the area and will likely result in a net increase in wildlife security from over-the-snow motorized equipment. It is anticipated that winter recreation would not increase substantially due to paving.

ADT, as a result of paving, is not expected to increase recreational activities on LJR. The FS has no future recreational development plans for LJR. No additional snow plowing would occur as a result of this project. Snowmobile activity and subsequent snow compaction occurs currently within the project area and would continue to occur, but no grooming of the road would occur. Although research has not investigated whether snowmobiles directly impact lynx habitat-use patterns, field observations suggest that this species exhibits little response to the noise and activity associated with snowmobile recreation (*pers. comm.* Squires 2002). It has been hypothesized that snow compaction from winter recreation may alter carnivore community structure (Ch. 14 in Ruggiero et al. 1999), but recent science shows that this may have been overemphasized (Kolbe et al. 2007).

Cumulative Effects on Lynx

Past activities include construction, use, and maintenance of the existing Little Joe Road, construction and uses of residential property, timber sales and related road building, agricultural activities, and recreational trail construction and use. Present and future activities include: seasonal recreation, maintenance, use of about eight residential properties and roads, minor agricultural activities, use of recreational trails, and about 8 MBF of annual timber sales and associated logging activities. The construction of the proposed action will not have a cumulative effect on lynx because the majority of the project actions occur below the altitude that lynx occur and because no additional actions are proposed or reasonably foreseen.

Determination of Effects Summary

No-Action Alternative. The no-action alternative does not change any of the existing conditions along the project corridor. Therefore, it is unlikely the no-action alternative would have negative impacts on Canada lynx.

Preferred Alternative. The preferred alternative is expected to impact the lynx. Impacts to lynx are anticipated as a result of loss of habitat, construction noise, and possible long-term increased use of the area. The action alternatives would affect little if any quality lynx foraging habitat. Further, these actions would have minimal effect on suitable habitat. Impacts to habitat would be a loss of connectivity within the LAU since improvements to roads in general, particularly paving, make them more attractive to potential developers, thereby having the potential to increase the amount and/or rate of development. However the private land ownership along the Little Joe Road corridor exists only within the first 1.9 miles of the proposed route, which is already paved. There is no potential for private land development on the National Forest System lands adjacent to the remainder of the road. Both the Lolo and the St. Joe NF has no planned future new recreational developments along LJR or upgrades to any existing recreational facilities. LJR is currently open and available to public travel when weather permits. Mineral County would not increase snow plowing once the paved portion of the road increases from 1.9 miles to 16.2 miles. So there would continue to be little recreational access during the time of the year that the lynx may be present. It is anticipated that winter recreation would not increase substantially due to paving as the road would not be plowed or groomed for snowmobile/cross-country ski use.

Given that: 1) the seasonal average daily traffic (SADT) is relatively low (247 for the 20-year projection); 2) the design speed is low (45 mph from MP 0.0 to MP 5.3 and 30 mph from MP 5.3 to MP 16.2); 3) the proposed road is two lanes; and 4) the current use of the area by lynx is anticipated only as movement between territories it is anticipated that the proposed project would result in *a may affect not likely to adversely affect* the lynx. In consideration of direct, indirect and cumulative effects, the proposed action alternatives for the project would have a may affect, not likely to adversely affect on lynx. The project is consistent with the 2007 Lynx Amendment.

The materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no impacts to Canada lynx.

4.5.5 Grizzly Bear

4.5.5.1 Affected Environment

The grizzly bear *(Ursus arctos horribilis)* was listed as a threatened species on July 28, 1975 (40CFR 31734-31736). Grizzly bears are habitat generalists whose key habitat requirements are the availability of food and isolation from humans. Grizzly bears are solitary wanderers, except when they are caring for young. Although they typically maintain a minimum distance from one another, their home ranges often overlap (USFWS 1993). Bears mate in late May through mid July, typically becoming

reproductive at age five (5). During winter months, grizzly bears hibernate at high elevations where snow accumulations are deep. The bears usually move along an elevation gradient to take advantage of seasonal foods. They emerge from hibernation in spring and move to the lowlands to forage on winter-kill carcasses and newly emerging vegetation. Grizzly bears are opportunistic feeders, foraging on carrion, squirrels, vegetation, nuts, berries, and insects. In the late summer and early fall, the bears move back up to higher elevations to forage on berries in the avalanche slides. Den digging begins in early September through November. Grizzly bears typically remain in their dens for about five (5) months (USFWS 1993).

Servheen et al. (2003) have identified and assessed the Northern Continental Divide Ecosystem (NCDE) to Bitterroots wildlife linkage zone, which provides seasonal habitat containing food, shelter, and security for wildlife moving between two large blocks of public land known as the NCDE and the Selway-Bitterroot Ecosystem. The Little Joe Road project lies within this linkage zone. Maintaining the effectiveness of this linkage is important for the long-term health of wildlife in the area. Its effectiveness is reduced as human development continues to fragment wildlife habitat.

On April 18, 2007, the U.S. Fish and Wildlife Service announced the initiation of a five-year review of grizzly bear *;* as listed in the lower 48 states excluding the Greater Yellowstone Area population) and eight (8) other species (72 FR 19549). The USFWS conducted reviews to ensure the accuracy of the classification of each species as threatened or endangered on the List of Endangered and Threatened Wildlife and Plants. A five-year review is an assessment of the best scientific and commercial data available at the time of the review (USFWS 2007).

The recovery plan for grizzly bears focuses on populations in six (6) recovery ecosystems with suitable habitat for self-sustaining populations of bears. They are the Yellowstone National Park, the Northern Continental Divide (NCD), the North Cascades, the Selkirk, the Cabinet-Yakk, and the Bitterroot. All but the Bitterroot ecosystem are currently inhabited by grizzly bears. The Yellowstone grizzly bear population is the strongest and most viable. The grizzly bear population in the NCD ecosystem is the next most viable; this area supports 300 to 400 bears (USFWS 2007).

Research demonstrates that management of human access (roads) into grizzly bear habitat can moderate the displacement of grizzly bears caused by human activity (Mace et al.1999; Wakkinen and Kasworm 1997; Mace et al. 1996; IGBC 1994). Roads into grizzly bear habitat have been widely recognized as having the potential to adversely affect grizzly bears (Nielson et al. 2004; Gibeau et al. 2001; Mace et al. 1999; Wakkinen and Kasworm 1997; Mace et al. 1996; McLellan 1989b; McLellan and Shackleton 1989; McLellan and Shackleton 1988).

Negative association with roads arises from vehicle noise and other human-related noise around roads, human scent along roads, and hunting and shooting along or from roads. Grizzly bears that experience such negative consequences learn to avoid the disturbance and annoyance generated by roads. Such animals may not change this resultant avoidance behavior for long periods after road closures and lack of negative

reinforcement. Displacement of bears away from preferred habitat is related to avoidance of people who shoot at bears (legal harvest, defense, mistaken identity, or malicious shooting) and of the disturbance related to people, noise, activity, roads, and traffic. In their Canadian study area, McLellan and Shackleton (1989b) found that bears near roads were more vulnerable to hunting and found support for the hypothesis that non-secretive bears were eliminated from the population by hunters. Grizzly bears may avoid quality habitat near roads except in poor food years when they may be forced to seek those resources at higher risk to their safety.

All of the factors contributing to displacement of grizzly bears from habitat in roaded areas have not yet been quantified by research. However, grizzly bears were consistently displaced from roads and habitat surrounding roads (Mattson et al. 1987; McLellan and Shackleton 1988; Aune and Kasworm 1989; Kasworm and Manley 1990; Mace et al. 1996; Wakkinen and Kasworm 1997; Mace et al. 1999). Along the Rocky Mountain Front in Montana, Aune and Stivers (1984) found that grizzly bears avoided roads and surrounding road corridors even when the area contained preferred habitat for breeding, feeding, shelter, and reproduction. McLellan and Shackleton (1988) found that grizzly bears used areas near roads less than expected in southeastern British Columbia and estimated that 8.7 percent of the total area was rendered incompatible for grizzly use because of roads. Mace and others (1996) found under-use of areas with high open and high total road densities on national forest lands in Montana, as measured by a spatial analysis method known as "moving windows". Using a GIS computer model, this analysis identifies areas of high open or total road densities and revealed female home range selection was high for unroaded and low for roaded areas. Areas with lower open and/or total densities were used as expected. Mace and others (1996) found that as road densities and human use of roads increased, female grizzly bear use of adjacent habitat decreased substantially. In some years, avoidance of roads and areas of high disturbance may result in under-use of habitat. Waller and Servheen (2005) found that grizzly bears strongly avoided areas within 500 meters of U.S. Highway 2 in Montana, south of Glacier National Park. However, 52 percent of the bears sampled did cross the highway during the night when traffic volumes were lower (averaging 10 vehicles per hour).

Grizzly bears can become conditioned to human activity and show a high level of tolerance, especially if the location and nature of human use are predictable and do not result in overtly negative impacts for grizzly bears (Mattson 1993, Cronin et. al 1999). In Glacier National Park, Jope (1985) suggested grizzly bears in parks habituate to high human use and showed less displacement, even in open habitats. In Banff National Park, an area where people are prohibited from carrying firearms, grizzly bears used habitat close to low-volume roads more than expected and were more likely to cross low-volume roads than high-volume roads (Chruszez et al. 2003). High habitat quality influenced the use of habitat near roads and the likelihood that bears would cross roads. Habituated grizzly bears were closer to roads than wary bears. Yonge (2001) found that grizzly bears near Cooke City, Montana, were willing to consistently forage in very close proximity to high levels of human use if cover was sufficient and energetically efficient feeding opportunities (high quality habitats) were present. Both Mattson (1993) and Yonge (2001) postulated that areas with higher levels of human activity might have a positive effect for bears by serving as a kind of refugia for weaker population cohorts,

subadults, and females with cubs seeking to avoid intra-specific competition with adult males. However, Mattson (1993) qualified this observation by adding that the beneficial effects vary as to whether hunting is allowed, and how closely the human population is regulated. Further, food-conditioned grizzly bears were much more likely to be killed by humans. Both Yonge (2001) and Mattson (1993) indicated that increases in human use levels can be deleterious if some human activities are unregulated, such as use of firearms, presence of attractants, and nature and duration of human uses. Conversely, a level of coexistence between humans and grizzly bears can be achieved if such activities are controlled. Near Cooke City, Montana, the New World Mine reclamation project had minimal effects on grizzly bears, in part because reclamation activities were temporally and spatially predictable, and people associated with the work were carefully regulated against carrying firearms or having attractants available to grizzly bears (Tyers 2006). In the Swan Valley of Montana, raw location data from a small number of collared grizzly bears show nocturnal use of highly roaded, forested habitat (*pers. comm.* C. Servheen, FWS, 2005). The Swan Valley data have not been statistically analyzed, and the study was not designed to determine the impact of roads on bears. Sample size was very small and, perhaps most importantly, mortality rates for these grizzly bears are not yet known. However, these data indicate that some grizzly bears can apparently habituate or adapt to relatively high levels of human activity.

Roads in grizzly bear habitat also create a serious risk of mortality to grizzly bears. Grizzly bear mortality can result directly from collisions with vehicles but, more commonly, mortality can be caused indirectly through increased exposure to and interaction with humans. The specific relationship between roads and the mortality risk to bears is difficult to quantify. The level of human use of roads is one of several factors influencing the mortality risk associated with any road. Forest roads facilitate human access into grizzly bear habitat, which directly or indirectly increases the mortality risk to grizzly bears. Grizzly bears are increasingly vulnerable to illegal and legal harvest as a consequence of increased road access by humans in Montana (Mace et al. 1996) and in the Yellowstone region (Mattson et al. 1992). In southeastern British Columbia, roads increased access for settlers, legal hunters, and poachers, the major source of adult grizzly mortality in that area (McLellan and Shackleton 1988; McLellan 1989c.) McLellan (1989a) reported that 7 of 13 successful legal hunters interviewed had been on a road when they harvested a grizzly bear.

Grizzly bears inhabit large tracts of relatively undisturbed land. The most effective habitats consist of a wide range of vegetation that produces a varied food supply. Diversity in habitat characteristics also provides required resting, denning, and social areas and space. Cover is a key habitat component for grizzly bears.

Critical habitat for the grizzly bear has not been proposed or designated under the ESA. Rather, grizzly bear recovery focuses on the establishment of populations in six areas with suitable habitat for self-sustaining populations, as described above.

Corridors and linkages are concepts that have evolved in response to habitat fragmentation. Both natural processes and human activities can fragment habitat. Harris and Gallagher (1989) state that corridors and linkages may mitigate the consequences of fragmentation by connecting patches of habitat, allowing movement of species, and

reducing genetic isolation. Even though the concepts of corridors, linkage, and connectivity are generally accepted, there is uncertainty surrounding the specifics. Forman et al. (2003) examined the knowledge gaps in the research about wildlife connectivity and roads. Their work shows that: 1) few rigorous studies have been conducted, 2) many studies focused on a single species, 3) a large research void exists in addressing factors that affect how large carnivores use passages, and 4) most evaluations used frequency of passage to measure success without accounting for abundance of the species.

Providing connectivity between habitats can also have negative consequences such as allowing non-native species to invade new habitat. For example, removing a culvert to improve fish passage can allow non-native trout to move into a drainage that once contained genetically pure native cutthroat trout.

Even the terms corridor and linkage do not have a quantitative definition and are often used interchangeably. Servheen et al. (2004) state that a "corridor" implies an area just used for travel. They further explain that linkage zones are more than just travel areas. For species to move between ecosystems, they need habitat that will support feeding and other needs as they travel. Thus linkage zones will support low-density populations as well as allow for movement.

High speed, multi-lane highways disrupt wildlife movement through cover loss, physical barriers such as right-of-way fencing, disturbance from traffic and direct mortality. Developments associated with the highway such as businesses and subdivisions also have potential for wildlife conflicts. Servheen et al. (2004) explain that roads and development can reach a level that makes the area impermeable to wildlife, and those areas are termed "habitat fracture zones". Interstate 90 is the main fracture zone within the wildlife analysis area. Any direct influence on Interstate 90 is outside the jurisdiction of the Forest Service and beyond the scope of this project.

Social values and attitudes also contribute to the level of mortality risk to grizzly bears. Incidental or accidental human caused grizzly bear mortality, combined with a few people intent on illegally shooting bears, can collectively result in serious, detrimental effects to grizzly bear populations. Access management that provides adequate amounts of habitat secure from the influence of roads and high use trails, when combined with public information programs, efforts to foster local public support for grizzly bear recovery such as those of bear specialists, and law enforcement, can be instrumental in reducing mortality risks to grizzly bears by managing the present and anticipated future national forest road use levels that result from the increasing human population in western Montana.

4.5.5.2 Project Impacts

No-Action Alternative. The no-action alternative does not change any of the existing conditions along the project corridor. Therefore, it is unlikely the no-action alternative would have negative impacts on grizzly bear.

Preferred Alternative. Grizzly bear are not expected to inhabit the Little Joe Road project area. The grizzly bear is not included in the USFWS list of threatened or endangered species for the project area, and no grizzly bears have been reported within the project area, and the project is not within a recovery zone. However it is possible, as evidenced by occasional grizzly bear sightings in the region, the project area could be used as a linkage area incidentally by grizzly bear for movement between territories. There is a potential long-term impact to grizzly bear recovery as the project area lies between two recovery zones (Bitterroot to the north and Cabinet-Yaak to the south), and paving the road could reduce and fragment the habitat available to them (*pers. comm.*, Chris Servheen, FWS,, June 27, 2003).

The concept of linkage zones that allow wildlife to move across the landscape and especially across major highways is fairly straightforward. The specifics of where and how a bear may cross LJR is not known but given that 1) the projected average daily traffic is relatively low, 2) the design speed is low, 3) the proposed road is two lanes, 4) there are no known grizzly bears occupying the project area, and 5) use of the area by grizzly bears is incidental. 6) grizzly bears are not listed on the FWS project specific T & E list. It is anticipated that the no-action and preferred alternatives would have may affect, not likely to adversely affect the grizzly bear.

The materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no impacts to grizzly bear.

Cumulative Effects on grizzly bear

Grizzly bear are not expected to inhabit the Little Joe Road project area, but the surrounding area is habitat for grizzly bear. The potential long term cumulative effect on grizzly bear is loss of habitat from increased human activity in the area. The increased human activity may inhibit grizzly bear from using the linkage zone and increasing species diversity.

LJR is primarily publicly owned lands with no future plans to sell to private entities. The potential for increased pressure to sell and develop the publicly owned land is unlikely and not reasonably foreseeable.

Global climate change may cause changes in the distribution of wildlife habitats which may in turn elicit the movement of species to new inhabit areas. Predicting how the climate will change in different regions of the world and then predicting which direction species will move in such unknown conditions are not reasonably foreseeable. The incremental impacts from this project, when added to all past, present and future events would not result in substantial cumulative impacts to grizzly.

4.5.6 Forest Service Sensitive Species

4.5.6.1 Affected Environment

The inventory conducted by Widener and Associates November 2003 and updated in June 2008 examined Forest Service special status species. Table 11 lists the 14 Forest

Service fish and wildlife sensitive species known or suspected in the Lolo National Forest. Refer to Chapter 4.4 "Vegetation" for Forest Service special status plant species.

Table 11. List of Terrestrial Special Status Species. Species may be present or have suitable habitat in the project area.

Common Name	Scientific Name	Presence
Coeur d'Alene salamander	*Plethodon vandykei idahoensis*	Likely
Harlequin duck	*Histrionicus histrionicus*	Known until recently
Gray Wolf	*Canis lupus*	Known
Bald Eagle	*Haliaeetus leucocephalus*	Likely
Black-backed woodpecker	*Picoides arcticusi*	Known
Flammulated owl	*Otus flammeolus*	Known
Townsend's big-eared bat	*Corynorhinus townsendi*	Known
Fisher	*Martes pennanti*	Known
Wolverine	*Gulo gulo*	Known
Northern bog lemming	*Synaptomys borealis*	Not likely
Boreal toad	*Bufo boreas boreas*	Likely
Northern leopard frog	*Rana pipiens*	Likely
Peregrine falcon	*Falco peregrinus*	Not likely
Common Loon	*Gavia immer*	No habitat

Coeur d'Alene Salamander. Coeur d'Alene salamanders have a limited range and are found in the northern Rocky Mountains in northern Idaho, northwest Montana, and southeastern British Columbia at elevations up to about 5,000 feet (Maxell 2000, Werner et al. 2004).

Coeur d'Alene salamanders are usually found near waterfalls and rocky, cascading streams with fractured bedrock, gravel or talus for cover habitats (Maxell 2000, Werner et al. 2004). They are dependant on stable subterranean water flows which can be accessed through rock fractures or talus. Adults are usually above ground only at night during moist weather. These salamanders feed on a variety of small aquatic or semi-aquatic invertebrates found in moist habitats (Maxell 2000).

Harlequin Duck. Harlequin ducks are sea ducks, which nest during the summer along large inland streams and winter in coastal waters. They dive into turbulent white water to feed on aquatic insects and larvae. For nesting, harlequins prefer remote, large, swift, cascading streams with heavy cover along the banks and little human disturbance (Robertson and Goudie 1999).

Harlequin ducks were known in the District until recently. They could potentially occur in the project area, but optimum habitat near the project is also the habitat closest to human encroachment (near the St. Regis River). In Montana, most harlequin ducks inhabit fast-moving, low gradient, clear mountain streams (MNHP and MFWP 2004). Riparian vegetation does not appear to affect their selection of habitat; however, there is a positive correlation between their choice of habitat and the presence of overhanging

vegetation (MNHP and MFWP 2004). From the history of inhabitants and some habitat presence, presence is assumed.

Black-backed Woodpecker. The black-backed woodpecker in Montana is associated with early successional burned forests of mixed conifers, lodgepole pines, Douglas-firs, and subalpine spruce (MNHP and MFWP 2004). They are more numerous in lower elevation, Douglas-fir and pine forest habitats than in higher elevation, subalpine spruce or mixed conifer forest habitats (MNHP and MFWP 2004). Suitable habitat was observed during field surveys, and one individual was observed. The species is known to occur in the project area.

Flammulated owl. Flammulated owls are uniquely adapted to exploit old park-like ponderosa pines (FS R1, 2003). Habitat for flammulated owls in Montana has been assumed on the basis of one project in the Bitterroot valley. According to this study, flammulated owls are associated with mature and old growth xeric (desert-like) ponderosa pine/Douglas-fir forests and in landscapes with higher proportions of suitable forest and forest with low to moderate canopy closure (MNHP and MFWP 2004). They are absent from warm and humid pine forests and mesic (moderately moist) ponderosa pine/Douglas-fir forests (MNHP and MFWP 2004). No species is known to occur in the project area.

Townsend's Big-eared Bat. Townsend's big-eared bat species uses a variety of habitat for foraging activities and are therefore assumed to be present in the project area. Forest habitats near roosts include Douglas-fir forests, lodgepole pine forests, ponderosa pine forests, and black cottonwood riparian areas. The use of habitats in Montana by the Townsend's big-eared bat may be restricted as most caves and mines appear to be too cool in summer for use as maternity roosts. No caves or Townsend's big-eared bats were observed during field surveys.

Fisher. Fishers were thought to be extirpated from Montana by the 1920s, and until recently, fisher populations in R1 (FS, Region 1, also known as The Northern Region encompasses 25 million acres spread over 5 states. Included are 12 national forests located within the perimeter of northeastern Washington, northern Idaho, and Montana; and the national grasslands in North Dakota and northwestern South Dakota) were thought to be derived from 188 re-introductions that occurred from populations in British Columbia., Canada and Minnesota in the 1960s and late 1980s (summarized in Vinkey 2003). Genetic testing of fisher in western Montana clearly showed that fisher in the Bitterroot and Sapphire Ranges, that border the southeastern boundaries of the LNF, are part of the original population that existed prior to any re-introductions (Ibid.).

Fishers are considered a species of concern in Montana but they are still managed as a furbearer. Montana Department of Fish, Wildlife and Parks (FWP) administers the trapping programs in the state. A review of trapping records for the counties that encompass the entire LNF show 32 fisher harvested from 1996 through 2002, with all trapping activity occurring in Missoula and Mineral Counties (http://fwp.mt.gov/hunting/planahunt/harvestreports.html#furbearer). Records for years 2003 to date are not available for review.

According to the 2006-2007 Montana trapping regulations, there is a statewide quota of seven fishers and five of those are in FWP Region 2. That region contains Mineral, Granite and Ravalli Counties and portions of Missoula, Deer Lodge, Lewis and Clark, Silver Bow County, and encompasses the project area. The trapping quota reduces trapping pressure.

Wolverine. Wolverines are present on the Lolo National Forest The limited research on wolverines indicates that they have a huge home range, possibly between 140 and 770 square miles (Copeland and Harris 1994, Halter 1989). During a study in northwestern Montana, Hornocker and Hash (1981) found most wolverines in medium to scattered timber, and wolverines crossed large clear-cuts but did not appear to hunt in them. Aubry et al. (2007) also found that wolverine records generally occurred in or near alpine vegetation and climatic conditions. They also found that the best predictor of wolverine occurrence were areas that had a high probability of retaining snow cover through the wolverine denning period (15 April – 15 May).

Copeland and Harris (1994) found two natal dens in cirque basins, and large boulders and down trees may be important features. Denning wolverines with young appear to be very sensitive to human disturbance.

In earlier studies, Copeland and Harris (1994) found that marked wolverines tended to avoid roads but did cross them. Additional analysis showed no attraction to or avoidance of trails but study animals were located near trails and active campgrounds during the summer (Copeland et al. 2007).

In both Montana and Idaho, big game carrion appears to be the major food source with snowshoe hares, squirrels and small mammals making up most of the rest of the diet (Copeland and Harris 1994, Hornocker and Hash 1981). Winter is probably the most difficult time for wolverines to find food. Marked wolverines did not move to big game winter range as expected, but fed on carcasses of animals that probably died during the late summer and fall (Copeland and Harris 1994). The presence of large predators such as mountain lions and wolves, and wounding losses from hunting may be important sources of carrion.

Even with limited research, the habitat factors for wolverine appear to be alpine and subalpine habitat, undisturbed denning habitat, big game carrion as a food source and trapping pressure.

Northern Bog Lemming. Northern bog lemmings are present in sphagnum bogs, wet meadows, moist mixed and coniferous forest, alpine sedge meadows, krummholz spruce-fir forests with dense herbaceous and mossy under-stories and mossy stream sides. They could occur in Mineral County but are not known or expected in the project area due to a lack of suitable habitat.

Boreal Toad. Boreal toads are usually found in aspen groves, riparian forests, mountain meadows and less commonly in Douglas fir forests. They are widespread through the

mountainous areas of the northwest, from sea level to tree line. Boreal toads are known to occur in desert streams and springs, and grasslands They are usually found in or near ponds, lakes, reservoirs, rivers and streams and are less common in heavily wooded regions (FEIS, 2003). No boreal toads were observed during the field surveys. However, boreal toads are likely to be present in the project area due to the presence of riparian forest areas near Little Joe Creek.

Northern Leopard Frog. The northern leopard frog habitat requirements are springs, slow streams, marshes, bogs, ponds, canals, flood plains, reservoirs, and lakes. They usually prefer permanent water with rooted aquatic vegetation. Northern leopard frogs are expected to be present in Mineral County (MNH, 2003). No northern leopard frogs were observed during the field surveys. Suitable habitat for this species is present in the project area. The greatest likelihood of presence is at the creek crossings, along the St. Regis River and in the riparian zone near Little Joe Creek. Water is present in the lower valley of this mountainous region; backwater areas near the mouth of the creek have rooted aquatic vegetation. Therefore, northern leopard frogs are likely to be present in the project area.

Peregrine Falcon. Peregrine falcons are found in tundra, moorland, steppe, marshland, mountain meadows, open forests, and seacoasts. Inland habitat consists of open plant communities like grasslands and meadows usually near rivers or lakes. Peregrine falcons are found in coniferous forests of the east and southeast US and along the borders of dense forests near water from sea level to 10,000-feet

Common Loon. Lakes are a necessary component of summer loon habitat. They require long water runways to become airborne (NPS, 2003). No lakes are located in the vicinity of the project or on the Superior Ranger District. Therefore this species is not likely to occur in the project area.

Bald Eagle. The bald eagle is a de-listed threatened species. The presence of this species is likely along the Little Joe Creek corridor and the St. Regis River corridor. The potential presence of this species has been determined due to the presence of foraging habitat and forage species since bull trout and west coast cutthroat trout are known to utilize Little Joe Creek. Therefore, prey species for the bald eagle are present in the project area.

4.5.7 Project Impacts.

No-Action Alternative. The no-action alternative may impact the Coeur d'Alene salamander, northern goshawk, harlequin duck, fisher, boreal toad, northern leopard frog, and peregrine falcon, because these species are known to occur in or near the waters of the project area. The continued maintenance activities that promote encroachment of the gravel and sediment from the road on Little Joe and North Fork Little Joe Creeks will continue to impede the quality of water. Certain reaches of these waterways would remain unavailable to various life stages of aquatic species.

The no-action alternative would have little to no impact on Forest Service Sensitive terrestrial species.

Preferred Alternative.
In all species listed below where the term, *short-term construction impacts,* occurs the anticipated impacts include: Noise, temporary displacement, and temporary construction traffic.

Coeur d'Alene Salamander. Risk factors for Coeur d'Alene salamanders are primarily activities that directly alter the stream or remove the tree canopy from over the stream. Activities that directly alter a stream include instream mining, water diversion and development of water impoundments. Activities that remove the tree canopy from a stream include wildfire, timber harvest and road construction in the riparian area.

This project includes replacements of culverts to restore fish passage. A culvert project does have a short term impact on the stream because of the sediment that enters the stream during the work, but the project has a long term benefit of restoring the stream to a more natural gradient.

The Lolo National Forest operates under the guidelines of the Inland Native Fish Strategy (INFISH) which protects the vegetation along streams. The INFISH guidelines include buffering areas within 300 feet of fish bearing streams, 150 feet of non-fish bearing streams, 50 to 100 near intermittent streams and 50 to 150 feet near wetlands. These measures maintain cover and limit disturbance in the riparian area and should adequately protect habitat for these salamanders. This project meets the INFISH guidelines.

Due to short term construction impacts, the project may impact individuals or habitat but is not likely to cause a trend towards federal listing or cause a loss of species or population viability.

Harlequin Duck. Impacts to the harlequin duck, (with assumed presence) would be due to short term construction impacts, the project may impact individuals or habitat but is not likely to cause a trend towards federal listing or cause a loss of species or population viability.

Black-backed Woodpecker. No habitat would be removed as a result of the project. Due to short term construction impacts, the project may impact individuals or habitat but is not likely to cause a trend towards federal listing or cause a loss of species or population viability.

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Flammulated owl. Since this species is not known to occur in the project area, there would be no impacts to it.

Townsend's Big-eared Bat. Impacts to the Townsend's big-eared bat are not anticipated, because no habitat is within the project area.

Fisher. Direct and indirect impacts would be similar to those of the lynx; a loss of connectivity between more quality habitat to the north and south of the project area. The forested nature of stands on either side of the road would remain in tact, thus maintaining the suitability of these stands from the standpoint of lynx travel.
Improvements to roads in general, particularly paving, make them more attractive to potential developers, thereby having the potential to increase the amount and/or rate of development. However the private land ownership along the Little Joe Road corridor exists only at approximately the first 1.9miles of the proposed route, which is already paved. There is no potential for private land development on the National Forest System lands adjacent to the remainder of the road. The FS has no planned future new recreational developments along LJR or upgrades to any existing recreational facilities. LJR is currently open and available to public travel when weather permits. Mineral County would not increase snow plowing once the paved portion of the road increases from 1.9-miles to 16.2-miles. No new groomed snowmobile routes would be created so the project should not contribute to increased snowmobiling/compaction in the area and will likely result in a net increase in wildlife security from over the snow motorized equipment. It is anticipated that winter recreation would not increase substantially due to paving. No habitat would be removed as a result of the project. Due to short term construction impacts, the project may impact individuals or habitat but is not likely to cause a trend towards federal listing or cause a loss of species or population viability.

Wolverine. No activities are proposed in any alpine or subalpine habitat. The LSI (Land Systems Inventory) database was used to identify cirque basins and similar landforms that could be potential wolverine denning habitat. This data showed that cirque basins are mainly distributed along the Montana-Idaho state line. No activities are proposed near any of these basins. Following the proposed treatments in this project, elk security will still exceed the desired amounts. The open road density will stay the same.

Direct and indirect impacts would be similar to those of the lynx; a loss of connectivity between more quality habitat to the north and south of the project area. The forested nature of stands on either side of the road would remain in tact, thus maintaining the suitability of these stands from the standpoint of lynx travel.

Improvements to roads in general, particularly paving, make them more attractive to potential developers, thereby having the potential to increase the amount and/or rate of development. However the private land ownership along the Little Joe Road corridor exists only at approximately the first 1.9-miles of the proposed route, which is already paved. There is no potential for private land development on the National Forest System lands adjacent to the remainder of the road. The FS has no planned future new recreational developments along LJR or upgrades to any existing recreational facilities. LJR is currently open and available to public travel when weather permits. Mineral County would not increase snow plowing once the paved portion of the road increases from 1.9-miles to 16.2-miles. No new groomed snowmobile routes would be created so the project should not contribute to increased snowmobiling/compaction in the area and will likely result in a net increase in wildlife security from over the snow motorized equipment. It is anticipated that winter recreation would not increase substantially due to paving. No habitat would be removed as a result of the project. Due to short term

construction impacts, the project may impact individuals or habitat but is not likely to cause a trend towards federal listing or cause a loss of species or population viability.

Northern Bog Lemming. Impacts to the northern bog lemmings are not anticipated due to lack of suitable habitat.

Boreal Toad. This project includes replacements of culverts to restore fish passage. A culvert project does have a short term impact on the stream because of the sediment that enters the stream during the work, but the project has a long term benefit of restoring the stream to a more natural gradient.

The Lolo National Forest operates under the guidelines of the INFISH which protects the vegetation along streams. The INFISH guidelines include buffering areas within 300 feet of fish bearing streams, 150 feet of non-fish bearing streams, 50 to 100 near intermittent streams and 50 to 150 feet near wetlands. These measures maintain cover and limit disturbance in the riparian area and should adequately protect habitat for these the boreal toad. This project meets the INFISH guidelines.

Due to short term construction impacts, the project may impact individuals or habitat but is not likely to cause a trend towards federal listing or cause a loss of species or population viability.

Northern Leopard Frog. The effects to the northern leopard frog would be similar to that of the boreal toad.

Peregrine Falcon. The presence of peregrine falcons in the project area is not anticipated, therefore neither are any project-related impacts.

Common Loon. Impacts to common loons are not anticipated as their presence in the area is not anticipated.

Bald Eagle. Nesting activities are not as likely to occur in the project area except in the lower Little Joe floodplain near the confluence with the St. Regis River. No potential nest trees were observed during field surveys. There are no known nest sites within at least one half mile of the project area (USFS 2003).

Over the short-term prey species could potentially be impacted by sedimentation/ turbidity. Prey species may also be impacted over the long term by habitat modification (the addition of riprap to stream banks).

Individual eagles foraging in the area could potentially be disturbed during construction activities. However, although Little Joe Creek could potentially provide foraging and nesting habitat for bald eagles, better bald eagle habitat and food sources exist in the nearby St. Regis and Clark Fork Rivers. No potential bald eagle habitat would be modified by the preferred alternative as the proposed work is within the existing footprint except for the excavation and curve widening area, which is approximately 3 miles from

potential bald eagle foraging habitat. Therefore the project is expected to have no appreciable impact on the bald eagle because there would be no change to its habitat.

Construction impacts, primarily in the form of increased noise from construction activities may temporarily impact many of the species. These impacts would be temporary and minor in nature. No substantial long-term impacts to these species are expected as a result of the project.

Construction impacts in the form of increased sediment to adjacent waterways and wetlands may affect the northern leopard frog, western toad, and westslope cutthroat trout. These impacts would be temporary, and the severity of the impacts would be reduced through implementation of BMPs to control sediment transport. With the application of an asphalt-paved surface, there would be increased storm water runoff. It is anticipated that improving drainage in select areas, and improving passage through the new bridges on the project would have long-term beneficial impacts to these species.

The materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no impacts to forest sensitive species.

Cumulative Effects on Forest Service Sensitive Species

In addition to the identified impacts associated with the preferred alternative, other past, present, future and cumulative impacts to Forest Service Sensitive Species are discussed below.

Past activities include construction, use, and maintenance of the existing Little Joe Road, construction and uses of residential property, timber sales and related road building, agricultural activities, and recreational trail construction and use. Present and future activities include: seasonal recreation, maintenance, use of about eight residential properties and roads, minor agricultural activities, use of recreational trails, and about 8 MBF of annual timber sales and associated logging activities.

Although pressures associated with these activities have and would affect wildlife species, management of the area would help to alleviate some of these impacts. The majority of the project area is in federal owned lands, and managed by the FS which have no plans to change ownership causing increased development. Therefore, this project, when added to other past, present, and reasonably foreseeable future actions, is not expected to incrementally result in substantial adverse impacts to the Forest Service Sensitive Species within the project area.

Table 12. List of Terrestrial Special Status Species. Summary of Impacts to Special Status Species

Common Name	Impact	Presence
Coeur d'Alene salamander	MII	Likely
Harlequin duck	NI or MII	Known until recently
Gray Wolf	MII	Known
Bald Eagle	MII	Likely
Black-backed woodpecker	MII	Known
Flammulated owl	NI	Not Likely
Townsend's big-eared bat	NI	Known
Fisher	MII	Known
Wolverine	MII	Known
Northern bog lemming	NI	Not likely
Boreal toad	MII	Likely
Northern leopard frog	MII	Likely
Peregrine falcon	NI	Not likely
Common Loon	NI	No habitat

NI =No Impact
MII=May impact individuals or habitat but is not likely to cause a trend towards federal listing or cause a loss of species or population viability

4.5.8 General Wildlife

4.5.8.1 Affected Environment

Elk and mule deer winter range is present along the first four-miles of the project area. White tail deer winter range is present along the first two-miles of the project area. All three of these ungulate species utilize the area along the remainder of the road corridor for summer range. A few moose are also present in the area. Black bear, mountain lion, ruffed grouse and blue grouse are plentiful in the project area. All of the above described species are legally open to take during established hunting.

4.5.8.2 Project Impacts.

No-Action Alternative. The types of impacts to general wildlife currently occurring in the project area would remain essentially the same with the no-action alternative.

The projected increase in traffic due to population growth coupled with not addressing deficiencies of the current road (the lack of warning signs and compromised vehicle control on a graveled surface) may increase the result in wildlife/vehicle collisions with the no-action alternative.

Preferred Alternative. Potential affects to wildlife as a result of the project include temporary construction noise, loss of habitat, habitat fragmentation, and increased opportunity for wildlife collisions as a result of increased speed and increased use (over

current ADT) of the roadway. Wildlife, especially elk, may experience increased displacement from the road corridor due to increased traffic.

Terrestrial habitat would be permanently altered at the area of proposed excavation and curve widening (MP 14.5). The approximate area of impact from the excavation and curve widening is 3.7acres. Terrestrial habitat fragmentation may also be increased as a result of paving the road assuming that this results in an increase in use of the roadway. According to Chris Saulicer with the USFWS (*pers. comm.* June 27, 2003) and Ruediger (2000) paved roads are generally considered to be detrimental to wildlife compared to unpaved roads, as they are associated with increased use. Increased traffic volumes result in increased impacts such as habitat fragmentation, mortalities (direct and indirect), and dispersal (Ruediger, 2000).

Some increase in terrestrial movement under the proposed crossings may occur.

The materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no impacts to general wildlife.

4.5.8.3 Cumulative Effects on General Wildlife

The analysis area for cumulative impacts to wildlife for this project is expanded beyond the Little Joe corridor because much of the wildlife have a large range. In addition to the identified impacts associated with the preferred alternative, other past, present, and future impacts to fish and wildlife have been identified and are discussed below.

Past activities include construction, use, and maintenance of the existing Little Joe Road, construction and uses of residential property, timber sales and related road building, agricultural activities, and recreational trail construction and use. Present and future activities include: seasonal recreation, maintenance, use of about eight residential properties and roads, minor agricultural activities, use of recreational trails, and about 8 MBF of annual timber sales and associated logging activities.

No plowing would occur as a result of this project. Snowmobile activity and subsequent snow compaction, occurs currently within the project area and would continue to occur, but no grooming of the road would occur. Although research has not investigated whether snowmobiles directly impact carnivores (lynx, wolverine, grizzly bear, wolf and fisher) habitat-use patterns, field observations suggest that these species exhibit little response to the noise and activity associated with snowmobile recreation (*pers. comm.* Squires . 2002). It has been hypothesized that snow compaction from winter recreation may alter carnivore community structure (Ch 14 in Ruggiero et al 1999), but recent science shows that this may have been overemphasized (Kolbe et al. 2007).

Although pressures associated with these activities have and would affect wildlife species, management of the area would help to alleviate some of these impacts. The majority of the project area is in federal owned lands, and managed by the FS which have no plans to change ownership causing increased development. Therefore, this project, when added to other past, present, and reasonably foreseeable future actions, is not

expected to incrementally result in substantial adverse impacts to the general wildlife within the project area.

4.5.8.4 Mitigation

See Summary of Mitigation Measures Chapter 5

4.5.9 Aquatic Organism

4.5.9.1 Affected Environment.

The project area contains three main streams: the St. Regis River, Little Joe Creek, and North Fork Little Joe Creek. Additionally there are several unnamed minor streams, which flow through the area. The road parallels Little Joe Creek or North Fork Little Joe Creek for approximately 9.5 miles, crossing at two locations along the 16.2-mile route. The affected environment is the two crossing locations at MP 7.5 and 10.7.

4.5.9.2 Project Impacts.

No-Action Alternative. The types of impacts to aquatic organisms currently occurring in the project area would remain essentially the same with the no-action alternative. Sedimentation of the surrounding waterways would likely continue to worsen, and certain reaches of these waterways would remain unavailable to various life stages of aquatic species.

The projected increase in traffic would potentially increase sedimentation due to the need for added maintenance activities, which in turn cause more gravel to be displaced into Little Joe Creek and North Fork Little Joe Creek.

Preferred Alternative. The areas of consideration are the two crossing locations at MP 7.5 and 10.7. Aquatic organisms may be impacted by increased sediment from construction activities and increased runoff from the paved surface of the road. However, these impacts would be temporary and are expected to be minimal due to implementation of BMPs during construction and improved drainage for the road design. In time aquatic organisms would be impacted beneficially with increased potential for movement among habitat zones because the new bridges would not impede movement as is the current existing condition with the substandard aquatic organism passage culverts.

The materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no impacts to aquatic organisms.

Cumulative Impacts The areas of consideration are the two crossing locations at MP 7.5 and 10.7. In addition to the identified impacts associated with the preferred alternative, other past, present, and future impacts aquatic organisms have been identified and are discussed below.

These activities have and/or would continue to result in cumulative impacts to aquatic species that include increased transportation of sediment and other pollutants to waterways, increased turbidity of sediments, removal of shade-providing vegetation, and

construction of stream crossing structures that would improve inadequate aquatic organism passage.

Past activities include construction, use, and maintenance of the existing Little Joe Road, construction and recreational trail construction and use. Present and future activities include: seasonal recreation, maintenance, use of about eight residential properties and roads, minor agricultural activities, use of recreational trails, and about 8 MBF of annual timber sales and associated logging activities. Therefore, this project, when added to other past, present, and reasonably foreseeable future actions, is not expected to incrementally result in substantial impacts to aquatic organisms within the project area.

4.5.9.3 Aquatic Mitigation

See Summary of Mitigation Measures Chapter 5

4.6 Recreation

4.6.1 Affected Environment

This section discusses recreational resources available along the Little Joe Road corridor and the potential for changes in recreational activities due to the change in road surface from gravel to pavement. Recreational activities including hunting, fishing and sight seeing traffic on the Montana side with additional camping recreation on the Idaho side.

4.6.2 Project Impacts.

No-Action Alternative. Recreational activities including hunting, fishing and sight seeing traffic would be expected to increase slightly primarily due to general increases in population with the no-action alternative. Maintaining the road as gravel may discourage some types of recreational visitors like site-seeing Recreational Vehicle (RV) users, but in turn may continue to encourage other types of recreational users like hunters.

Preferred Alternative. Recreational activities including hunting, fishing and sight seeing traffic would be temporarily impacted with road detours and closures during construction. Long term recreation is expected to increase slightly primarily due to general increases in population, and possibly with the shift in types of recreational users. The paved road may entice additional use with the increased level of comfort associated with driving on a paved surface relative to a gravel surface. LJR has no special designation on the Montana side but is popular for people seeking high-country more rural and primitive driving experience than a city or Interstate driving experience. There exists no major draw for example to popular exhibits on either end of LJR, so the anticipated use would stay at or similar to the current use. The St. Joe National Forest on the Idaho side of the LJR has no plans to increase recreational facilities.

The materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no impacts to recreation.

4.6.3 Cumulative Impacts

The area of consideration includes the Lolo National Forest and the St. Joe National Forest along the LJR route. Recreation use and facilities could be affected over the long term if the project results in an increase in use of the roadway. There is no planned long term potential for the development of new campgrounds / recreation facilities to accommodate new types of visitors. There are no planned changes to increase the number of developed campgrounds and fishing access points, or an increase in dispersed camping. However, there may be an increase in recreational use due to general population increases, and increase in user comfort from the new road surface.

The U.S 93 Access Control Lolo To Missoula, Final Access Control Report 2007 (http://mdt.mt.gov/pubinvolve/us93corridor/docs/access_report.pdf), shows a range of ADT percent increases between 2.2 and 2.9% over 10 and 15 years respectively. This study was conducted on rural and non-rural Montana roads combined. The range of increase was calculated based on proposed changes due to: increased travel demands due to planned growth, current and planned development within the study corridor, and increasing use of recreational areas served by intersecting roadways within the study corridor. ADT increases after paving LJR are calculated at a 3 percent annual increase, which is slightly higher than the Montana study showed. Considering this information and the conclusion that only 1.9 miles of the proposed 16.2 miles has potential for development; ADT as a result of paving, recreational activities on LJR are not expected to increase by more than 3%. Furthermore, the FS has no future recreational development plans for LJR.

4.7 Archaeological and Historic Resources

4.7.1 Affected Environment

Prehistory of western Montana is represented by isolated projectile points from the Folsom and Windust traditions of the Paleo Indian period (10,000 – 7,500 BP), large corner and side notched projectile points of the Middle period (7,500 – 2,000 BP), and small side notched points representative of the advent of the bow and arrow in the Late Prehistoric period (2,000 – 1,720 BP). The Proto historic period (1,700 – 1,805 BP) is represented by the introduction of the horse, increased mobility, and more trade goods including European trade goods such as beads and metal objects.

Following exploration of the surrounding area by Lewis and Clark in 1805, David Thompson in 1811, and Lt. John Mullan in 1853, prospecting and mining represent historic activities in the Little Joe drainage. Subsequent activities include logging and saw milling.

The area is high in minerals and contains many unpatented mining claims. Mineral County became an independent county in 1914, with Superior as the county seat, and boasts a lively history before and since. It has hosted a gold rush, saw the building of two transcontinental railroads, experienced the trauma of the 1910 fire, and witnessed the destruction of several floods of the St. Regis and Clark Fork Rivers, as well as being the home to many Civilian Conservation Corps workers during the Great Depression. The historic John Mullan Road was built here in 1859-60 and the Yellowstone Trail in

1917(mineral http://mineralcounty.info/). The Little Joe Road is still sometimes referred to as the 'Gold Creek Road'.

A cultural resources survey was conducted in compliance with the Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, for the inventory and evaluation of properties on or eligible for listing to the National Register of Historic Places (NRHP) prior to project implementation. The area of potential effect (APE) encompassed the entire unpaved Montana section of LJR and approximately 50-feet on either side of the centerline of the existing alignment. Five sites were reviewed for eligibility for listing on the National Register of Historic Places. Four were determined ineligible due to loss of integrity, and the remaining site was outside the project corridor and would not be affected by the proposed undertaking.

4.7.2 Project Impacts

No-Action Alternative. Since no known sites listed or eligible for listing on the NRHP are located in or near the project area, the no-action alternative would have no impacts to archaeological or historic resources.

Preferred Alternative. An extensive record search and pedestrian archeological survey was conducted in all high and medium probability areas as defined by the Montana State Historic Preservation Office (SHPO) approved Sited Identification Strategy. It revealed no new prehistoric or historic sites within the project corridor and therefore a *no historic properties affected* determination was made. The SHPO concurred with this determination in their December 23, 2003 letter (Attachment 6).

The materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no impacts to cultural resources.

4.7.3 Cumulative Impacts

The Little Joe Road and Little Joe Creek watershed are the analysis areas for cumulative impacts on archaeological and historic resources for this project. Past, present, and future activities may have impacted or may impact archaeological and historic resources. Past activities include construction, mining, timber haul, recreation, and maintenance of the existing LJR. Present and future activities include: seasonal recreation, maintenance, use of about eight residential properties and roads, minor agricultural activities, use of recreational trails, and about 8 MBF of annual timber sales and associated logging activities.

Operation of construction equipment and excavation of soils as part of construction of roads, buildings, and trails or during logging has the potential to disturb intact cultural resources in the Little Joe drainage. Resources may also be disturbed by increases in erosion due to potential removal of vegetation and increases in stormwater runoff.

While it is evident that the Little Joe drainage was used both prehistorically and historically, the sparseness of cultural resources identified during the cultural survey for this project suggests the drainage was not extensively used in the past. Additionally, the

identified cultural resources in the project area were determined not eligible for inclusion on the NRHP. Therefore, this project, when added to other past, present, and reasonably foreseeable future actions, is not expected to incrementally result in substantial adverse impacts to the archaeological and historic resources of the project area.

4.8 Section 4(f) resource and Section 6(f) funds

There are no Section 4(f) resources of concern along the Little Joe Road corridor. There are no Section 6(f) funds obligated for this project.

4.9 Noise

4.9.1 Affected Environment and Project Impacts

The area of consideration for noise impacts is the Little Joe Road corridor. The current level of noise is general background forest, animal sounds, as well as traffic noise associated with traveling on a gravel road.

No-Action Alternative. The no-action alternative does not change any of the existing conditions along the project corridor. However, keeping the existing gravel surface will increase noise levels as population and use increases at average national and state growth rates.

Preferred Alternative. A temporary increase in noise levels would occur due to construction activities in the vicinity of project corridor. Blasting would occur at MP 14.5 and would cause additional noise impacts in that area. The areas not located along Little Joe Road would have lower ambient noise levels than areas immediately adjacent to the road. All equipment would be required to comply with FHWA's standard noise mitigation measures; therefore, no substantial noise problems are expected to occur.

The materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no noise impacts.

Construction noise impacts are anticipated to affect species within a half-mile radius of the project area. This distance is the generally accepted radius for projects that do not involve blasting, jack hammering, or impact pile driving. The source of increased short-term noise is anticipated to be general construction equipment (back up alarms, dozers, trucks, graders). Noise could disturb species and their prey, causing individuals to avoid the project area during construction. The noise environment in the project area is currently characterized by road traffic and logging activities. Long-term noise impacts could result from increased traffic use of the road. However, a long-term reduction in noise is also anticipated as a result of paving the roadway, which would result an elimination of noise associated with a gravel road (washboard effects).

Paving Little Joe Road would cause a decrease in road noise from the lack of vehicle tires crunching on gravel. However, this might be offset from noise associated with increased traffic, including recreational motor vehicle noises, associated with a potential increase in recreational activity.

4.9.2 Cumulative Impacts

The area of consideration for noise impacts is the Little Joe Road corridor. Increased use of the Little Joe Road, agricultural and logging activities, as well as increased recreation, are not anticipated to appreciably increase long-term or cumulative noise impacts. Noise effects are minimal and of short duration primarily during the summer recreation season. Therefore, this project, when added to other past, present, and reasonably foreseeable future actions, is not expected to incrementally result in substantial adverse impacts to noise levels in the LJR corridor.

4.9.3 Mitigation

See Summary of Mitigation Measures Chapter 5

4.10 Air Quality

4.10.1 Affected Environment

The area of consideration for air quality impacts is the Little Joe Road corridor.

The federal government has established National Ambient Air Quality Standards (NAAQS) to protect the public from air pollution. Designated "attainment" areas are areas that have not violated these air quality standards. Geographic areas where concentrations of a pollutant exceed the ambient air quality standards are classified as "nonattainment" areas. Areas previously designated as nonattainment that are now in compliance with air quality standards are classified as "maintenance" areas. (http://nris.mt.gov/deq/montanaairquality/default.aspx)

Fugitive dust from traffic on unpaved roads is one of the main components of air pollution in western Montana. Many areas of the state had problems attaining the NAAQS for particulate matter over the years, and control plans have been implemented that include the paving on rural roads as a key component of an overall strategy. Currently air quality conditions in the St. Regis area are classified as unknown but with expected compliance. The closest communities with monitoring data are Thompson Falls, Superior, and Missoula. Most of those areas have been or are in non-compliance with the PM NAAQS. This has chiefly been from wood stove and roadway fugitive dust emissions. (Montana Department of Environmental Quality)

4.10.2 Project Impacts

No-Action Alternative. Particulate matter in the form of dust created from vehicles driving on the existing gravel road would continue to enter the air with the no-action alternative.

Preferred Alternative. Short-term effects from this alternative would be increased dust during construction due to use of construction vehicles. The most substantial past and present impact to air quality in the Little Joe corridor is likely airborne dust associated with the use of the Little Joe Road and other gravel roads in the area. Emissions and airborne dust from vehicles and equipment associated with residential construction,

logging, and road use also have and would affect air quality. However, given the relatively low occurrence of these activities, the associated effects on air quality are minimal. There is potential that the paved road would cause an increase in traffic to the LJR corridor. This increase in traffic may increase negative air quality; however they may be a decrease in dust due to paving the gravel road which may offset the change in air quality due to increased traffic. The proposed action of paving would improve air quality in along the project corridor.

The materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no impacts to air quality.

4.10.3 Cumulative Impacts

The area of consideration for noise impacts is the Little Joe Road corridor. The largest past, present and cumulative impact to air quality in the Little Joe corridor is airborne dust associated with use of the Little Joe Road and other gravel roads in the area. Emissions and airborne dust from vehicles and equipment associated with residential construction, agricultural activities, logging, and road use also have and would affect air quality. However, given the relatively low occurrence of these activities based on the SADT, the associated effects on air quality are minimal. The paving would cause a reduction in dust resulting in a beneficial impact on air quality in the project area. The incremental impacts from this project, when added to other past, present, and reasonably foreseeable future actions, would not result in substantial cumulative impacts to the resource, or affect the ability of the resource to sustain itself.

4.10.4 Mitigation

See Summary of Mitigation Measures Chapter 5

4.11 Visual

4.11.1 Affected Environment

The area of consideration for visual impacts is the Little Joe Road corridor.

The project snakes between six Lolo National Forest Plan Management Areas; the national forest land within the Lolo National Forest has been divided into 28 management areas, with different management goals, resource potentials and limitations. The proposed project is consistent with the Lolo National Forest Plan, 1986 USDA Forest Service. Scenic values are important along LJR, and many scenic viewing opportunities exist. The Little Joe corridor is classified by the FS as an area of "high sensitivity" for visual impact.

4.11.2 Project Impacts

No-Action Alternative. The visual elements of LJR would remain unchanged with the no-action alternative. However, if regular maintenance is not implemented, the road could lose the ability to be used by the public, and the opportunity for the public to view its visual qualities could decrease.

Preferred Alternative. Although much of LJR has a scenic natural setting, it has not been designated as a federal, state, or forest scenic byway nor otherwise distinguished for its scenic attributes. A paved road surface and lane markings would be more visible, however, design elements to minimize these changes would be revegetating disturbed areas and providing vegetation along some portions of the stream/road bank that currently have no vegetation. Also, curve widening changes would be minor, except at MP 14.5, and new cutslopes would be similar in character to natural slopes and existing cutslopes in the corridor. Therefore, the project would not substantially change the overall look and feel of the corridor and is not expected to result in any substantial impacts to its scenic attributes.

The materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no visual impacts.

4.11.3 Cumulative Impacts

The area of consideration for noise impacts is the Little Joe Road corridor. Past, present, and future actions resulting in changes to the visual quality of the Little Joe drainage include the possible construction of a trailhead adjacent to the St. Regis Bridge, removal of vegetation associated with logging and agriculture, and introduction of non-native plant species. These actions have not nor are they expected to substantially alter the overall natural feeling of the Little Joe drainage either separately or cumulatively. This interpretation is supported by the fact that much of the land in the drainage is relatively protected from land ownership and development change because it is Forest Service, state or county-owned land.

4.12 Floodplains

The landform consists of recent floodplains, perennial streams, and low stream terraces 2 to 10 feet above the existing stream channel. Floodplains and terraces have fluctuating water tables and are subject to flooding.

4.12.1 Affected Environment

Little Joe Road runs parallel to Little Joe Creek and North Fork Little Joe Creek for about one-third of the route, and portions of the road were constructed in the Little Joe Creek floodplain and the floodplains of its tributaries.

4.12.2 Project Impacts

No-Action Alternative. The no-action alternative would have no known additional impacts to the floodplains along LJR. With continued maintenance grading of the gravel road, it is expected that inadvertent side casting of material would continue to encroach on the floodplains as the road widens.

Preferred Alternative. Additional road material would be placed in the floodplains along Little Joe Creek and North Fork Little Joe Creek in order to construct the preferred alternative. However, the amount of fill material would be minimized by moving the road away from Little Joe Creek in areas and by providing wider stream crossing structures with a natural bank-full stream configuration. Also, this would help to avert

damage to the road or the natural environment (i.e., excessive erosion near the culvert outlet, excessive ponding at the inlet) and reduce flooding during large storm events. Therefore it is not expected that the preferred alternative would have adverse impacts to floodplains within the project area. No additional affects are anticipated from the proposed actions. Impacts to floodplains are not foreseeable as a result of the proposed project.

Approximately 1/2 of the gravel pit is within the Zone A floodplain designation. Zone A is an estimated FEMA floodplain where no base flood elevations (BFE) and no floodways are designated. For large portions of this creek, the flow becomes subsurface and this subsurface flow is maintained almost year round. As part of remediation, the proposed plans include reclaiming the gravel pit, and removing a culvert. Removing this fill and existing culvert will remove a potential flow constriction within the main channel/floodway.

Some cut and fill are proposed at the gravel pit. No net fill would be placed within the Zone A floodplain and any additional fill would be placed outside of the Zone A designated area.

In accordance with Executive Order 11988, Floodplain Management, WFLHD evaluated the proposed improvements and its floodplain impacts. Potential floodplain impacts have been consciously reduced through avoidance.

However, the materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no impacts to floodplains.

4.13 Public Services and Utilities

4.13.1 Affected Environment

Public services within the first 1.9-miles of the project corridor include fire and police protection, school bus service, maintenance of public facilities (including roads), health services, solid waste disposal, and mail delivery.

4.13.2 Project Impacts

No-Action Alternative. The no-action alternative does not change any of the existing conditions along the project corridor. The road would remain gravel, thereby emergency relief along the corridor may be slightly hindered. Graveling maintenance activities may decrease or cease due to associated costs. The no-action alternative would have little to no impact on public service and utilities.

Preferred Alternative.

The preferred alternatives would have no anticipated impacts or very minor impacts to these services and utilities. Access for each of the services described above would be maintained throughout the construction period; therefore effects to these services are anticipated to be adverse but temporary and minor. Coordination would take place with Missoula Electric Coop, Blackfoot Communications and private residents for any needed

relocation of portions of these facilities. Any relocation work would be done as necessary without disruption in service.

The materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no public service and utilities impacts.

4.14 Land Use

Improved accessibility via improvement of the road may make the area more attractive for residential development. However, other factors must be analyzed, including availability and quality of water, cost of power and utilities, availability and quality of schools and public services, land prices, zoning ordinances and demand.

Development projections cannot be assumed to progress through a linear progression. Development is affected by regional, national, economic and residential factors. Changes can arise from fluctuations in fuel and energy prices, interest rates, local zoning, land values, and regional home sales. Some or all of the following scenarios are possible:

- Improvement of road leads to increased development
- Increased development leads to improvement of road
- Increased interest rates reduce demand for development
- Decreased interest rates increase demand for development
- Higher real estate values in metropolitan area lead to increased rural development
- Population influx leads to increased demand for rural development

Western Montana cities have shown considerable growth and expansion into regional centers of services, finance and construction with growth rates of 35% from 1990-2000. The demand for rural development has followed suit, with a 300% increase in the real estate (University of Montana 2005).
Land ownership in the project area is segmented. Land adjacent to the first 1.9 miles on LJR is privately owned by approximately eight separate land owners. The right-of-way for this segment is owned by Mineral County and runs from about MP 0.0 to MP 0.1, 70 feet on the right and 60 feet on the left; and then again from MP 0.1 to MP 1.9, 50ft on each side of the road. The route continues on as USFS property.

Public land for the remainder of the route is managed by the Lolo National Forest and under the jurisdiction and maintenance of the FS. Upon completion of the project, Mineral County would assume maintenance and jurisdiction of the entire length of the route.

While improvements to LJR may make the corridor more attractive to current and potential homebuilders, it is expected the project would have little influence on the recent trend of people moving to the area. The only privately owned land in the corridor is the first 1.9 miles. There are no future plans to sell public lands. Land use changes are not a foreseeable impact as a result of the proposed project.

4.14.1 Project Impacts

No-Action Alternative. No change to current land use would occur due to the no-action alternative.

Preferred Alternative. No change to current land uses would occur due to the preferred alternative. The proposed project is consistent with the Forest Land and Resource Management Plan. No new right-of-way would be needed to build this alternative. Mineral County currently has maintenance responsibility for its portion of the route. If this alternative is chosen, upon completion of the project, Mineral County would assume maintenance and jurisdiction of the entire length of the route.

The materials source pit, and staging/storage area at MP 2.2 have been under use by the FS and were previously determined by the FS to have no impacts to land use.

Existing Right of Way (ROW)
The current ROW for the paved portion of the project up to MP 1.9 is owned by Mineral County. ROW for the remainder of the project is owned by the Forest Service. Additional ROW would not be required, but an easement from the FS to Mineral County would need to be processed upon construction completion of the proposed improvement.

Telephone cables and powerlines serve private landowners within the first 1.9 miles of the route and should not need to be relocated. WFLHD would coordinate the relocation of utilities with Clark Fork TeleCommunications in Missoula, MT if it should become necessary. There are no utilities from MP 1.9 to MP 16.1.
(From WFLHD Project Identification Report (PIR) 1998)

4.15 Prime Farmland, Rangeland, and Forestland

No prime or unique farmland, rangeland, or forestland is present within the project area. Therefore, either alternative would have no effect on these resources.

4.16 Climate Change

The climate change effects of paving a road have not been scientifically quantified. It is reasonable to suspect that there would be no measurable direct effects on the global climate due to executing the proposed action. Cumulative impacts associated with paving and climate change are currently impossible to measure.

4.17 Environmental Justice

On February 11, 1994, President Clinton issued the Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (Executive Order 12898). In accordance with this order, the LJR Improvement project has been reviewed to determine if it would result in "...disproportionately high and adverse human health and environmental effects on minorities and low-income populations." Due to the relatively narrow width of the proposed reconstruction project,

no residents or businesses would need to be displaced or relocated as a result of the project. Also, the short-term (construction related) and long-term impacts and benefits would affect all LJR users on an equal basis. Opportunities for employment during project construction and the long-term road safety improvements would extend to minorities and people with low incomes in nearby communities and thus could benefit these groups. In conclusion, the project would not result in "… disproportionately high and adverse… effects on minorities and low-income populations."

4.18 Irreversible or Irretrievable Commitment of Resources

4.18.1 Project Impacts

No-Action Alternative. There would be little to no change to the current level of commitment of resources due to the no-action alternative. If associated costs due to maintenance become too substantial, maintenance activities may decrease and less rock resource would be impacted. However if the decision to increase maintenance to the LOS 5 level as a gravel road, more rock resources would be needed.

Preferred Alternative
Construction of the road would require an irretrievable commitment of fossil fuel for construction equipment operation. Excavation of rock at the MP 12.2 and 14.5 would permanently change the lay of the land in those two areas, and the rock removed and used to construct pave LJR would be irretrievable.

Changes or diminishment to corridors and/or linkage zones are potential long-term irreversible and irretrievable commitment of resources. The estimated low SADT counts on the Little Joe Road are minimal and not large enough volumes that cause diminished corridors or linkage zones. Furthermore LJR being situated on public lands that have a low potential for urban growth is additional support that the potential to cause irreversible and irretrievable commitment of resources is unlikely (Waller, J.S, Servheen, C, 2005).

5 Summary of Mitigation Measures

The following table summarizes the mitigation measures that would be implemented with the preferred alternative. Many of the mitigation measures are duplicative and apply to more than one resource.

Table 13

Resource	Mitigation Measures
Soils and Geology	• Cutslopes would be designed to promote stability, minimize erosion, and allow for revegetation. • Topsoil would be conserved and stockpiled for later use to enhance revegetation success. • Woody debris, obtained on site or from clearing operations, would be scattered in appropriate densities to foster shade and micro-habitat zones on cutslopes and disturbed sites where appropriate and feasible. • Following construction, cutslopes and disturbed sites would be seeded or planted with native seed, shrubs, and/or trees at appropriate distributions, spacing, and timing as determined by a plant specialist.

	• If appropriate, fertilizer would be used to facilitate revegetation. • If appropriate, mulch, tackifier, or other erosion control method would be used to protect seeded areas. A fast-germinating annual plant may be added to the seed mix to provide quick ground cover. • Appropriate sediment and erosion control BMPs would be put into place before construction begins and would be maintained in working order throughout the construction period and until vegetation is established.
Water Resources	• Through consultation with the MT DEQ and in compliance with applicable permitting and regulatory requirements, a water turbidity-monitoring plan would be developed and implemented to ensure the project would not degrade water quality conditions in Little Joe Creek. • Appropriate sediment and erosion control BMPs would be put into place before construction begins and would be maintained in working order throughout the construction period and until vegetation is established. • A dewatering and diversion plan would be established and would include, but would not be limited to, the following procedures: Where culvert/bridge replacement is performed in flowing streams, actions to reduce sediment would be conducted. Actions, such as stream diversion, would be assessed for sediment production to assure that mitigation actions result in reduced sediment productions. Where possible, sediment capture devices would be placed to deter downstream movement of sediment. Pumping would be required to remove subsurface flow laden with sediment around the excavated areas. Pump discharge would be released in an area where sediment would not be delivered to the stream. • During stream culvert replacement, natural streambed material would be replaced within the crossing structure. If applicable, large substrates would be conserved and scattered to provide "shadow rocks" (habitat and resting areas) within the crossing. The stream channel would be replaced to a natural and appropriate bankfull and floodplain configuration for the site and entering stream type. Appropriate riparian vegetation would be planted and/or transplanted where possible and as determined by a plant specialist. Woody debris from site clearing would be scattered over disturbed surfaces. • There would be no fueling or storage of petroleum products within the Little Joe Creek (and the North Fork of the Little Joe Creek) floodplain. • Prior to construction, the contractor would prepare a Hazardous Materials Spill Plan to identify actions to take in the event of a spill. This plan would incorporate preventative measures such as the placement of refueling facilities and the storage and handling of hazardous materials. • All disturbed sites along the project route would be revegetated promptly, using species appropriate to the site. Seeded and planted sites would be protected from erosion with a tackifier or other soil protection method until vegetation becomes established. • Erosion controls would be left in place until vegetation becomes established. • Drainage facilities that allow ground infiltration and provide sediment filtration from stormwater runoff would be provided. • The amount of fill material placed in water bodies and floodplains would be minimized. • The need to relocate, realign, or recreate the Little Joe Creek and the North Fork of the Little Joe Creek stream channel where it flows close to the roadway corridor would be avoided. • Where feasible, the road would be shifted away from Little Joe Creek and North Fork Little Joe Creek, leaving existing fill/riprap in place, and providing a vegetative buffer between the road and the creek. • Disturbed areas that are already present within the project corridor would be used as staging areas for construction equipment to avoid the disturbance of additional areas. • A stinger would be employed to plant appropriate seedlings between the riprap and at other locations where the road and stream are in close proximity. A plant and/or stream specialist would determine the appropriate types of seedlings and their locations and spacing.
Wetlands	• Appropriate sediment and erosion control BMPs would be put into place before construction begins and would be maintained in working order throughout the construction period and until vegetation is established.

	• Fueling or storage of petroleum products would comply with permit requirements. • Petroleum products and other chemicals would not be allowed to enter wetlands. The contractor would prepare an emergency spill plan and have a spill containment kit onsite at all times. • All disturbed sites along the project route would be revegetated promptly, using species appropriate to the site. • Seeded and planted sites would be protected from erosion with a tackifier or other soil protection method until vegetation becomes established. • Drainage facilities that allow ground infiltration and provide sediment filtration from stormwater runoff would be provided. • The amount of fill material placed in water bodies and floodplains would be minimized. • Relocation, or realignment, of the Little Joe Creek and the North Fork Little Joe Creek stream channel would be avoided where it flows close to the roadway corridor. • Where feasible, the road would be shifted away from Little Joe Creek and North Fork Little Joe Creek, leaving existing fill/riprap in place, and providing a vegetative buffer between the road and the creek. • If appropriate, disturbed areas that are already present within the project corridor would be used as staging areas for construction equipment to avoid disturbing additional areas within the project corridor.
Vegetation	• Topsoil would be conserved and stockpiled for later use on disturbed sites to enhance revegetation success. • Cutslopes and disturbed sites would be seeded or planted with native vegetation appropriate for the site as soon as possible following construction. • A mulch or tackifier to prevent erosion prior to reestablishment of vegetation would cover seeded areas. A fast-germinating annual plant may be added to the seed mix to provide quick ground cover. • Grass seed would be planted using hydro seeding or drilling. • Appropriate sediment and erosion control BMPs would be put into place before construction begins and would be maintained in working order throughout the construction period and until vegetation is established. • Where appropriate, erosion berms would be constructed, or straw wattles would be staked at appropriate spacing. • All seed and hay or straw used on the construction site would be free of noxious weeds. • The project area would be sprayed to control the spread of noxious weeds prior to construction and for three years after construction during the establishment of revegetation. Disturbed sites would be monitored for noxious weeds during this period.
Fish and Wildlife	• Appropriate sediment and erosion control BMPs would be put into place before construction begins and would be maintained in working order throughout the construction period and until vegetation is established. • All in-water work would be conducted during the in-water work period (July 15-September 1). This would avoid impacts to migrating adult bull trout and undeveloped eggs and embryos still in the stream gravels; • Excavation of the streambank would only occur from the road surface or bank and would not require operating in the flowing channel (except the excavator bucket); this is in-stream work. • A number of measures would be implemented to reduce sedimentation. These measures include in-water work during lowest flows; staked straw bales, sediment fencing, and construction of settling basins down slope of work areas; straw bales, slash filter windrows or sediment bags would be placed around the periphery of disturbance sites in the RHCA; and all sediment laden water would be filtered prior to discharge to the channel. All control devices would be inspected daily during periods of precipitation and weekly during dry periods; • All disturbed sites would be replanted with native vegetation with an emphasis on clump planting transplants (willow, dogwood and alder) first, use of native hardwood cuttings second, planting of containerized native plants third and native grass seeding fourth; • Disturbed sites would be mulched to reduce riling and improve success of seeding

	efforts; • Planting sites would be monitored for a minimum of one full growing season to ensure adequate success is achieved; • Hazardous materials, including fuel, would not be stored or transferred within 165-feet of the two-year floodplain of any water body. No staging areas or parking areas would occur within 165-feet of the two-year floodplain. This would reduce the likelihood of a spilled toxic substance reaching the river. Spill containment booms would be maintained on-site at all times during construction operations and/or staging of equipment or fueling supplies. Fueling trucks would maintain a spill containment boom at all times; • Any equipment that is to come in contact with the flowing channel would be inspected daily for leaks prior to working in the flowing stream. External oil, grease, and mud would be removed from equipment using steam cleaning, and this would be done at least 165-feet away from the two-year floodplain, and contained in hazardous spill socks. The project inspector, prior to each entry into the flowing stream, would inspect the equipment. Untreated wash and rinse water must be adequately treated prior to discharge into the stream; • Excavated and stored materials would be staged in stable upland sites. All applicable erosion control standards would be required during stockpiling of materials. • Work in streams within the project corridor would comply with work windows that are protective of species as determined by the U.S. Fish and Wildlife Service and Forest Service biologists. • No vehicle fueling or refueling operations or storage of hazardous materials that could accidentally enter a stream, would be permitted within Resource Conservation Areas (RCAs), defined as 300-feet of the top of the bank of any intermittent or perennial stream channel (Diem 2005). • Prior to construction, the contractor would prepare a Hazardous Materials Spill Plan to identify actions to take in the event of a spill. This plan would incorporate preventative measures such as the placement of refueling facilities and the storage and handling of hazardous materials. • Culvert replacements in fish-bearing streams would be designed to allow aquatic and semi-aquatic passage by constructing a natural bankfull stream configuration and substrate within the crossing. • Where culvert/bridge replacement is performed in flowing streams, sediment capture devices would be placed to deter downstream movement of sediment. • During stream culvert replacement, natural streambed material would be replaced. The stream channel would be replaced to a natural configuration and riparian vegetation would be planted. • Riprap would be used to stabilize stream banks where appropriate. • Drainage facilities that allow ground infiltration and provide sediment filtration from stormwater runoff would be provided. • The amount of fill material placed in water bodies and floodplains would be minimized. • Relocation, or realignment, of the Little Joe Creek and the North Fork Little Joe Creek stream channel would be avoided where it flows close to the roadway corridor. • Where feasible, the road would be shifted away from Little Joe Creek and North Fork Little Joe Creek, leaving existing fill/riprap in place, and providing a vegetative buffer between the road and the creek. • Disturbed areas that are already present within the project corridor would be used as staging areas for construction equipment to avoid the disturbance of additional areas within the project corridor. • Electrical facilities that need to be relocated because of construction activities would be raptor-proofed to avoid electrocution of birds. • Where feasible, culverts/bridges would allow small mammal passage underneath the roadway.
Archaeological and Historic Resources	• If any cultural remains are encountered during road construction, all activities would stop, and the FHWA and an archaeologist would be contacted to evaluate the discovery.

Noise	• All equipment would have sound control devices no less effective than those provided on the original equipment. All equipment would have muffled exhaust. • All equipment would comply with pertinent noise standards of the EPA. • No construction would be performed within 100 ft of any occupied residence on Sundays, legal holidays, or between the hours of 10:00 pm and 6:00 am on other days. • Should a specific noise impact complaint occur during construction, one or more of the following measures may be required: o Shutting off idling equipment when possible o Rescheduling construction operations to avoid periods of noise annoyance identified in complaint o Notifying nearby residents when extremely noisy work would be occurring o Installing temporary or portable acoustic barriers around stationary construction noise sources, if possible.
Floodplains	• No net fill would be placed within the Zone A floodplain and any additional fill would be placed outside of the Zone A designated area. No fill will be placed within 250' from the edge of the Little Joe Creek.
Air Quality	• The asphalt road pavement would reduce airborne dust. • Dust control measures (e.g. water applied to construction areas) would be implemented to control dust during construction.
Hazardous Materials	• Prior to construction, the contractor would prepare a Hazardous Materials Spill Plan to identify actions to take in the event of a spill. This plan would incorporate preventative measures such as the placement of refueling facilities and the storage and handling of hazardous materials. • There would be no fueling or storage of petroleum products within the Little Joe Creek (and the North Fork Little Joe Creek) floodplain.
Transportation/ Circulation	• A Traffic Control Plan would be developed by FHWA and implemented during construction to reduce congestion and traffic delays. This plan would identify traffic control measures such as the use of flag persons and pilot cars.

6 Coordination

Social, Economic, and Environmental Team

A SEE Team was established during the scoping phase of the project to identify and assess the environmental effects of the proposal and recommend alternatives for evaluation. The SEE Team acts as a steering committee for project development activities during the conceptual and design phases. The team is also charged with the formulation and implementation of a comprehensive public involvement process. This team is composed of representatives from the principal land management agencies and WFLHD. Team members call on available disciplines within their agencies for technical assistance as needed.

The SEE (Interagency) Team members for this project are:

- **Greg Gifford, Project Manager,** Federal Highway Administration, Western Federal Lands Highway Division, 610 East Fifth Street, Vancouver, WA 98661, (360) 696-7700.
- **Denise Steele, Environmental Protection Specialist,** Federal Highway Administration, Western Federal Lands Highway Division, 610 East Fifth Street, Vancouver, WA 98661, (360) 696-7700.
- **Susan Colyer, P.E., Forest Engineer,** U.S. Forest Service, Lolo National Forest, Building 24, Fort Missoula, Missoula, MT 59804, (406) 329-3729.
- **Wayne Noem, Civil Engineering Specialist,** Montana Department of Transportation, P.O. Box 201001, 2701 Prospect Avenue, Helena, MT 59620 (406) 444-6109.
- **Judy Stang, County Commissioner,** Mineral County Commissioners, P.O. Box 550, Superior, MT 59870, (406) 822-3556.

List of Preparers

This EA was prepared by:

- Federal Highway Administration, Western Federal Lands Highway Division
  - Denise Steele, Environmental Protection Specialist

Technical reports were prepared by:

- Widener and Associates Environmental Consultants
- USDA Forest Service
  - Skip Rosquist, Forest Hydrologist
  - C. Milo McLeod, Forest Archaeologist
  - J. Rodger Free, Archaeologist
  - Sydney Wimbrow, Archaeologist
  - Jennifer Copenhaver, Fisheries Biologist

Public and Agency Comments

Comments received during the public scoping and Project Checklist phases of the project and the responses to them are located in Attachment 5.

6.1 Permits and Approvals

Required permits and approvals would be obtained prior to construction. The following permits and approvals are expected to be required for the proposed project:

- Section 404 authorization from the Army Corps of Engineers
- Section 401 Water Quality Certification from the Army Corps of Engineers/ Montana Department of Environmental Quality (DEQ)
- Montana Pollution Discharge Elimination System (MPDES) Permit from the Montana DEQ
- Short-term Water Quality Standard for Turbidity (318 Authorization) from the MT DEQ
- Burn approval
- Water source approval

6.2 Public Outreach and Coordination

1998 Project Scoping began
2004 Website available for review and comment until early 2008
2004 Environmental Status Update literature released to mailing list recipients
2004 Public Open February 2004, request for comment
2007 request for comments postcard released to mailing list recipients
2008 EA plan for release postcard released to mailing list recipients

7 Consultation

Section 7 Consultation with the U.S. Fish and Wildlife Service was initiated for formal consultation January 25, 2008. WFLHD has not received a Biological Opinion (BO).

Section 7 Consultation with the U.S. Fish and Wildlife Service was initiated for informal consultation January 25, 2008. WFLHD has not received a response.

Section 106 Consultation with the SHPO occurred in 2003. WFLHD requested concurrence on a no *historic properties affected* November 21, 2003. WFLHD received concurrence from the SHPO December 23, 2003.

Tribal consultation occurred 2003.

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10-JUL-2007

MONTANA DEPARTMENT OF TRANSPORTATION

LIMITED DETAIL CRASH LIST

SAFR006C

Start Date 01-JAN-1990 End Date 30-APR-2007 Select AC_RANGE_CODE = '28W' AND AC_TOWNSHIP_CODE = '17N'

***** CRASH DETAILS *****

SEQ NO.	LOCATION	TIME	DATE	DAY OF WEEK	JUNCT REL	ROADWAY RELATED	WEATH COND	ROAD COND	LIGHT COND	# VEH	# PED	# FAT	# INJ	COLLISION TYPE
1	00R04328W17N17	22:00	08-JUL-1990	SUN	NJ	OFF ROAD	CLEAR	DRY	DUSK	1	0	0	0	
2	00R06428W17N02	02:20	16-SEP-1993	THU	NJ	OFF ROAD	CLEAR	DRY	DARK NOT LIT	1	0	0	1	
3	00R06528W17N36	10:00	08-JUN-2000	THU	NJ	ROADWAY	CLEAR	LOOSE GRAVEL	DAYLIGHT	1	0	0	0	
4	00R07528W17N05	10:00	13-MAY-2001	SUN	NJ	SHOULDER RT	CLEAR	SNOW OR SLUSH	DAYLIGHT	1	0	0	1	
5	00R09128W17N10	13:00	26-MAY-2003	MON	NJ		CLEAR	SAND,MUD,DIRT	DAYLIGHT	1	0	0	0	

***** VEHICLE DETAILS *****

SEQ NO.	TYPE NO.	CONTRIBUTING CIRCUMSTANCES	INTENT	DIR TRV	BODY	TRAILER	VEH YR	DAMAGE	FIRST HARMFUL	MOST HARMFUL
1	VEH 1	OTHER(ENVIRONMENT) UNKNOWN	GO STRAIGHT		COMPACT CAR	NO TRLR	89	DISABLING	OVERTURN	OVERTURN
2	VEH 1	INATTENTIVE DRIVING INATTENTIVE DRIVING CARELESS DRIVING	GO STRAIGHT		TRUCK/TRACTOR	NO TRLR	85	DISABLING	OVERTURN	OVERTURN
3	VEH 1	TOO FAST FOR COND INATTENTIVE DRIVING	GO STRAIGHT	S	SUV	NO TRLR	87	DISABLING	OVERTURN	OVERTURN
4	VEH 1	IMPROPER BACKING OPR CARELESS DRIVING OTHER(ENVIRONMENT) SLUSHY SHOULDER LOW,HIGH	BACK	E	STD PICKUP	NO TRLR	97	DISABLING	OVERTURN	OVERTURN
5	VEH 1	OTHER(DRIVER) OTHER(ENVIRONMENT)	REMAIN PARKED		PICKUP				OTHER FIXED OBJ	OVERTURN

MONTANA DEPARTMENT OF TRANSPORTATION

LIMITED DETAIL CRASH LIST

Start Date 01-JAN-1990 End Date 30-APR-2007 Select AC_RANGE_CODE = '29W' AND AC_TOWNSHIP_CODE = '17N'

***** CRASH DETAILS *****

SEQ NO.	LOCATION	TIME	DATE	DAY OF WEEK	JUNCT REL	ROADWAY RELATED	WEATH COND	ROAD COND	LIGHT COND	# VEH	# PED	# FAT	# INJ	COLLISION TYPE
1	00R05129W17N23	17:00	18-OCT-1993	MON	NJ	ROADWAY	CLEAR	DRY	DAYLIGHT	2	0	0	1	SIDESWIPE SD
2	00R07729W17N25	19:00	29-JUL-1995	SAT	NJ	OFF ROAD	CLEAR	DRY	DAYLIGHT	1	0	0	1	
3	00R07829W17N14	14:20	21-OCT-1998	WED	NJ	SHOULDER RT	CLEAR	ICE	DAYLIGHT	1	0	0	0	
4	00R09529W17N13	08:00	31-OCT-1993	SUN	NJ	OFF ROAD	RAIN	ICE	DAYLIGHT	1	0	0	1	

***** VEHICLE DETAILS *****

SEQ NO.	TYPE NO.	CONTRIBUTING CIRCUMSTANCES	INTENT	DIR TRV	BODY	TRAILER	VEH YR	DAMAGE	FIRST HARMFUL	MOST HARMFUL
1	VEH 1	INATTENTIVE DRIVING CARELESS DRIVING	GO STRAIGHT		TRUCK/TRACTOR	NO TRLR	69	FUNCTIONAL	MV IN TRANSPORT	MV IN TRANSPORT
	VEH 2	INATTENTIVE DRIVING CARELESS DRIVING IMPROPER PASSING HILL OBSTRUCTION	OVERTAKE		TRUCK/TRACTOR	NO TRLR	77	DISABLING	MV IN TRANSPORT	MV IN TRANSPORT
2	VEH 1	INATTENTIVE DRIVING OTHER(DRIVER) CARELESS DRIVING	GO STRAIGHT		OTHER	NO TRLR	92	NO DAMAGE	OVERTURN	OVERTURN
3	VEH 1	ICY TOO FAST FOR COND	GO STRAIGHT	S	COMPACT CAR	NO TRLR	85	FUNCTIONAL	TREE	TREE
4	VEH 1	ICY	GO STRAIGHT		TRUCK/TRACTOR	POLE TRLR	89	DISABLING	OVERTURN	OVERTURN

LIMITED DETAIL CRASH LIST

SAFR006C

Start Date 01-JAN-1990 End Date 30-APR-2007 Select AC_RANGE_CODE = '28W' AND AC_TOWNSHIP_CODE = '18N' AND AC_SECTION_CODE IN ('23','26','34','35')

***** CRASH DETAILS *****

SEQ NO.	LOCATION	TIME	DATE	DAY OF WEEK	JUNCT REL	ROADWAY RELATED	WEATH COND	ROAD COND	LIGHT COND	# VEH	# PED	# FAT	# INJ	COLLISION TYPE
1	00R01628W18N35	00:30	30-NOV-1996	SAT	NJ	SHOULDER LT	CLOUDY	SNOW OR SLUSH	DARK NOT LIT	1	0	0	1	
2	00R05128W18N26	22:08	16-JUN-2006	FRI	NJ	ROADWAY	CLOUDY	DRY	DARK NOT LIT	2	0	0	2	SIDESWIPE SD
3	00R05828W18N23	17:40	02-MAY-2000	TUE	IR	SHOULDER LT	CLEAR	DRY	DAYLIGHT	1	0	0	2	
4	00R07328W18N23	12:00	06-JUN-1997	FRI	IR	ROADWAY	CLOUDY	DRY	DAYLIGHT	2	0	0	0	RIGHT ANGLE
5	00R07628W18N23	11:00	01-SEP-1997	MON	NJ	ROADWAY	CLEAR	DRY	DAYLIGHT	2	0	0	0	REAR END
6	00R08228W18N34	00:02	22-OCT-1994	SAT	NJ	OFF ROAD	CLEAR	WET	DARK NOT LIT	1	0	0	0	
7	00R08328W18N23	17:30	20-NOV-1994	SUN	NJ	ROADWAY	CLOUDY	ICE	DARK NOT LIT	1	0	0	0	

LIMITED DETAIL CRASH LIST

SAFR006C

Start Date 01-JAN-1990 End Date 30-APR-2007 Select AC_RANGE_CODE = '28W' AND AC_TOWNSHIP_CODE = '18N' AND AC_SECTION_CODE IN ('23','26','34','35')

***** VEHICLE DETAILS *****

SEQ NO.	TYPE NO.	CONTRIBUTING CIRCUMSTANCES	INTENT	DIR TRV	BODY	TRAILER	VEH YR	DAMAGE	FIRST HARMFUL	MOST HARMFUL
1	VEH	1 ALCOHOL TOO FAST FOR COND	GO STRAIGHT	S	MID-SIZE CAR	NO TRLR	84	DISABLING	TREE	TREE
2	VEH	1 ALCOHOL CARELESS DRIVING	OVERTAKE	S	COMPACT CAR	NO TRLR	90	DISABLING	MV IN TRANSPORT	DITCH
	VEH	2 UNKNOWN	GO STRAIGHT	S	STD PICKUP	NO TRLR	98	DISABLING	MV IN TRANSPORT	OVERTURN
3	VEH	1 DISRGD TRAFFIC SIGNS TOO FAST FOR COND CARELESS DRIVING CURVE IN ROAD WAY	GO STRAIGHT	E	MID-SIZE CAR	NO TRLR	87	DISABLING	OVERTURN	OVERTURN
4	VEH	1 INATTENTIVE DRIVING OTHER(DRIVER)	BACK	S	LARGE CAR	NO TRLR	85	OTHER	MV IN TRANSPORT	MV IN TRANSPORT
	VEH	2 UNKNOWN	GO STRAIGHT	W	SMALL PICKUP	NO TRLR	77	OTHER	MV IN TRANSPORT	MV IN TRANSPORT
5	VEH	1 UNKNOWN	SLOW/STOP	S	SMALL PICKUP	NO TRLR	94	FUNCTIONAL	MV IN TRANSPORT	MV IN TRANSPORT
	VEH	2 INATTENTIVE DRIVING FOLLOWED TOO CLOSELY	GO STRAIGHT	S	COMPACT CAR	NO TRLR	96	DISABLING	MV IN TRANSPORT	MV IN TRANSPORT
6	VEH	1 FELL ASLEEP INATTENTIVE DRIVING CARELESS DRIVING	GO STRAIGHT		STD PICKUP	NO TRLR	88	DISABLING	OVERTURN	OVERTURN
7	VEH	1 OTHER(ENVIRONMENT)	GO STRAIGHT		SMALL WAGON	NO TRLR	83	FUNCTIONAL	DOMESTIC ANIMAL	DOMESTIC ANIMAL

Attachment 2. Biological Opinion

The Biological Opinion was due June 2008 and will be obtained before a final decision is issued.

Attachment 3. Bull Trout Matrix and Matrix to PCE Crosswalk and Dichotomous Key

Bull Trout Matrix of Diagnostics/Pathways and Indicators for the Little Joe drainage.

Diagnostic/Pathways: Indicators	Little Joe	Major Effects of the Action (s)	Minor Effects of the Action (s)	INFISH Forest Plan Compliance
	FA/FAR/FAUR	Restore (R) **Maintain (M)** **Degrade (D)**	Restore (R) **Maintain (M)** **Degrade (D)**	Y/N
Characteristics Subpopulation:				
Subpopulation Size	FUR	D	D	Y
Growth & Survival	FUR	M	M	Y
Life History Diversity & Isolation[7]	FAR	R	R	Y
Persistence and Genetic Integrity[7,9]	FUR	M	M	Y
Water Quality:				
Temperature[2,7]	FAR	M	M	Y
Sediment[1,4]	FUR	D	D	Y
Chemical Contam. / Nutrients[1,7]	FAR	M	D	Y
Habitat Access:				
Physical Barriers[7]	FAR	R	R	Y
Habitat Elements:				
Substrate Embeddedness[1,4]	FUR	D	D	Y
Large Woody Debris[3]	FUR	M	M	Y
Pool Frequency & Quality[3]	FUR	M	M	Y
Large Pools[3]	FUR	M	M	Y
Off-Channel Habitat[3]	FUR	M	M	Y
Refugia[3]	FUR	M	M	Y
Channel Condition & Dynamics:				
Wetted Width/Max Depth Ratio[3,7]	FUR	M	M	Y
Streambank Condition[3]	FUR	M	R	Y
Floodplain Connectivity[3,6]	FUR	M	M	Y
Flow & Hydrology:				
Change in Peak/Base Flows[1,5,7]	FUR	M	M	Y
Drainage network Increase[1,5,7]	FAR	M	M	Y
Watershed Conditions:				
Road Density & Location[1,5]	FUR	M	M	Y
Disturbance History	FUR	M	M	Y
Riparian Conservation Area[3,6]	FUR	M	M	Y
Disturbance Regime	FAR	M	M	Y
Integration of Species & Habitat Condition[8]	FUR	D	D	Y

FUR = Functioning at Unacceptable Risk, FAR = Functioning at Risk, FA = Functioning Appropriately

Primary Constituent Elements within the proposed bull trout critical habitat rule

1. Permanent water having low levels of contaminants such that normal reproduction, growth and survival are not inhibited.
2. Water temperatures ranging from 2-15°C, with adequate thermal refugia available for temperatures at the upper end of this range. Specific temperatures within this range would vary depending on bull trout life history stage and form, geography, elevation, diurnal and seasonal variation, shade, such as that provided by riparian habitat, and local ground water influence.
3. Complex stream channels with features such as woody debris, side channels, pools, and undercut banks to provide a variety of depths, velocities, and instream structures.
4. 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. A minimal amount of fine substrate less than 0.63 cm (0.25 in) in diameter and minimal substrate embeddedness are characteristic of these conditions.
5. A natural hydrograph, including peak, high, low, and base flows within historic ranges or, if regulated, a hydrograph that demonstrates the ability to support bull trout populations.
6. Springs, seeps, groundwater sources, and subsurface water connectivity to contribute to water quality and quantity.
7. Migratory corridors with minimal physical, biological, or chemical barriers between spawning, rearing, overwintering, and foraging habitats, including intermittent or seasonal barriers induced by high water temperatures or low flows.

8. An abundant food base including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.
9. Few or no predatory, interbreeding, or competitive nonnative species present

PCE's for bull trout critical habitat and associated habitat indicators.

PCE No.	Description of Primary Constituent Element	Associated Habitat Indicators
1	Water temperatures that support bull trout use. Bull trout have been documented in streams with temperatures from 32 to 72°F (0 to 22°C), but are found more frequently in temperatures ranging from 36°F to 59°F (2°C to 15°C). These temperatures may vary depending on bull trout life history stage and form, geography, elevation, diurnal and seasonal variation, shade, such as that provided by riparian habitat, and local ground water influence. Stream reaches with temperatures that preclude any bull trout use are specifically excluded from designation.	Temperature; Refugia; Average wetted width/maximum depth ratio in scour pools in a reach; Streambank condition; Change in peak/base flows; Riparian conservation areas; Floodplain connectivity
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 structures.	Large woody debris; Pool frequency and quality; Large pools; Off-channel habitat; Refugia; Average wetted width/maximum depth ratio in scour pools in a reach; Stream bank condition; Floodplain connectivity; Riparian conservation areas
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. This should include a minimal amount of fine substrate less than 0.25-inch in diameter.	Sediment; Substrate embeddedness; Large woody debris; Pool frequency and quality
4	A natural hydrograph, including peak, high, low, and base flows within historic ranges or, if regulated, currently operates under a biological opinion that addresses bull trout, or a hydrograph that demonstrates the ability to support bull trout populations by minimizing daily and day-to-day fluctuations and minimizing departures from the natural cycle of flow levels corresponding with seasonal variation.	Change in peak/base flows; Increase in drainage network; Disturbance history; Disturbance regime
5	Springs, seeps, ground water sources, and subsurface water quality and quantity as a cold water source.	Floodplain connectivity; Change in peak/base flows; Increase in drainage network; Riparian conservation areas; Chemical contamination/nutrients
6	Migratory corridors with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and foraging habitats, including intermittent or seasonal barriers induced by high water temperatures or low flows.	Life history diversity and isolation; Persistence and genetic integrity; Temperature; Chemical contamination/nutrients; Physical barriers, Average wetted width/maximum depth ratio in scour pools in a reach; Change in peak/base flows; Refugia
7	An abundant food base including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.	Growth and survival; Life history diversity and isolation; Riparian conservation areas; Floodplain connectivity (importance of aquatic habitat condition-indirectly covered by previous 6 PCEs)
8	Permanent water of sufficient quantity and quality such that normal reproduction, growth and survival are not inhibited.	Sediment; Chemical contamination/nutrients; Change in peak/base flows

PCE = primary constituent element. Effect Determination for Bull Trout Critical Habitat

Below are the eight PCEs and the supporting rationale:

1. **Water temperatures that support bull trout use. Bull trout have been documented in streams with temperatures from 32 to 72°F (0 to 22°C), but are found more frequently in temperatures ranging from 36°F to 59°F (2°C to 15°C). These temperatures may vary depending on bull trout life history stage and form, geography, elevation, diurnal and seasonal variation, shade, such as that provided by riparian habitat, and local ground water influence. Stream reaches with temperatures that preclude any bull trout use are specifically excluded from designation.**

   This PCE is addressed, directly by the analysis of temperature. It is addressed indirectly through consideration of refugia, which by definition is high quality habitat of appropriate temperature. Important components of refugia include pool frequency and quality and large pools. Average wetted width/maximum depth ratio in scour pools is an indication of water volume, which indirectly indicates water temperature, (i.e., low ratios indicate deeper water, which in turn indicates possible refugia). This indicator, in conjunction with change in peak/base flows, is an indicator of potential temperature and refugia concerns, particularly during low flow periods. Stream bank condition, floodplain connectivity and riparian conservation areas address the components of shade and ground water influence, both of which are important factors of water temperature. Stable streambanks and intact riparian areas, which include part of the floodplain, typically support adequate vegetation to maintain thermal cover to streams during low flow periods.

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 structures.**

   The analysis of large woody debris, such as current values and sources available for recruitment, directly addresses this PCE. Large woody debris increases channel complexity and creates pools and undercut banks. Pool frequency and quality would also directly address this PCE, showing the number of pools per mile as well as the amount of cover and temperature of water in the pools. Average wetted width/maximum depth ratio in scour pools in a reach is an indicator of channel shape and pool quality. Low ratios suggest deeper, higher quality pools. Large pools, consisting of a wide range of water depths, velocities, substrates and cover, are typical of high quality habitat and are a key component of channel complexity (USFWS 1998). An analysis of off-channel habitat would describe side-channels and other off-channel areas. Stream bank condition would analyze the stability of the banks, including such features as undercut banks. The analysis of both riparian conservation areas and floodplain connectivity would directly address this PCE. Floodplain and riparian functions include the maintenance of habitat and channel complexity, the recruitment of large woody debris and the connectivity to off-channel habitat or side channels (USFWS 1998).

Complex habitats provide refugia for bull trout and in turn, refugia analysis would assess complex stream channels.

All of these habitat indicators consider the numerous characteristics of instream bull trout habitat and quantify critical components that are fundamental to creating and maintaining complex instream habitat over time.

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. This should include a minimal amount of fine substrate less than 0.25-inch in diameter.**

   This PCE is addressed directly by analysis of sediment in areas of spawning and incubation and considers directly the size category composition of instream sediments, particularly fine sediments no larger than 2.5-inches. This PCE is also addressed directly by analysis of substrate embeddedness in rearing areas, which is a function of sediment size category and bedload transport. Both of these indicators would assess substrate composition and stability in relation to the various life stages of the bull trout as well as the sediment transportation and deposition. Large woody debris and pool frequency and quality affects sediment transport and redistribution within a stream and would indirectly assess substrate composition and amounts.

4. **A natural hydrograph, including peak, high, low, and base flows within historic ranges or, if regulated, currently operates under a biological opinion that addresses bull trout, or a hydrograph that demonstrates the ability to support bull trout populations by minimizing daily and day-to-day fluctuations and minimizing departures from the natural cycle of flow levels corresponding with seasonal variation.**

   This PCE is addressed by analysis of change in peak/base flows, which considers changes in hydrograph amplitude or timing with respect to watershed size, geology, and geography.

   Considering increase in drainage network and disturbance history provides further information. Roads and vegetation management both have effects strongly linked to a stream's hydrograph. Disturbance regime ties this information together to consider how a watershed reacts to disturbance and the time required to recover back to pre-disturbance conditions.

5. **Springs, seeps, ground water sources, and subsurface water quality and quantity as a cold water source.**

   This PCE is addressed by analysis of floodplain connectivity and riparian conservation areas. Floodplain connectivity considers hydrologic linkage of off-channel areas with the main channel and overbank flow maintenance of wetland function and riparian vegetation and succession. Floodplain and rearing areas provide hydrologic connectivity for springs, seeps, ground water

upwelling and wetlands and contribute to the maintenance of the water table (USFWS 1998).

The analysis of changes in peak/base flows would address subsurface water connectivity. Increase in drainage network would address potential changes to ground water sources and subsurface water connectivity. Chemical contamination/ nutrients would address concerns regarding ground water quality.

6. **Migratory corridors with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and foraging habitats, including intermittent or seasonal barriers induced by high water temperatures or low flows.**

   The biological indicator life history diversity and isolation addresses the function of migration and/or subsequent isolation with respect to the population. The biological indicator persistence and genetic integrity indirectly reflects the status of migratory corridors. Physical, biological or chemical barriers to migration are addressed directly through water quality habitat indicators, including temperature, chemical contamination/nutrients and physical barriers. The analysis of these indicators would assess if barriers have been created due to impacts such as high temperatures, high concentrations of contaminants or physical barriers. Analysis of change in peak/base flows and average wetted width/maximum depth ration in scour pools in a reach would assess whether changes in flow might create a seasonal barrier to migration. An analysis of refugia, which considers the habitat's ability to support strong, well distributed, and connected populations for all life stages and forms of bull trout, would also be pertinent to this PCE.

7. **An abundant food base including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.**

   An analysis of floodplain connectivity and riparian conservation areas would asses these contributions of the food base. Floodplain and riparian areas provide habitat to aquatic invertebrates, which in turn provides a forage base to bull trout (USFWS 1998). This PCE is indirectly addressed through the biological indicator of growth and survival and life history diversity and isolation. Both of these indicators look at habitat quality and subpopulation condition, which provides information on food base. This PCE is a synthesis of the previous PCEs. It is addressed through the analysis of biological and habitat indicators in that, if a bull trout population either exists or could exist in a watershed, then there is an adequate forage base. A healthy habitat provides a forage base for the target species. Any potential impairment to the forage base has been addressed by way of summarizing the biological and habitat indicators.

8. **Permanent water of sufficient quantity and quality such that normal reproduction, growth and survival are not inhibited.**

Flow conditions, such as perennial or ephemeral would be analyzed through changes in peak/base flows, and addressed in consideration of current base flows. Changes in hydrograph amplitude or timing with respect to watershed size, geology, and geography would be considered.

The level of contaminants is addressed directly by the analysis of chemical contamination/nutrients and sediment. Current listing under 303(d) of the Clean Water Act should be considered, as well as the causes for that listing. Sediment is considered a contaminant especially in spawning and rearing habitat and analysis would apply to this PCE.

DICHOTOMOUS KEY FOR MAKING ESA DETERMINATION OF EFFECTS

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

NO	No effect
YES (or unknown)	Go to 2

2. Would the proposed action(s) have any effect whatsoever [1] on the species; designated or proposed critical habitat; seasonally or permanently occupied habitat; or unoccupied habitat necessary for the species' survival?

NO	No effect
YES	(**May Affect**) Go to 3

3. Does the proposed action(s) have potential to: result in "take"[2] of any proposed/listed fish species?

A. NO	Go to 4
B. YES	**Likely to adversely affect**

4. Does the proposed action(s) have potential to or cause an adverse effect to any proposed/ listed fish species habitat, such as: adverse effects to critical habitat constituent elements or segments; impairing the suitability of seasonally or permanently occupied habitat [3]; or impairing or degrading unoccupied habitat necessary for the survival [4] of the species locally?

A. NO	**Not likely to adversely affect**
B. YES	Likely to adversely affect (including adverse effects to critical habitat)

1. Any effect whatsoever~ includes small effects, effects that are unlikely to occur, and beneficial effects (all of which are recognized as }may effect~ determinations). A }no effect~ determination is only appropriate if the proposed action **would literally have no effect whatsoever** on the species and/or critical habitat, **not** a small effect, an effect that is unlikely to occur, or a beneficial effect.

2 "Take" - The ESA (Section 3) defines take as "to harass, harm, pursue, hunt, shoot, wound, trap, capture, collect or attempt to engage in any such conduct". The USFWS (USFWS, 1994) further defines "harm" as "significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering", and "harass" as "actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering".

3. Action(s) with potential to hinder attainment of relevant }**functioning appropriately indicators**~ (from Table 2) may result in an adverse affect determination due to negative effects on habitat. This may indicate harm or harassment take of the species or adverse effects to habitat necessary for survival of the species locally (i.e. potential for adverse affect w/o take, or adversely affecting critical habitat).

4. Survival

The species persistence, as listed or as a recovery unit, beyond the conditions leading to its endangerment, with sufficient resilience to allow recovery from endangerment. This condition is characterized by a species with a sufficiently large population, represented by all necessary age classes, genetic heterogeneity, and number of sexually mature individuals producing viable offspring, which exists in an environment providing all requirements for completion of the species' entire life cycle, including reproduction, sustenance, and shelter (USDI and USDC 1998).

Attachment 4. SHPO Concurrence Letter

WESTERN FEDERAL LANDS HIGHWAY DIVISION
610 EAST FIFTH STREET
VANCOUVER, WA 98661-3801
(360) 619-7700 FAX: (360) 619-7846

U.S. Department
of Transportation

**Federal Highway
Administration**

November 21, 2003

Dr. Mark Baumler, State Historic Preservation Officer
Montana Historical Society
P.O. Box 201201, 225 North Roberts
Helena, MT 59620-1201

Refer to: HFL-17
File: 709
#25325L_MJB

CONCUR
MONTANA SHPO
DATE 23 Dec 03 SIGNED

Dear Dr. Baumler:

Recommendation for No Historic Properties Affected
Montana Forest Highway 84, Little Joe Road

The Western Federal Lands Highway Division (WFLHD), in cooperation with the USDA Forest Service, Lolo National Forest (FS), the Montana Department of Transportation (MDT), and Mineral County (County), is proposing the improvement of MT FH 84 (Milepost 1.1 to 16.1) in Mineral County. The project is locally known as Little Joe Road. The project begins at the south end of the St. Regis Bridge 1.8 kilometers (1.1 miles) south of the junction with Camel's Hump (Mullen) Road, and ends at MP 16.1 at the Idaho/Montana state line.

The project includes portions of Sections 26, 33-35 in Township 46N, R28W; Sections 4-7 in T45N, R28W and Sections 12-16 and 21-23 in T45N, R27W. By letters of May 4, 2003, WFLHD initiated consultation with your office as well as with the Confederated Salish & Kootenai Tribes (Tribes), the MDT, the Montana Department of Natural Resources & Conservation, and the FS. No specific comments were received from any of the other consulting parties.

Heritage resource personnel of the Lolo National Forest accomplished the field inventory and effects evaluation under a reimbursable agreement with WFHLD. Forest Archaeologist C. Milo McLeod supervised the inventory and report preparation and prepared the recommendations of effect for that inventory. A copy of the report, entitled *"Cultural Resource Inventory for the North Fork of Little Joe Road, Forest Highway #84, Mineral County, Montana,"* is enclosed for your records, as is the requisite CRABS form.

Five cultural properties are potentially affected by the proposed undertaking. Two were recorded previously; three were identified during the present inventory. These sites are discussed at length in the enclosed report, but summaries are presented below for purposes of effects recommendations.

Site 24MN0164, the Milwaukee Railroad Grade and the "Route of the Hiawatha," a property listed on the National Register of Historic Places, lies outside the project corridor and will not be affected by the undertaking.

file: FHA/2003

BUCKLE UP AMERICA

Site 24MN0027 was recorded as a lithic scatter in 1976, and was apparently destroyed by road construction in 1981. The present inventory indicates that at least 7 feet of fill were placed over the site. Test excavations in intact peripheral areas did not recovery any prehistoric materials. As the site is apparently destroyed, a recommendation of "no effect" is appropriate.

Site 24MN310 and 320, the Little Joe and Mayo mines respectively, were recommended as not eligible for the National Register due to their limited production and activity, compromised integrity, and peripheral relationship to the mining history of the area. In addition, these sites are outside the area of potential effect. The lack of integrity, contribution to the mining history (production history) and contribution to the regional context of mining suggests a recommendation of "no adverse effect" for these properties.

Site 24MN0322, the original (1927) Little Joe Road is not recommended eligible to the National Register, due to loss of integrity of setting, workmanship and design. That road has in turn been overlain by subsequent (1933, 1974) Little Joe roads. The 1933 road is likewise not recommended to be eligible due to loss of "...all integrity of materials, workmanship and design and association from the original road." (McLeod, et al., 2003: 19)

The only eligible property, 24MN0164, is outside of the area of potential effect and will not be affected. The remaining properties were recommended as not eligible to the National Register of Historic Places. Therefore, the appropriate recommendation for this undertaking per the requirements of 36CFR800.4(d)(1) is for "no historic properties affected."

I appreciate your consideration of this request. Please contact Michael Boynton, Archaeologist/Environmental Specialist, at (360) 619-7983 if you have any questions.

Sincerely yours,

Edwin (Ted) M. Wood, Jr.
Design Operations Engineer
Idaho/Montana

Enclosure:
Cultural Resource Inventory Report

cc: Charles McLeod, Forest Archaeologist, Lolo National Forest, Missoula, MT
Donald Matt, Chairman, Confederated Salish and Kootenai Tribes, Pablo, MT
Marcia Pablo, THPO, Confederated Salish and Kootenai Tribes, Pablo, MT
Terri Thomas, Environmental Protection Specialist (ID/MT), WFLHD
Michael Boynton, Archaeologist, WFLHD
Jack Doucey, Designer, ID/MT Design Team, WFLHD
Project file: MT PFH 84

Attachment 5. List of Public and Agency Comments

WFLHD received various comments from the general public, environmental groups, and governmental agencies. The comments are provided below in chronological order with the most recent first. The text boxes provide direction to the location in the document where the comment has been addressed.

2008

Received July 16, 2008
Thank you for the opportunity to, once again, comment on the Little Joe Road Project here in Mineral County. We are currently in favor of proceeding with this project, which we look at as the necessary completion of the project already in place on the Idaho side. Our earlier concerns about the financial burden its future management might place on Mineral County have been alleviated by cost-share agreements with the USFS through Schedule A negotiations.

Thank you for your comment

The recreational and commercial use of this corridor is important to the economy of Mineral County and this project will enhance that importance through the significant improvements in use safety and comfort, while at the same time reducing the continual and expensive maintenance activities necessary under its current condition.
Perhaps even more important, the project, through paving and drainage improvements, will actually enhance the riparian and aquatic habitat of state-listed impaired streams by reducing the high sediment delivery resulting from the current road conditions. We are also pleased that the project will replace barriers and impediments to upstream migration in adjacent waterways.
Please keep us informed of the status and progress of this project.

Received by email June 14, 2008:
When we looked for property to purchase for retirement seven years ago, we found a piece we really liked in Washington. We debated and didn't buy it because it was on a blacktopped road leading to a state park and we knew we would constantly have diesel 5-wheelers, RV's, and dirt bikes going past our front door. We purchased a nice, quiet piece of property on Little Joe Road in Montana instead - even though it was more expensive and would mean we would have to wait longer to retire.

Thank you for your comment

Now, you want to pave (we are assuming that's what "resurfaced, restored, and rehabilitated") means right in front of our property that we are hoping to move into next summer! I can understand wanting to maintain the road and keep it in good condition, but why spend the money to pave it (if that is the plan), when mostly local people and loggers use it? Why not put the money to good use someplace where paving is really needed.

If we have misunderstood the postcard we received, and "resurfaced, restored, and rehabilitated" does not mean "paving or blacktopping", we apologize. But, if it does, we would like to register our displeasure at the idea.

We do not get the "local newspaper" since we still live in Washington, but read the Missoulian on-line from time to time. It does not always carry everything in the local paper, so we did not know if we would see the "release date as well as the locations you may obtain a copy" or not; thus this e-mail.

Thank you for your time. If we have misunderstood, please advise. Otherwise, if you are taking opinions of homeowners, our opinion is "don't pave or blacktop Little Joe Road".

2007

#1 Comment:

I am writing on behalf of the Montana Chapter of the American Fisheries Society to provide comment and express our concerns regarding projects proposed on the Lolo National Forest to improve roads under the auspices of the Forest Highways Program in the Thompson River, Petty Creek and Little St. Joe drainages. The American Fisheries Society (AFS) is the oldest and largest professional society representing fisheries scientists. The mission of the AFS is to improve the conservation and sustainability of fishery resources and aquatic ecosystems by advancing fisheries and aquatic science and promoting the development of fisheries professionals. The Montana Chapter is comprised of approximately 260 fisheries professionals representing state and federal agencies, tribal governments, universities, and the private sector.

As fishery professionals, we are concerned that the environmental review process for these projects will not adequately involve biologists familiar with the streams in question. We do not believe the purpose and need of these projects has been adequately demonstrated and we feel quantitative information to support the contention that the fishery benefits of the projects outweigh the potential ecological impacts is lacking. We are also concerned that the proposed schedule will contribute to inadequate environmental review. The review and decision-making process is on an accelerated pace that skirts the Forest Service line-officers who are responsible for conserving and managing National Forest resources.

We are especially concerned these projects could proceed without ample regard for each watershed's fisheries values. The Thompson River is home to several important salmonid species, including bull trout, a threatened species under the Endangered Species Act, and westslope cutthroat trout, a Species of Special Concern in Montana. In addition, the Little St. Joe drainage is the most important bull trout core area remaining in this portion of the lower Clark Fork River watershed. The Petty Creek drainage is home to a robust population of westslope cutthroat trout and is also a bull trout core area.

We believe that the proposed activities may potentially degrade critical bull trout habitat and negatively impact core populations, which are important for recovery and conservation efforts. Specifically, road improvement mitigation plans should include measures that will upgrade culverts to provide fish passage to spawning and rearing habitats and improve drainage features to restore normative runoff and sediment regimes in the drainages. We recommend, however, that the genetic integrity of westslope cutthroat trout populations be quantified and considered on a case-by-case basis when evaluating culvert replacement projects. Further, in areas where bank stabilization is deemed necessary, natural bank revetment structures (i.e. large woody debris, j-hook veins) should be used rather than riprap to maintain the natural integrity of critical shoreline habitats. Natural shoreline areas are critical for subadult hull trout as they provide nighttime feeding and resting areas.

Thank you for your comments. Please see the biological analysis in chapter 4 that was assessed by the Lolo NF Fisheries Biologist

Please see the 2008 revised purpose and need in chapter 2

The LJR project was proposed in 1998. Please see the chronological series of events in chapter 1

Please see the biological analysis in chapter 4 that was assessed by the Lolo National Forest Fisheries Biologist

We do not question the need for road maintenance on county, state, private and Forest Service roads that run through national forests. However, the scientific evidence is clear that the prime road-related impacts on water quality and fish populations on national forests in western Montana are from system and non-system roads constructed primarily for logging. These impacts include increased sediment from poor road drainage, culverts undersized for the discharges they must convey, poorly engineered culverts that interrupt fish movement, cut-slopes that impede the exchange of groundwater with surface (flows, roads serving as beachheads for weed infestations, and other impacts. Maintenance and retirement of substandard roads should be the number one priority for investment on roads in national forests.

Please see ch 4.2 and the MDEQ website referenced in text above and here at http://www.deq.mt.gov/CWAIC/

Based on the limited information and public discussion on these projects thus far, it appears there could be significant impacts to at-risk fisheries. These impacts range from increased traffic that increases risk of spills from accidents on the Thompson River road, to riprapping that reduces salmonid habitat and stream function on the Little St. Joe Road improved road access will also encourage additional angling pressure on sensitive fisheries, particularly in Little Joe Creek. In addition, we believe it is important to evaluate the effects these projects will have on facilitating development of private land on national forest margins. It would help to conduct this evaluation in the context of how private land development will directly affect fish and wildlife, as well as how it might increase the Forest Service's increasing obligation to invest in fire suppression in interface areas. We note that the impacts of Forest Service fire suppression on fisheries in interface areas is currently an issue of concern. In fact, the State of Montana and the Forest Service are currently discussing problems associated to the impacts of suppression activities on cutthroat trout habitat in O'Brien Creek, located outside of Missoula and not far from Petty Creek.

Please see land development discussion chapter 4.14

Please see list of coordination activities chapter 6.2

We urge your agencies to invite increased participation by agency fishery biologists and hydrologists in the evaluation of the impacts of these projects. We also recommend you invite wider public participation in the decision, so that the public can better understand the need, purpose and tradeoffs of these projects while there is still time to modify or eliminate them as Forest Highway Projects.

The LJR project was proposed in 1998. Please see the chronological series of events in chapter 1

We would appreciate being apprised in a timely fashion as these projects wend their way through environmental analysis and potential design phases.

Thank you for your comment, we have added you to our mailing list

#2 Comment:

We are interested in participating in the Little Joe project, as well as other Forest Highway projects in the region.

Thank you for your comment, please see the fragmentation discussion in chapters 3.31 and 4

#3 Comment:

The Idaho Department of Fish and Game is concerned about the proposed Little Joe Road (Montana Forest Highway 84) improvement project on the Lolo National Forest in Mineral County, Montana that would use funding from the Forest Highways Program.

The Idaho Department of Fish and Game believes the paving of the Little Joe Road will ultimately increase habitat and population fragmentation and mortality risk to many terrestrial species in a key area of habitat connecting the Bitterroot Wilderness with contiguous habitats to

the north and into Canada. Increasing development of private lands in the Northern Rockies is increasing stress on wildlife and their habitats across the landscape. Increasing private land development makes the careful management of habitat security and habitat integrity on public lands all that more important. The paving of the Little Joe Road to connect I-90 to the currently paved St. Joe Road in Idaho will create a paved loop road and will increase traffic speed and traffic volume in this important wildlife area with resulting detrimental impacts on wildlife. Creating another high-use, increased speed, paved motor vehicle corridor in close proximity to an already heavily traveled interstate corridor is contrary to Forest Service direction to conserve connected wildlife habitat, has the potential to negatively impact big game hunting opportunities as well as conservation of at-risk species, and will increase risks to wildlife and motorists alike through increased collision potential.

Please see land development discussion chapter 4

Please see potential traffic increases discussion

The greatest threat to wildlife in the Northern Rockies is human intrusion into wildlife habitat. This intrusion takes two basic forms: 1) private land development; and 2) motorized access into wildlife habitat. This 15-mile paving project of the Little Joe Road will increase motorized access and human presence in prime wildlife habitat in the key linkage area between the Bitterroot ecosystem and habitats to the north; thereby reducing the probability that we can ever maintain and or reconnect and link these habitats and wildlife populations. We believe it is counter productive that at the same time agencies are working closely in partnership with State Departments of Transportation in both Montana and Idaho to facilitate the identification of highway crossing areas to improve the permeability of these highways to wildlife, the Federal Highway Administration/Western Federal Lands Highway Division and the U.S. Forest Service Engineering Office in the Missoula Regional Office are planning to create yet another paved highway right through the middle of exceptional wildlife habitat on public land.

Please see potential for increased motorized access discussion in chapter 3 and 4

The Little Joe Road paving project is in direct conflict with the interagency wildlife linkage effort and the maintenance of healthy wildlife habitat and populations in the Northern Rockies that 13 State and Federal wildlife and land management agencies have signed on to support (copy attached). This paving project will also contribute to increases in two of the four threats that the Forest Service has identified as significant risks to healthy forests: 1) increased invasive species; and 2) increased unmanaged recreation. Paving of the currently unpaved Little Joe Road will increase traffic volumes, traffic speeds, and direct wildlife mortality (and human injury) through vehicle-wildlife collisions. There will be additional, cascading consequences to other Federal, State, and private resources in the form of increased recreational pressure with demands for more campgrounds, increased dispersal of invasive species, increased habitat fragmentation, increased human-wildlife conflicts, increased access-related hunting pressure, and increased unmanaged recreation through increased off-road vehicle pressure.

Please see potential for increased invasive species discussion in chapter 4.4

Please see potential for increased recreation discussion in chapter 4.6

We do not believe the purpose and need for this project have been adequately demonstrated. Specifically, we question that this project is "...necessary for the protection, administration, and utilization of the [National Forest System] NFS (23 USC 101) [or]...the use and development of NFS resources (23 USC 101)." We also have difficulty finding it serves any of the following needs (23 CFR 5660.105): "local needs such as schools, mail delivery, commercial supply; access to private property within the NFS; a preponderance of NFS generated traffic: NFS generated traffic that has a significant impact on road design or construction." The current road is clearly adequate for existing travel and recreational needs.

Please see the 2008 revised purpose and need in chapter 2

In conclusion, we believe that the Little Joe Road should be removed from the list of designated Forest Highways and that plans to pave 15 miles of this road be abandoned due to a lack of a purpose and need, and due to serious concerns about the direct and indirect impacts this project will have on wildlife and wildlife habitat fragmentation, and risks to humans. We further recommend the Little Joe Road not be plowed in the winter and that it continue to be open for seasonal use only, as is currently the case.

Please see the no increased plowing discussion in chapters 2, 3 and 4

Thank you for your careful consideration of our concerns about this project.

#4 Comment:

Thank you for your comment, please see the fragmentation discussion in chapters 3.31 and 4

I write to you as a wildlife manager to express concern with the proposed Little Joe Road (Montana Forest Highway 84) improvement project on the Lolo National Forest in Mineral County, Montana that would use funding from the Forest Highways Program.

The U.S. Fish and Wildlife Service believes the paving of the Little Joe Road would ultimately increase habitat and population fragmentation and mortality risk to many terrestrial and aquatic species in a key area of habitat connecting the Bitterroot Wilderness with contiguous habitats to the north and into Canada. Increasing development of private lands in the Northern Rockies is increasing stress on wildlife and their habitats across the landscape. Increasing private land development makes the careful management of habitat security and habitat integrity on public lands all that more important. The paving of the Little Joe Road to connect I-90 to the currently paved St. Joe Road in Idaho would create a paved loop road and would undoubtedly increase traffic speed and traffic volume in this important wildlife area with resulting detrimental impacts on wildlife and fisheries. Creating another high-use, increased speed, paved motor vehicle corridor in close proximity to an already heavily traveled interstate corridor is contrary to Forest Service direction to conserve connected wildlife habitat, has the potential to negatively impact big game hunting opportunities as well as conservation of at-risk species, and would increase risks to wildlife and motorists alike through increased collision potential.

Please see land development discussion chapter 4

Please see potential traffic increases discussion chapter 2.3

The greatest threat to wildlife in the Northern Rockies is human intrusion into wildlife habitat. This intrusion takes two basic forms: 1) private land development; and 2) motorized access into wildlife habitat. This 15-mile paving project of the Little Joe Road would increase motorized access and human presence in prime wildlife habitat in the key linkage area between the Bitterroot ecosystem and habitats to the north; thereby reducing the probability that we can ever maintain and/or reconnect and link these habitats and wildlife populations. It is ironic and inefficient that at the same time we are working closely in partnership with State Departments of Transportation in both Montana and Idaho to facilitate the identification of highway crossing areas to improve the permeability of these highways to wildlife, the Federal Highway Administration / Western Federal Lands Highway Division and the U.S. Forest Service Engineering Office in the Missoula Regional Office are planning to create yet another paved highway right through the middle of exceptional wildlife habitat on public land.

Please see potential for increased motorized access discussion in chapter 3 and 4

The Little Joe Road paving project is in direct conflict with the interagency wildlife linkage effort and the maintenance of healthy wildlife habitat and populations in the Northern Rockies that 13 State and Federal wildlife and land management agencies have signed on to support (copy enclosed). This paving project would also contribute to increases in two of the four threats that the Forest Service has identified as significant risks to healthy forests: 1) increased

invasive species; and 2) increased unmanaged recreation. Paving of the currently unpaved little Joe Road would increase traffic volumes, traffic speeds, and direct wildlife mortality through vehicle-wildlife collisions. I here would he additional, cascading consequences to other Federal, State, and private resources in the form of increased recreational pressure with demands for more campgrounds, increased dispersal of invasive species, increased habitat fragmentation, increased human-wildlife conflicts, increased access-related hunting pressure, increased fishing pressure in this important bull trout spawning stream, and increased unmanaged recreation through increased off-road vehicle pressure. There would also he increased costs to county governments for road maintenance as the maintenance of this road would transfer to the county once it is paved.

Please see potential for increased invasive species discussion in chapter 4.4

We do not believe the purpose and need for this project have been adequately demonstrated. Specifically, we question that this project is "...necessary for the protection, administration, and utilization of the [National Forest System] NFS (23 USC 101) [or] .., the use and development of NFS resources (23 USC 101)." We also doubt that it serves any of the following needs (23 CFR S660.105): "local needs such as schools, mail delivery, commercial supply; access to private property within the NFS; a preponderance of NFS generated traffic; NFS generated traffic that has a significant impact on road design or construction." The current road is clearly adequate for existing travel and recreational needs.

Please see potential for increased recreation discussion in chapter 4.6

Please see the 2008 revised purpose and need in chapter 2

In conclusion, we believe that the Little Joe Road should be removed from the list of designated Forest Highways and that plans to pave 15 miles of this road be abandoned due to a lack of a purpose and need and duc to our grave concerns about the direct and indirect impacts of such paving on wildlife and wildlife habitat fragmentation, and risks to humans. We further recommend the Little Joe Road not be plowed in the winter and that it continue to be open for seasonal use only, as is currently the case.

Please see the no increased plowing discussion in chapters 2, 3 and 4

Thank you for your careful consideration of our deep concerns about this project.

#5 Comment:

I write to you as a wildlife manager to express concern with the proposed Little Joe Road (Montana Forest Highway 84) improvement project on the Lolo National Forest in Mineral County, Montana that would use funding from the Forest Highways Program.

Thank you for your comment, please see the fragmentation discussion in chapters 3.31 and 4

The U.S. Fish and Wildlife Service Grizzly Bear Recovery Program believes the paving of the Little Joe Road will ultimately increase habitat and population fragmentation and mortality risk to many terrestrial and aquatic species in a key area of habitat connecting the Bitterroot Wilderness with contiguous habitats to the north and into Canada. Increasing development of private lands in the Northern Rockies is increasing stress on wildlife and their habitats across the landscape. Increasing private land development makes the careful management of habitat security and habitat integrity on public lands all that more important. The paving of the Little Joe Road to connect I-90 to the currently paved St. Joe Road in Idaho will create a paved loop road and will undoubtedly increase traffic speed and traffic volume in this important wildlife area with resulting detrimental impacts on wildlife and fisheries. Creating another high-use, increased speed, paved motor vehicle corridor in close proximity to an already heavily traveled interstate corridor is contrary to Forest Service direction to conserve connected wildlife habitat, has the potential to negatively impact big game hunting opportunities as well as conservation of

Please see land development discussion chapter 4

Please see potential traffic increases discussion chapter 2.3

at-risk species, and will increase risks to wildlife and motorists alike through increased collision potential.

The greatest threat to wildlife in the Northern Rockies is human intrusion into wildlife habitat. This intrusion takes two basic forms: 1) private land development; and 2) motorized access into wildlife habitat, This 15-mile paving project of the Little Joe Road will increase motorized access and human presence in prime wildlife habitat in the key linkage area between the Bitterroot ecosystem and habitats to the north; thereby reducing the probability that we can ever maintain and / or reconnect and link these habitats and wildlife populations. It is ironic and inefficient that at the same time we are working closely in partnership with State Departments of Transportation in both Montana and Idaho to facilitate the identification of highway crossing areas to improve the permeability of these highways to wildlife, the Federal Highway Administration / Western Federal Lands Highway Division and the U.S. Forest Service Engineering Office in the Missoula Regional Office are planning to create yet another paved highway right through the middle of exceptional wildlife habitat on public land.

Please see land development discussion chapter 4

Please see the fragmentation discussion in chapters 3.31 and 4

The Little Joe Road paving project is in direct conflict with the interagency wildlife linkage effort and the maintenance of healthy wildlife habitat and populations in the Northern Rockies that 13 State and Federal wildlife and land management agencies have signed on to support (copy attached). This paving project will also contribute to increases in two of the four threats that the Forest Service has identified as significant risks to healthy forests: 1) increased invasive species; and 2) increased unmanaged recreation. Paving of the currently unpaved Little Joe Road will increase traffic volumes, traffic speeds, and direct wildlife mortality through vehicle-wildlife collisions. There will be additional, cascading consequences to other Federal, State, and private resources in the form of increased recreational pressure with demands for more campgrounds, increased dispersal of invasive species, increased habitat fragmentation, increased human-wildlife conflicts, increased access-related hunting pressure, increased fishing pressure in this important bull trout spawning stream, and increased unmanaged recreation through increased off-road vehicle pressure. There will also be increased costs to county governments for road maintenance as the maintenance of this road will transfer to the county once it is paved.

Please see potential for increased invasive species discussion in chapter 4.4

Please see potential for increased recreation discussion in chapter 4.6

We do not believe the purpose and need for this project have been adequately demonstrated. Specifically, we question that this project is "...necessary for the protection, administration, and utilization of the [National Forest System] NFS (23 USC 101) [or] ..the use and development of NFS resources (23 USC 101). "We also doubt that it serves any of the following needs (23 CFR S660.105). "local needs such as schools, mail delivery, commercial supply; access to private property within the NFS; a preponderance of NFS generated traffic; NFS generated traffic that has a significant impact on road design or construction." The current road is clearly adequate for existing travel and recreational needs.

Please see the 2008 revised purpose and need in chapter 2

In conclusion, we believe that the Little Joe Road should be removed from the list of designated Forest Highways and that plans to pave 15 miles of this road be abandoned due to a lack of a purpose and need and due to our grave concerns about the direct and indirect impacts of such paving on wildlife and wildlife habitat fragmentation, and risks to humans. We further recommend the Little Joe Road not be plowed in the winter and that it continue to be open for seasonal use only, as is currently the case.

Please see the no increased plowing discussion in chapters 2, 3 and 4

Thank you for your careful consideration of our deep concerns about this project.

#6 Comment

The Interagency Grizzly Bear Committee (IGBC) is the committee of state, federal, and Canadian agencies working cooperatively to implement the Grizzly Bear Recover / Plan (USFWS 1993) and conserve and recover the grizzly bear in the conterminous United States. The IGBC is involved in a wide range of activities to accomplish this goal including limiting human-caused mortality, habitat management, and management of bears that come into conflict with human activities, education efforts with users of grizzly habitat, and outreach and cooperation with private land owners in grizzly habitat.

Thank you for your comment, please see the fragmentation discussion in chapters 3.31 and 4

Habitat fragmentation is one of the issues complicating the conservation of grizzly bears and many other species of wildlife. Habitat fragmentation is the process of separating populations of animals and their habitats into smaller and smaller units. Small, fragmented populations of any species are less likely to survive. The main factor causing habitat fragmentation is human development, especially when development occurs in a linear fashion. Development in mountain valleys and transportation systems such as highways and railroads are common problems for wildlife. If we do not maintain the opportunities for linkage of wildlife populations across these areas of human development, we will have difficulty securing the future of wildlife species such as the grizzly.

Please see the grizzly bear discussion in chapter 4

To address the issue of habitat fragmentation, the IGBC supports the identification of those areas within and between the major grizzly bear ecosystems where wildlife can live or move between existing large blocks of relatively secure habitat. These areas are called linkage zones. Linkage zones occur primarily between large blocks of public lands. Cooperation and coordination between public land managers, fish and game agencies, private landowners, and state and federal transportation agencies is required to maintain linkage zones that work for wildlife. The IGBC supports this cooperation and coordination.

Please see the proposed organism passage and crossing structures discussion in chapters 3.2 and 4

Especially important in this effort is the cooperation and support of state and federal highway departments to work with wildlife agencies to enhance crossing possibilities for wildlife within linkage zones. A critical part of this effort is support of research and monitoring to identify the best sites for crossing enhancement structures, and the design and placement of such structures at such sites when the opportunity arises through highway improvement and redesign. We urge highway departments to cooperate in this effort.

Another key factor in linkage zone implementation is close and careful cooperation with private landowners to allow them to participate in linkage zone implementation If they choose to do so. The IGBC supports a careful approach that involves private landowners, local governments, and all stakeholders in linkage zone activities.

In summary, the IGBC believes linkage zone identification and the maintenance of existing linkage opportunities for wildlife between the large blocks of public lands in the range of the grizzly bear are fundamental to healthy wildlife. Wildlife habitat conservation and the eventual recovery of listed species such as grizzly bears will require connections between populations. Maintaining linkage opportunities will benefit all wildlife species and will help assure healthy populations of the wildlife species we all value.

Please see the linkage and corridor discussion in chapter 4

2004

#1 Comment

I am writing regarding the proposed road projects being proposed by the Western Federal Lands Highway Division on the Little Joe Creek Road and the Petty Creek Road. I am writing on behalf of American Wildlands and all of our members. We are a conservation organization that focus on the conservation of wildlife populations and their habitat, with a special emphasis on ensuring the wildlife habitat has connectivity and linkage between it. As a result we are a concerned about the two proposed road projects, due to their direct and indirect impacts that could result to wildlife habitat. In the following paragraphs we outline the issues that we believe need to be adequately explored in the environmental analysis for both projects to document the potential impacts that these roads could have on the natural resources of the analysis area.

Thank you for your comment. Please see the linkage and corridor discussion in chapter 4

We strongly urge you to conduct a thorough environmental analysis for these projects. Due to its location in important wildlife habitat, the significant increase in road width and road surface, the significant increase in speeds that will result and the impacts upon the wild character of the area are, it is only prudent to conduct a full EIS analysis for this project.

Please see the discussion on the proposed actions that do not include widening the road in chapter 3.2

Widening the two roads?

The scoping documents for both roads did not specify if the roads would he widened or not, though they did make it clear that the roads are to be upgraded. Does this mean that these roads, which are most likely very narrow, are going to be bumped up to a 30 foot road width? It is crucial that this information is completely disclosed in the environmental analysis.

In contrast to Forest Highway Program dimensional requirements that the proposed project is trying to reach, forest roads like the Little Joe Creek and Petty Creek Roads are typically maintained to requirements of 3.6 meter in width with single-lane turnouts (USDA 1998). These relatively narrow, dirt or aggregate roads alter microclimate, fragment habitat, disrupt wildlife movement patterns, facilitate the dispersal of exotics and weedy species, and provide additional access to human-caused disturbance (USDA 1999). When these forest roads are upgraded to the dimensions specified by FHWA regulations, the width of the roadway increases as much as three times its original width, and the impact of the roads upon natural systems increases radically.

Bridge Reconstruction:

We are supportive of the proposal to reconstruct a number of bridges along the roadway to bring them up to the standards. Does this mean they will be widened to the travel width of 7.3 meters (24 feet)? In addition, we are supportive of making the bridge railings meet AASHTO requirements. If appropriate, are these bridges located in areas that could he built in such a way that they could facilitate wildlife movement underneath them? That has proven to be very successful for ungulate and other wildlife movement. In addition, are their fish passage issues associated with this roadway, and if so, will the bridge design allow for this?

Please see the bridge and AOP discussion in chapter 3 and 4.5

Road Use and Need for Project:

Do these roads really get a lot of use? There were no ADT numbers included in the scoping notices, though both mention that the use is increasing. Is there enough use in these areas to warrant the projects that are being proposed?

Please see the 2008 revised purpose and need discussion in chapter 2

Traffic Speed:

The scoping notice for the proposed Petty Creek project, states that the road is below road design standards for the traffic type, volume and speed. Neither notice includes details about the volume and speed of the traffic on these roads, which would be very beneficial for the public to know. Is the traffic volume so high on these roads, that it really warrants significant upgrades? What are the current posted speed along the road? How will the posted speed limit change with the proposed upgrades?

Please see the current and proposed speeds discussion in chapters 2 and 3

Ecological Impacts of Roads:

Roads are the single most invasive human impact upon natural systems (Noss 1995). They affect wildlife, disrupt water flow, cause pollution, and facilitate increased human encroachment into undeveloped areas. Impacts to wildlife include direct destruction of habitat; fragmentation and isolation of populations; spread of exotics and pests; pollution of habitat and water systems; death to wildlife by roadkill and poaching; and edge effects. These effects exist for all roads as Well as for many trails. The damage caused by roads is dependent on a number of factors. including the dimensions of the road, the type of road surface used, proximity to vulnerable habitat and aquatic systems, and the volume and type of traffic that utilizes the road (For further reading on the ecological effects of roads, see Noss 1995; Trombulak 2000; and Fiedler et al 1992). When compared to unimproved forest roads, many of which are single-lane, high-clearance, and aggregate-or template earth-surfaced, the impacts of upgrading to FHWA standards are quite significant. The impacts of these highways include aquatic, terrestrial, and atmospheric pollution, as well as serious health risks to those exposed to construction-phase upgrading processes.

Please see the linkage and corridor discussion in chapter 4

General Wildlife Impacts from Roads:

The impacts of roads to wildlife are extensive. Roads destroy habitat, disrupt movement patterns, fragment and isolate populations, create deleterious edge effects, facilitate the dispersal of exotics, function as mortality sinks for many sensitive species, and provide access to further encroachment by humans into natural systems (Noss 1995). Most of the impacts of roads on wildlife are dependent on the width of the road, velocity of traffic on the road, and the nature and frequency of road use. Generally, roads that are narrower, and which follow the terrain (rather than flatten and straighten roadways) and service fewer vehicles impact wildlife less extensively (Andrews 1990). Therefore, dirt and gravel forest roads tend to have a less dramatic effect on local terrestrial systems.

Please see the discussion about staying within the existing road prism for most of the route in chapter 3

The impacts mentioned above are amplified by paving forest roads. Paved roads are wider and facilitate increased traffic volume and velocity, thereby increasing incidence of roadkill, access to poachers, exacerbating disruption of wildlife movement patterns and behavior, and widening affected edge and habitat loss. Asphalt has the additional effect of depositing heavy metals in runoff, which can lead to contaminated water supply for wildlife. Deicing salt and roadside vegetation, often non-native weedy species, also attract wildlife to roadsides, further increasing the risk to wildlife of being hit by vehicles. Increased vehicle speeds and volume of traffic associated with improving forest roads to forest highway standards also results in increased

road-related noise production. Noise from construction affects wildlife habitat and survivability of certain sensitive species, as well as humans living or working within the zone of noise impacts (Spellerberg 1998). Exposure to increased human activity levels can result in a shift in home range and activity areas for several raptoral species, which can deplete vital energy reserves and result in a change in the survivability of less-resistant species as a result of out competition by those better adapted to proximity of human activity (Andersen et al 1990). Repealed exposures to increased human-related stress have led to premature labor, death, and other impacts (White andThurow 1985).

Please see the noise discussion in chapter 4.9

As discussed previously, upgrading roads results in widening the road surface and maintained shoulders. This results in increased road densities. There are many studies, which indicate acute sensitivity of certain terrestrial species to incremental changes in road density. Large mammals are especially prone to sensitivity to road densities. Wolves, for example, have been documented as failing to survive when road density exceeds .93 miles of road per square mile. Black hears avoid roads when densities exceed 0.8 miles per square mile. Paved roads amplify these trends. Many species have demonstrated a reluctance to cross paved roads, while showing little or no problem with crossing or approaching unpaved roads of the same dimensions and traffic levels. Paved roads create more dramatic edge effects than non-paved roads, while providing increased access to further human disturbance, such as poaching, roadkill, and otherwise destructive activity (Fiedler et al 1992).

Please see the discussion on potential traffic increases chapter 2.3

Roads further facilitate human impacts on ecological systems by providing access to recreationists, extractive industries, poachers, and development. While these impacts most certainly exist on dirt and gravel roads, paved roads provide more access to a greater number of people, and therefore have a greater cumulative effect on wildlands. Furthermore, the nature of recreational use often changes with the case of access afforded by paved highways. In order to meet increased recreational demands, the Forest Service has constructed paved parking lots, visitor centers, restrooms, picnic areas, and concrete block "primitive" camping areas. These facilities cater to demand for the consumption of National Forests in a comfortable, convenient, roadside atmosphere.

Road Kill and Wildlife:

Have there been any recorded accidents in the past few years on the Petty Creek or Little Joe Creek Roads? I lave any of these been related to wildlife-vehicle collisions? Has road kill data been collected along this road? If so, can that information be incorporated in the EIS for these projects?

Aquatics impacts:

A major argument for upgrading roads to pavement is that it decreases the production of detrimental sediment. Asphalt has been shown to reduce sediment production by approximately 98 percent compared to skid roads (Burroughs and King 1999). There are, however, sediment mitigation alternatives to paving. Fine sediment production can be minimized by utilizing seasonal and temporary closures, converting insloped roads to outsloped alignments, adding rolling dips to drain and disperse runoff, and adding ditch culverts. Additional consideration might also be given to closing the road. In many cases, the costs of upgrading a road for sediment reduction proposes may not differ significantly from those of straightforward road decommissioning measures (Weaver and Hagans 1999).

Further mitigation can be achieved by applying surface treatments. One treatment that has been fairly successful and cost effective is lignin sulfonate, which costs a fraction of the cost of paving with asphalt (approximately $8000 per mile compared to $67,000 for chip seals, and $80,000-$100,000 for asphalt resurfacing)(USDA 1999). A properly applied coat of lignin sulfonate (.3-.5 gallons per square yard) is as effective as a 3 inch layer of asphalt for increasing load bearing capacity and minimizing dust production (Link `N Node Notes 1995).

There are many adverse impacts to aquatic systems, which arc associated with asphalt surfaces. Asphalt contributes runoff carrying particulate matter to water systems. Aliphatics found in this runoff such as alkanes and alkenes, which are linked to cancer and asthma in humans, were found in the tissue of detrivorous fish in levels toxic to humans (Oris et al 1998). Heavy metals from vehicle exhausts have also been shown to persist in nearby aquatic systems. Significant concentrations of Polycyctic Aromatic Hydrocarbons (PAHs), alkanes, and other hydrocarbons were also recorded in the soil beneath the asphalt surface (Sadler et al 1999). These compounds were found to have leached through the soil and entered ground water in detectable amounts (Oris et al 1998). In this study, PAH levels in 50% of studied sites exceeded health criteria, and were also found to be highly toxic to freshwater organisms.

Heavy metal contamination in runoff water from vehicle emissions and road surfaces has also been documented as a result of asphalt paving. These levels increase proportionately with the increased traffic that is associated with paving roads. Thus, the increased access and convenience afforded by paved highways potentially results in an increase in heavy metal deposition proportional to road use.

Please see potential for increased recreation discussion in chapter 4.6

Residue from paving can also contaminate road verges in the form of runoff. Particulate matter (PM) and oils have been found in runoff and adjacent water systems. There is additional pollution associated with the impacts of hauling road paving materials, refinery emissions, and energy for heating the asphalt mixture.

Costs to the County:

The scoping notices indicate that these roads are under Missoula and Mineral Counties management and will remain in their ownership and management after this project is completed. The scoping notice states that one of the primary deficiencies of this road includes the fact that the gravel surface is difficult and expensive for the County to maintain. There is no mention of how expensive this paved road will be to maintain. We have included some detailed information regarding costs of dirt versus paved roads below. This must be fully discussed in the EIS.

Please see maintenance costs discussion in chapter 2.1

It has been estimated that forest highways (which you are proposing to create here) have maintenance costs the same as state highways, around $6-8,000 per mile per year. The scoping notice mentioned that one of the reasons that this project was being proposed was due to the costs associated with the dirt road and maintenance associated with this. There was no mention in the scoping notice of the costs that this new road would have. Dirt roads, like the one that exists now, cost significantly less. For instance, a 28-mile long forest road in Wyoming called the Loop Road costs a total of around S6,000 a year to maintain in contrast to the $6-8,000 per mile for forest highway. The DEIS must explain what the estimated costs are for maintenance of this road and how the county is going to deal with the costs in the long-term.

Roads that are used less frequently wear less rapidly, and therefore require less frequent maintenance. Also, increased requirements for user comfort and ease of travel require frequent and more extensive work to ensure that the road is clear of potential obstacles to vehicles Furthermore, the materials needed to maintain the different levels of road have variable costs. Dirt roads can often be repaired with materials that are on or near the site. Gravel usually must be hauled considerably greater distances, and asphalt requires a fairly involved production, hauling, and application process. Also, asphalt production requires a variety of relatively expensive raw materials for basic production.

Please see Level of Service (LOS) discussion in chapter 2 and 3

Maintenance associated with dirt roads includes: clearing and repairing culverts; surface compaction (with a steam roller); removal of encroaching vegetation, fallen logs, and rocks or other objects protruding over 100 mm above the road surface; dust palliative application; repairing fill slopes; and maintaining erosion control structures (USDA 1999). Generally, template earth roads on the National Forest system are maintained to level 3 specifications or lower, and a large percentage of FS dirt roads arc maintained by the extractive industries which use them.

Please see proposed action discussion in chapter 2

Maintenance requirements for gravel roads include: reshaping or blading the road surface to the required contour (generally every 18-24 months); rolling and rock raking the road surface; removing imbedded material and protruding objects; reestablishing the road surface to a depth of 4 - (6"; clearing dips and cross drains; seasonal closure and recontouring; and applying a dust palliative (around 1-2 times per year). There are many requirements that are specific to maintaining asphalt roads. In icy or snowy conditions, salt or sand mist he applied; a crack seal, fog seal, chip seal, and slurry seal must he applied; worn spots require patching with new asphalt; potholes must be repaired; asphalt and aggregate must be removed and stockpiled; and new aggregate must be applied. Also, herbicides are applied to maintain road verges and to extend the usefulness of the asphalt surface. Additionally, Forest Highways are maintained to specifications that require routine maintenance for driver comfort and increased vehicle speed, while supporting higher traffic volumes. These higher rates of speed and use wear the road at an increased rate, thereby necessitating more frequent repair and maintenance of the roads.

Forest Service roads cost between $20-$600 :'mile to maintain annually. Level 1 roads are maintained solely to prevent resource damage, and require no surface maintenance. Level 2 roads must be kept clear of major obstacles for high-clearance vehicles. This entails roadside brush removal fee access and to control drainage (but not for user comfort). Levels 3-5 require varying levels of dust abatement, brush control for sight distance, ditch cleaning, sign maintenance, and litter pickup. Costs increase with increased traffic, which is associated with higher maintenance level specifications (Coghlan and Sara 1997).

Please see maintenance costs discussion in chapter 2.1

Forest Highway maintenance is still more costly, primarily due to materials needed to repair damaged asphalt. Further costs are attributable to increased roadside vegetation management requirements, cost of transport and special equipment for asphalt mixing, and deicing salt or sand application in icy or snowy weather.

Please see vegetation discussion in chapter 4.4

The cost of maintaining roads is highly variable, and is dependent upon a range of factors, including the grade of the road surface, the surface type, the volume and intensity of precipitation, volume and speed of vehicle traffic, and the intended use for the road. The appropriated annual maintenance for forest roads ranges from $300-60/mile for levels 3-5

roads, $60-100/ mile for level 2 roads, and $20-40/mile for level 1 roads. In contrast, Forest Highways have approximately the same maintenance costs as state highways, which averages around $6000-$8000 per mile per year, or about 10 to 28 times the cost of maintaining a forest road. In light of these higher maintenance costs, as well as the $1 million per mile construction costs for forest highways, the Program's justification as a budget solution becomes untenable.

Thank you for your comments, we have you on the mailing list

Thank you for accepting these comments. Please ensure that American Wildlands is on the mailing list for both of these projects. In addition, please make sure that we are on the list for all of the proposed Western Federal Lands Highways projects in Montana, Wyoming and Idaho.

#2 Comment

Thank you for your comment.

We're in favor of paving Little Joe Road. We would like to see freeway on and off ramps connecting Little Joe Road directly with I-90. This would be more convenient for traffic into Avery and St. Marie, Idaho and the St. Joe wilderness country.

Surface of St. Regis River Bridge needs to be built up, because a big pond of water collects on it until it evaporates off.

#3 Comment

The National Wildlife Federation is extremely concerned about all three of these road projects. It appears to us that these projects are moving relentlessly forward with inadequate consideration being given to the high environmental costs associated with them. The Thompson Road project, for example, is in the midst of a multi-million dollar EIS study prior to their being any clear identification or quantification of the supposed benefits. All of these projects would have detrimental impacts on linkage for terrestrial species such as grizzly bears, wolves, lynx, and wolverine. These projects will increase mortality and genetic isolation risk for all these species. These projects will also place further impacts on bull trout populations through construction activity and increased human presence along important spawning streams; we are unconvinced that supposed benefits from culvert replacements is sufficient to counterbalance these impacts. We believe the Forest Service should be extremely careful and deliberate about activities that further fragment or deteriorate the habitats of these and other species.

Thank you for your comment. Please see the grizzly bear, wolves, lynx, wolverine and linkage discussion in chapter 4.5

Please see the bull trout discussion in chapter 4.5

Early in his term, Chief Bosworth identified the issue of habitat fragmentation on National Forest lands as one of his main areas of concern. These projects will fragment habitats and wildlife populations on National Forests and seem to directly contradict the Chief's stated priorities. For none of these projects have we seen any tabulation of benefits that could come close to justifying the environmental costs. As well, we suspect that the generalized (and highly questionable) statements of benefits from access and connectivity proffered in support of these projects will also tall to justify the economic costs of the projects.

Please see the habitat fragmentation discussion in chapters 4 and 6

At our meeting with XXXXX, XXXXXXX stated that he would not proceed with any forest highway project over the objection of XXXXXX. We would very much hope that you would not concur in moving forward with either the Petty Creek or Little Joe projects and that we could avoid costly environmental reviews and a polarizing public debate on them. The

Thompson River project is already beyond this point, but we hope that you will step in and inform FHWA that the XXXX is not interested in pursuing this project so that the money spent on evaluation of a poorly-conceived project can be spent in more productive ways. Thank you for your consideration of these concerns and we look forward to your response.

#4 Comments

My concern is the protection of Little Joe Creek. Having pavement will cause more run off into the stream than what the current gravel road offers. What benefits will be available to Mineral County residence other than having a nice paved road to travel. Our County doesn't have enough money to maintain the County Roads we already have adequately. Now the maintenance of Little Joe Road will only add additional costs. Who's going to pay for this additional maintenance cost?

Thank you for your comment. Please see the stream discussion in chapter 4

I am also concerned about the spread of noxious weeds that are already in the area. What type of BMPs will be used to insure minimal noxious weed exposure?

Please see the noxious weed and BMP discussion in chapter 4 and 7

#5 Comments

During construction:

- need to address impact of road closure on St. Regis and Avery businesses;
    - will there be total closure or pilot car/ one lane/one way etc.?
- need to consider impact to Little Joe Fishery directly and impact to St. Joe indirectly ie increased pressure.

Thank you for your comment. Please see the road closure discussion in chapter 2 and 3

I would approve of construction (paving) as would other area business owners, but construction time impacts to area businesses need to be addressed:

- Total road closure during the construction period would be very detrimental.