Department of Agriculture

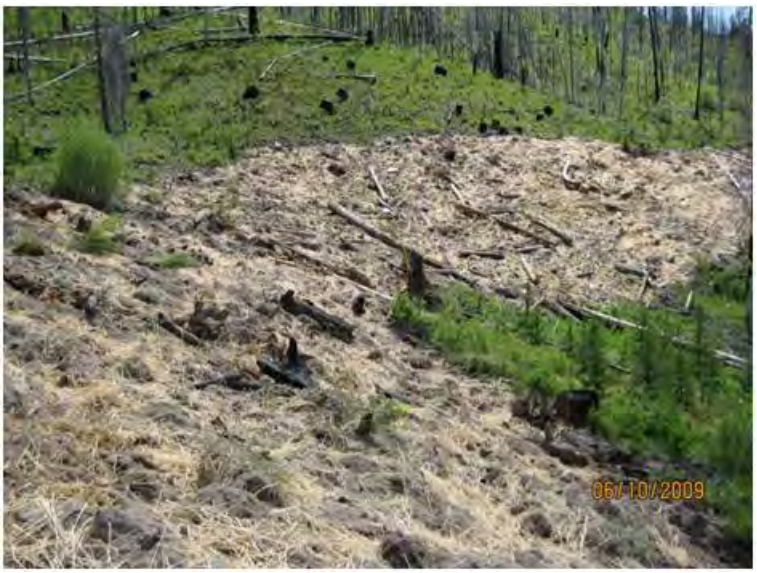
United States Forest Service

September 2012

ENVIRONMENTAL ASSESSMENT

MARTIN CREEK WATERSHED RESTORATION PROJECT

BITTERROOT NATIONAL FOREST
SULA RANGER DISTRICT



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Chapter 1.0 Purpose of and Need for Action

1.1 Contents of Chapter

This environmental Assessment (EA) documents the National Forest System of Roads for the Martin Creek Watershed in the upper east fork of the Bitterroot River on the Sula Ranger District of the Bitterroot National Forest. The analysis focuses on "legacy" roads, historic roads in various stages of natural recovery, not currently in the Bitterroot National Forest Transportation System roads database. The EA takes a look at the environmental effects of storing approximately 59 miles of road for future use; thereby restoring them to the BNF roads system, and decommissioning approximately 63 miles of road permanently removing them from the BNF road systems. Several miles of road were dropped from this analysis due to conflicts with the ongoing Bitterroot National Forest Travel Planning Project. Approximately 20 miles were dropped from this project due to location in Sleeping Child or Rye Creek and will be analyzed in the Darby Lumber Lands Project. Chapter 1 contains information related to the purpose of and the need for the project, goals and objectives, the decision to be made, and laws and regulations that influence this analysis.

1.2 Background

In 2007, the Forest transportation engineer identified a number of roads across the Forest that was listed as "historical" in the Forest roads database (INFRA database). Upon searching the database, it was discovered that many similarly constructed roads from the 1960s, utilized for timber harvest or fire suppression, were abandoned after use. These "historical" roads were re-classified as "undetermined"; there was not sufficient documentation available to determine the long term need for each road. To determine whether or not to include these "undetermined" roads in the Forest Service Transportation System, an analysis of the road system in the area is needed. This analysis is occurring for the Martin Creek Watershed Restoration Project using the NEPA process to verify these "undetermined" roads through inclusion back into the database or removal, (by decommissioning), from the Forest transportation system. Roads placed back into the transportation system can either be open for use or stored for future use.

The transportation system has been reviewed in this project area before. The Middle East Fork Hazardous Fuels Reduction project (1996) analyzed the road system and identified 4.1 miles for road storage. The Burned Area Recovery Project (2001) also looked at roads in this area and stored, decommissioned, or improved roads throughout the East Fork Bitterroot River drainage and other parts of the forest burned in 2000. Paint, Reynolds, Lick Environmental Assessment (1992), Meadow, Mink, Springer, Watershed Improvement Project (1996), the Lyman Environmental Analysis, and Watershed Restoration in Martin and Bertie Lord Drainages (1995b) reviewed evaluated the need for roads and identified watershed restoration treatments.

The undetermined roads in the Martin Creek Watershed Restoration project area were evaluated in the 2009 inventory and found fewer watershed issues than were identified in inventories. Conditions on roads reviewed in 2009 included good vegetation recovery on scarified roads, scarified roads being used by motorized vehicles, to natural recovery progressing well with no additional watershed improvement needs. Based upon the Decision Memo for the 1995Watershed Restoration in Martin and Bertie Lord Drainages project, there was intent to remove roads from the transportation system but the database was never updated and information on which roads would be retained or decommissioned is anecdotal. The Martin Creek Watershed Restoration EA (MCWR) evaluates the present condition of roads as determined by the 2009 inventory, the Forest Plan Direction for the area, fire/fuel and timber management opportunities, watershed improvement needs, and the existing system roads in the vicinity to develop Alternative 2.

This Environmental Assessment (EA) analyzes which roads are needed for current or future management and those to be decommissioned within the Martin Creek Watershed Restoration (MCWR) project area. A

percentage of the roads not needed for future management would have soils stabilized, sediment sources reduced, be revegetated and decommissioned. The majority of the 63 miles of roads to be decommissioned, 43 miles are stable, well vegetated, naturally recovering sites that do not need any treatment at all. Decommissioned roads would be removed from the transportation system and would not be available for future forest management. Fifty-nine miles of roads needed for current or future management or recreation would be placed on the transportation system and stored. Thirteen miles of the stored roads would be stabilized to protect and improve aquatic resources.

1.3 Purpose and Need for Action

The purpose of the Proposed Action is to:

1) Determine future need for abandoned timber roads that are classified as "undetermined" and to return necessary roads back into the transportation system and to decommission other abandoned roads as appropriate thereby permanently removing them from the transportation system. Complete a roads analysis that will identify the road system needed for the land area served by the "undetermined" roads and associated system roads that provide access to the undetermined roads.

2) Appropriately code affected undetermined roads in the transportation database.

3) Apply appropriate treatments on roads to be stored or decommissioned that reduce sediment sources and improve soil conditions. These proposed treatments will protect and improve watershed, soils, and fisheries resources and meet the intent of the Water Quality Restoration Plan and Total Maximum Daily Loads (TMDL) for the Bitterroot Headwaters Planning Area (2005) by reducing sediment sources in the East Fork Bitterroot River watersheds while still retaining roads necessary for future timber management activities, or recreation and access purposes, in a storage category.

4) Comply with the Bitterroot National Forest Land Management Plan (The Plan) to actively reduce sediment sources from existing roads and to minimize the adverse effects on water quality and fish habitat during construction and maintenance of roads (these roads currently receive no maintenance).

The proposed action brings us closer to identifying the minimum road system necessary for management of the national forest within the project boundary by storing and decommissioning undetermined roads. At project completion the long-term need for the roads classified as undetermined would be clarified and the transportation database updated. Storage and decommissioning treatments would improve soil conditions including infiltration to help restore natural hydrology. Natural stream characteristics will be established at crossings and sediment transport from the roads will be reduced.

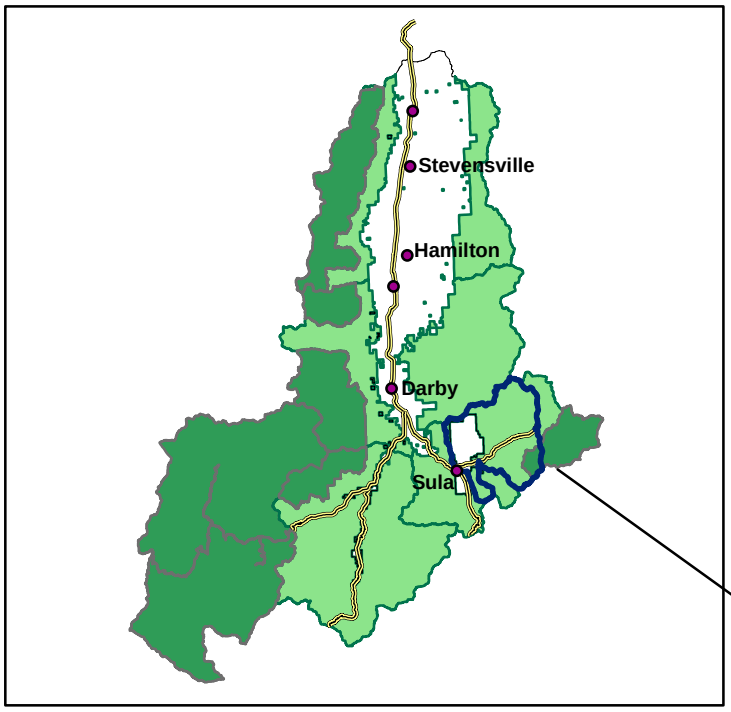
The proposed action helps bring Martin Creek Watershed into compliance with the Bitterroot Headwaters Total Maximum Daily Load, TMDL, sediment specifications. The Headwaters TMDL provides direction to reduce forest sediment load in the East Fork Bitterroot River by 42% (TMDL, p. 171). Treatment of sediment sources on these "undetermined" roads would help move the land base within the Sula Ranger District towards that goal.

One goal of the Martin Creek Watershed Restoration Project was to avoid conflict with Travel Planning and to avoid restricting the decision space of that analysis. To achieve this goal, treatments proposed with Martin Creek on any road that is included in Travel Planning would consist initially of only those that would reduce or eliminate sediment contributions while not altering access. Once travel planning is completed, additional treatment could occur, if needed, to meet the intent of this project while supporting the decision made in Travel Planning. This project will not determine motorized travel by vehicle type and/or season of use as outlined in the 2005 Travel Management Rule. The travel by vehicle type and time of year for the Bitterroot National Forest is being analyzed in the

Bitterroot National Forest Travel Management Planning Project Final Environmental Impact Statement Record of Decision.

Martin Creek Watershed Restoration Project

Vicinity Map



Martin Cr
Bush Cr
Paint Cr
Hart Cr
Cameron Cr
Doran Cr
Tepee Cr
Bertie Lord Cr
Jennings Camp Cr
Lyman Cr
Clough Springs
Guide Cr
Sula Cr
Kerlee Cr
Meadow Cr
Bugle Cr
Swift Cr
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Balsam Cr
Reimel Cr
Diggins Cr
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1.4 Proposed Action

The Sula Ranger District of the Bitterroot National Forest is evaluating the need for undetermined roads. This proposal, titled The Martin Creek Watershed Restoration Project, (MCWR), is a roads analysis that reviewed the undetermined road system and identified those that were necessary for future access and addresses soil stabilization and hydrologic issues; system roads were not considered. The analysis focuses on 121 miles of undetermined roads and determines the need for each segment. The undetermined roads could be placed back into the forest transportation system as stored roads or they will be slated to be decommissioned – permanently removed from the forest transportation system. The roads in the proposal are located throughout the East Fork Bitterroot River watershed in Lodge pole, Swift, Kerlee, Dowling, Bertie Lord, Jennings Camp, and Cameron Creeks. Several of these drainages are located in bull trout critical habitat on the Sula Ranger District, further requiring the analysis to ensure the continued survival of this species in the East Fork Bitterroot River tributaries and drainages. It does not address travel on roads included in the Bitterroot National Forest Travel Management Planning Project.

Fifty-nine miles of undetermined roads in the project area have been identified for future transportation needs, vegetation management, fire management, potential future timber harvest in timber management areas, and recreation. Approximately 46 miles of these roads are well vegetated and not eroding; these would receive no active treatments, they would be left in their present condition and identified in the transportation database as "stored". The remainder (about 13 miles) would need active treatment to reduce erosion and compaction. Treatments could include decompaction, partial recontouring entrance treatments, restoration of stream crossings, fertilizing, seeding, slashing, and/or mulching. The roads would be stored as Maintenance Level I roads, meaning that they remain closed to motorized travel, unless determined otherwise through travel planning, are not contributing to degradation of other resources, and should need no maintenance until the time that they may be opened for future use.

The remainder of the undetermined roads, approximately 62 miles, has been identified as surplus. This means access is duplicated by a nearby road, were built in a location that decreases, or is a threat to, forest health (water quality, fisheries, wildlife), or were constructed for a logging system that is not needed in the future. These 62 miles of road would be decommissioned and permanently removed from the forest transportation system. The majority of these, about 42 miles, are stable, well vegetated, naturally recovering sites that do not need any treatment. About twenty miles of the roads to be decommissioned need some form of active treatment which could include de-compaction, recontouring, entrance treatment,, restoration of stream crossings, fertilizing, mulching, seeding and slashing. These decommissioned roads would be removed from the forest transportation system following my decision.

Table 1: Proposed Miles of Road for Storage or Decommission

	No Treatment Needed (miles)	**Additional Treatment Needed (miles)**	**Total Miles Proposed in Alternative 2**
Stored Roads – Place on the transportation, roads will be available for future use.	46	13	59
Decommissioned Roads – Permanently removed from transportation system.	42	20	62

Limited motorized travel is occurring on about 19 miles of these undetermined roads. Another seven miles is accessible to motorized vehicles but is not being used. Treatment on roads that are currently in use and

that are proposed for storage or decommissioning would be limited to areas where there is a need to protect water quality. Travel Planning will make the final decision for use on "undetermined" roads that are currently active to avoid potential conflicts with this concurrent planning effort.

1.5 Project Goals and Objectives

The overall goal of the project is to:

- Return roads necessary for future timber management activities, recreation, resource protection purposes and fire access to the Forest Transportation System.
- Update the Forest Transportation System database to reflect the decisions made in this EA.
- Provide a sustainable, long-term road system that reduces sediment protects critical habitat and provides appropriate access.
- Improve infiltration of water where roads can be stored or decommissioned to help restore more natural hydrology.
- Reduce sediment transport from road surfaces into streams.
- Reestablish natural stream characteristics at road crossings.
- Return historic roads no longer necessary to conduct National Forest System activities back to productive land by improving soil conditions.

1.6 Decision to be made

This EA is not a decision document. It is a document disclosing the environmental consequences of implementing the different alternatives, including the No Action Alternative. There was a 30-day public scoping period. We prepared the EA with consideration of the public comments we received. The responsible Federal Official is the Sula District Ranger, Ruth Wooding. The decision will consider:

- What roads will be retained in the transportation system and what roads will be removed as redundant or un-necessary, and whether to treat the roads placed in either of these categories at this time, and if so, what roads to treat, what treatment methods would be implemented, and what mitigation and monitoring would be required.

Based on the effects documented in this EA, the District Ranger will decide to either; proceed with this project; drop the proposal; or, if it appears the environmental effects may be significant, prepare an environmental impact statement. If effects are not significant, the District Ranger will prepare a decision notice and Finding of No Significant Impact documenting the decision to implement the project.

1.7 Consistency with Bitterroot Forest Plan and other Laws and Regulations

The Bitterroot Forest Plan's direction for water and soil resources within Management Area 1 is to "Utilize watershed rehabilitation projects such as stabilizing cut or fill slopes, to repair problems" (USDA 1987, p. III-6). The Clean Water Act provides the overall direction for the protection of waters of the United States, from both point and nonpoint source of water pollution. The Montana Water Quality Act establishes general guidelines for water quality protection in Montana. It requires the protection of Montana's water, as well as the full protection of existing and future beneficial uses. All of the streams within the analysis area are classified as B1 streams under the Montana Water Classification system. The Administrative Rules of Montana (ARM 17.30.623) require that waters classified as B1 are suitable among other things for the "growth and propagation of salmonid fishes and associated aquatic life."

The roads are located in the following management areas:

- Management Area 1-managed for timber, forage, dispersed recreation (USDA Forest Service, 1987: page III-3),
- Management Area 2-big game winter range (USDA Forest Service, 1987: page III-9),

- Management Area 3a, the visually sensitive areas along the East Fork Highway (USDA Forest Service, 1987: page III-15); and
- Management Area 3b, riparian area, comprises a smaller portion of the analysis area (USDA Forest Service, 1987: page III-22).
- Management Area 8a, minimum level, (USDA Forest Service, 1987: page III-58) is located in the northern portion of Martin Creek and comprises less than 2% of the project area. FSDR 73094 provides a boundary for that MA and the non-system portion of that road beyond milepost 0.75 cuts into this area for a short distance.

Most of the roads are located in Forest Plan Management Area 1.The goal in this area is to manage for timber, livestock, big game forage and roaded dispersed recreation. The road density in Management Area 1 will be determined through transportation planning, the results will be reviewed by interdisciplinary teams and documented in environmental analysis reports. (USDA 1987, p III - 3-7).

Presidential Executive Order 12962, signed June 7, 1995, furthered the purpose of the Fish and Wildlife Act of 1956, the National Environmental Policy Act of 1969, and the Fish and Wildlife Coordination Act, seeking to conserve, restore, and enhance aquatic systems to provide for increased recreational fishing opportunities nationwide. This order directs Federal agencies to "improve the quantity, function, sustainable productivity, and distribution of aquatic resources for increased recreational fishing opportunity by evaluating the effects of Federally funded, permitted, or authorized actions on aquatic systems and recreational fisheries and document those effects relative to the purpose of this order."

The Bitterroot Headwater Total Maximum Daily Load and Restoration Plan (2005) also called the TMDL was developed as a requirement of Section 303 of the Clean Water Act and addresses water quality issues so that beneficial uses may be fully supported. The restoration plan developed as part of the TMDL directed the forest to reduce sediment contributions from forest roads within the Bitterroot Headwaters area by 42%.

This action is consistent with the Bitterroot Forest Plan approved in 1987. This action also complies with the Endangered Species Act, the Clean Water Act, National Forest Management Act, Forest Service sensitive species policy, and does not violate and Federal State, or local laws or requirement imposed for the protection of the environment.

Chapter 2.0 Alternatives

2.1 Contents of Chapter

Chapter 2 contains documentation of relevant issues that were identified during the scoping process, the description of the proposed action, the alternatives that were formulated based upon environmental issues, and alternatives eliminated from detailed evaluation.

2.2 Project Scope

The geographic scope of the project is displayed in Map 1 (p. 3) and is generally described in the introduction. The temporal scope for the project would be the period of implementation, which we estimate would be 10 years.

The Administrative Scope of the project includes the analysis of the Proposed Action (Alternative 2) and the No Action Alternative (Alternative 1), which reflects the current status and administrative activities within the analysis area.

The Proposed Action includes those activities necessary to fulfill the identified purpose and need, as well as all connected actions as described in Chapter 2. In order to meet the purpose and need a determination will be made to include or exclude a particular road on the Forest transportation system; and whether any road or watershed improvement activities should occur.

The direct, indirect, and cumulative effects are considered in the analysis, pursuant to 40 CFR 1508.7 and 40 CFR 1508.8, and are disclosed in Chapter 4. Direct effects are caused by the action. They occur at the same time and place as the action. Indirect effects are also caused by the action but occur later in time or farther from the action location. Effects can be beneficial or detrimental. The direct and indirect effects of the alternatives were analyzed for all resources affected by the proposed action or as required by law.

A cumulative effect is the impact on the environment resulting from the incremental effect of the action when added to other past, present, and reasonably foreseeable actions. The size of the area needed to analyze cumulative effects differs by resource. The cumulative effects area for many resources is limited to the project area itself. Some resources may need a larger area of review, including land outside of the analysis area. Each specialist analyzed the actions that might influence their resource, within the cumulative effects area appropriate for that resource. The effects discussions, including the potential cumulative effects, of the alternatives in the MCWR project are in Chapter 4.

2.3 Public Involvement

Scoping efforts included soliciting public comment as well as consulting with Forest Service personnel. A legal notice was published in the Ravalli Republic on March 22, 2010, a scoping letter was mailed out to 205 conservation and environmental organizations; state, federal and county agencies and elected officials; and local residents and landowners. Errors were found in the map and a corrected map was sent on April 5, 2010 to the mailing list, the comment period was extended to April 28 at that time. The scoping information was also posted on the Bitterroot National Forest website at http://www.fs.fed.us/r1/bitterroot/projects/nepa_project.shtml?project=30974. The scoping letter generated twelve responses (written and phone).

An interdisciplinary team (ID Team) composed of natural resource specialists, and the District Ranger, reviewed these letters and identified relevant issues. These issues were used to identify mitigation; modify the proposal based on input received; and to reduce adverse effects; and to increase beneficial uses.

During the scoping period the following issues were raised from external and internal comments:

- Costs, amount of active treatment should be limited to roads that really need it.

- Conflicts with Travel Management.
- Concern about closing any roads.
- Concern about closing roads that could make ATV routes.
- Concern about closing accessible roads.
- Requests to look for opportunities for ATV routes on these roads.
- Support for the project.
- Concern that 'ripping' eliminates even foot travel.
- Concern that wildlife can't use decompacted or recontoured roads.
- Belief that the cost of obliterating roads exceeds the resource benefits.
- Belief that the proper Roads Analysis procedure was not followed.
- Belief that recontouring or decompaction increases sediment yields.
- Road and stream crossing densities in the area.

2.4 Issues Eliminated from Detailed Study

An essential part of the environmental analysis process is to identify those issues that are relevant to the project being evaluated and those that are not relevant. It is the job of the ID Team, in consultation with the District Ranger (deciding official) to complete this step.

Issues serve to highlight effects or unintended consequences that may occur from the proposed action and alternatives, giving opportunities during the analysis to reduce adverse effects and compare trade-offs for the decision maker and public to understand.

2.4.1 STORAGE AND DECOMMISSIONING COSTS FOR A SET OF ROADS THIS LARGE WILL BE COSTLY

No active treatment would occur on roads that have already been treated or are naturally recovering. Of the 59 miles road that will be taken out of undetermined status, and returned to the Forest Transportation System for storage and possible future use 13 miles would need some stabilizing treatment; and of the 62 miles of road that will be permanently removed from the BNF Transportation System 20 miles require some treatment. Table 2 displays the proposed breakdown of treatment vs. no need for treatment.

Table 2: Proposed Miles of Road for Storage or Decommission

	No Treatment Needed (miles)	Additional Treatment Needed (miles)	Total Miles
Stored Roads – Place on the transportation, roads will be available for future use.	46	13	59
Decommissioned Roads – Permanently removed from transportation system.	42	20	62

The proposed "additional treatment" on 33 of the 121 miles analyzed would most likely be implemented using a forest crew and a rented excavator in a fashion similar to 2009 and 2010 on Burned Area Recovery. Road storage and decommissioning actions will all require routine consultation with Bitterroot National Forest Engineers to ensure the treatments meet engineering standards for forest roads on National Forest System lands. This method is relatively cost effective at approximately $1900-4500/mile depending upon

the amount of recontouring and number of stream crossings removed. This estimate includes all restoration supplies such as weed seed free straw, seed, fertilizer, fuel, support vehicles, crew and supervisory salaries.

2.4.2 THE PROPOSED ACTION HAS POTENTIAL CONFLICTS WITH THE ONGOING BITTERROOT NATIONAL FOREST TRAVEL PLANNING PROJECT.

There are no potential conflicts of the proposed action with the Bitterroot National Forest Travel Planning EIS (Travel Planning). The MCWR project objective is to evaluate the existing National Forest System roads that provide access to the projects' undetermined roads, and move one step closer to identifying the minimum road system needed to manage the National Forest System Land within the project area. The Bitterroot National Forest Travel Planning EIS will determine which roads and trails are designated for motorized travel, by class of vehicle, and appropriate season of use. Treatments on road segments within the Martin Creek project area will address resource concerns; due to potential conflict with Travel Planning, the 20 miles requiring additional treatment will be treated but will allow for continued use of these legacy roads until a travel planning decision is made.

2.4.3 THE PROPOSED ACTION SHOULD ADDRESS INCLUDING POTENTIAL ATV ROUTES

Consideration for ATV routes is not the purpose and need of the MCWR project. The ID Team reviewed the proposed actions on roads of concern and determined that the MCWR EA will not preclude a road from future consideration as an ATV route under the BNF Travel Planning EIS. Roads have been identified for return to the Forest Transportation System as "stored" specifically for potential recreation identified in the risk benefit table (PF-ROAD-1) and potential for future uses. Additionally, roads decommissioned in this roads analysis process may have segments restored to the Forest Transportation System if travel planning results in that decision.

2.4.4 DECOMPACTING AND RECONTOURING ROADS WILL MAKE THEM INACCESSIBLE TO HUMANS AND WILDLIFE

There is a concern that decompacted or recontoured roads are not accessible for human or wildlife use. While traveling along decompacted or recontoured roads will be more difficult for humans and a variety of wildlife species, the ID Team agrees that these actions will not eliminate the use of these roads by humans or by wildlife and that the expected benefits from stabilizing the land in these areas will negate this issue even further. The goal of reducing compaction and recontouring roads is to provide a stable landscape that mimics what is naturally found in the immediate area. Doing so may make walking along the road prism more difficult; however, it will not make travel any more difficult than it is on other nearby (undisturbed) areas of the forest. Of the 121 miles of road addressed in Alternative 2, 88 miles will be left in their current condition and receive no additional treatment. With Alternative 2, stabilizing treatments would occur on 33 miles of road within the project area (13 miles of stored, and 20 miles of decommissioned).

Issue: The initial analysis used to develop the proposed action did not properly follow the Roads Analysis Procedure (USDA FS, 1999)

The Roads Analysis Procedure provides information for decision making based upon interdisciplinary review of the road system, focusing on risks and benefits for resources. During analysis, the ID Team, including the District Ranger, reviewed each road and evaluated its' risk to elk security, soils and water, threatened and endangered species. Each road was evaluated for its benefit to roaded recreation, vegetation, fuels and fire management, access to state and private land, and for future potential commercial activities including timber harvest in the Timber Management Areas identified as such under the Bitterroot National Forest Plan of 1987. This information was recorded in a risk benefit table that is based on the Roads Analysis Procedure and is included in the project file (ROADS-1). In some Roads Analysis,

additional questions are answered by specialists that support the calls made in the risk/benefit table. In the case of this project, the completion of these questions would duplicate the information found in the table. Ruth Wooding, District Ranger and Deciding Officer, determined that the completion of the risk/benefit table provided sufficient information to make an informed decision.

2.5 Relevant Issues from Federal, State, Local Government and Public Comment

The Interdisciplinary Team in consultation with the District Ranger reviewed the issues identified during scoping. Issues that were determined to be relevant to the analysis were identified. These are used in Chapter 3 to evaluate the environmental effects. From these comments, the following relative issues were identified:

Issue 1: The ground disturbing activities associated with decommissioning or storage of roads could affect water quality.

Discussion: Proposed decommissioning activities would involve the use of heavy equipment. This equipment would be used to move soil, rock, rip road surfaces, and place downed wood. The equipment would also be used to remove culverts where necessary. While the culvert is being removed and the stream banks reshaped to their natural grade, some sediment would be deposited directly in the stream.

Indicator to describe effects: Discussion of monitoring results from similar projects on the Bitterroot and other nearby National Forests. There is some sediment contribution from culvert removal or disturbance adjacent to streams, monitoring results found that vegetation recovers quickly adjacent to culvert removals and stabilizes soils, usually within three years (Forest Plan Monitoring Reports 2007 and 2008, PF-WAT-16 and WAT-17).

Issue 2: The proposed action would limit motorized access within the project areas. Concern about closing motorized access routes.

Discussion: The Proposed Action would not limit motorized access within the project area. These roads are not shown on the Forest Visitor Map and so are included as those roads closed to motorized travel unless included under the 2001 Tri-State Rule. This EA is not making decisions regarding motorized travel within the project area but moves one step closer to identification of the minimum roads system in the project area. It looks only at undetermined roads and identifies a subset of them for future access needs. Treatments on road segments within this project area will address resource concerns and accommodate travel management decisions made in the Bitterroot National Forest Travel Planning Project EIS.

Indicator to Describe Effects: Nineteen miles are accessible and currently being used by motorized vehicles. Breakdown of changes to that from Alternative 2.

Issue 3: Road and stream crossing densities in the area are contributing to decreased water quality.

Discussion: Stream crossings often contribute sediment to streams. Compacted roads increase runoff and erosion on the road surface and where runoff is channelized. The intent of the project is to reduce sediment contributions by increasing infiltration (decompacting road surfaces) and improving vegetative cover; this would result in better fish habitat and improve beneficial uses.

Indicator to Describe Effects: Reduction in road densities, stream crossings, miles of road receiving an infiltration improving treatment.

2.6 Alternative Development Process

Issues received from the public and those identified by the ID Team were used to modify the proposal sent during public scoping. The modifications are designed to refine the proposal, reduce the potential for adverse environmental effects, eliminate travel planning conflicts, and increase beneficial effects.

2.7 Alternatives Eliminated From Detailed Study

Some commenter's requested identification and development of ATV routes in the project area. This alternative was not considered in detail because it was outside of the scope of the document. During analysis, potential ATV routes were noted and where feasible, were proposed for retention in the Forest Transportation System under the storage category. Storage or treatment to address resource concerns does not preclude consideration as an ATV route outside of this analysis.

Other commenter's suggested that all accessible roads be left open. This alternative was not considered in detail because it does not meet the purpose and need of the project. During field review and roads analysis the deciding official and the interdisciplinary team identified risks and benefits of each road and compared to nearby system roads. Those roads needed for motorized access in the future were placed in the storage category and retained in the FTS. Other roads that are currently accessible but serve an area accessed by other system roads and were proposed for decommissioning will have treatment deferred until Travel Planning is complete and the record of decision finalizes motorized travel routes to ensure those decisions can be accommodated.

One commentor suggested an alternative that would remove culverts and harden crossings to improve water quality and reduce costs. This was not considered in detail as part of the purpose and need is to identify which roads are needed for future access and management and which are not due to poor road location, or adjacent nearby roads and then properly identify stored and decommissioned roads in the transportation database. The actions proposed by the commentor are similar to those that would occur on the 13 miles of stored roads in Alternative 2 that require treatment. Additional levels of treatment would occur on 20 miles of road proposed for decommissioning; no treatment is proposed on the remaining 88 miles of road.

Some commenter's requested an alternative that all roads be decommissioned. This alternative did not meet the purpose and need and was not considered in detail because some of the roads evaluated are needed for future access as identified in the Forest Plan Management Areas. The intent of this project was not to eliminate all access but to identify which of the undetermined roads were needed to manage the area, provide reasonable access, and improve aquatic resources.

Commenter's noted that several roads in the initial proposal conflicted with travel planning. These were dropped from this project or the proposed action amended to eliminate conflict with travel planning. Several roads (see the Table on page xx 49 of the EA have segments of them that are system roads, this table has been amended following receipt of Public Comment. Please refer to this table for further clarification of what portions of these roads are included in the MCWR project.

2.8 Description of Alternative 1, No Action

The no action alternative provides a basis for comparison of the other alternatives. Under the No Action alternative, no road decommissioning or storage would take place. Legally sanctioned activities that currently occur on open roads and trails would continue. This includes public travel with motor vehicles on those routes that are designated open to motor vehicles. This alternative does not evaluate which undetermined roads are needed to manage the lands in this area and would defer storage or decommissioning of them until some later date. Timing of future analysis would depend upon the Travel Plan Decision and when the Forest could complete the required environmental analysis and documentation.

2.9 Description of Alternative 2, Proposed Action

The Martin Creek Watershed Restoration Project evaluates the existing network of National Forest System Roads and undetermined roads within the project area and completes a road analysis that takes a step towards identification of the minimum road system needed for future management of these national forest system lands. It focuses on 121 miles of undetermined road and determines the long-term need of each road and addresses soil stabilization and hydrologic issues. The District Ranger and the interdisciplinary team reviewed each undetermined road and identified whether it was needed for future management or access and could be placed back onto the forest transportation system as stored (Maintenance Level 1), or removed permanently from the forest transportation system if not needed for future management or access and then cross checked to ensure there is no conflict or pre decision with the BNF Travel Planning efforts. None of these roads would be opened for public use at this time. The roads in the proposal are located throughout the East Fork of the Bitterroot River watershed in Lodge pole, Swift, Kerlee, Dowling, Bertie Lord, Jennings Camp, and Cameron Creeks. The project as proposed is intended to be subject to decisions made in the Bitterroot National Forest Travel Management Planning analysis once complete.

Fifty-nine miles of the undetermined roads in the project area have been identified for future transportation needs (vegetation management, fire management, and recreation) and would be correctly identified as a stored road in the forest transportation system. Approximately 46 miles of these 59 miles are well vegetated and not erosive; these would receive no active treatments, they would be left in the present condition and identified in the transportation database as “stored”. The remainder (about 13 miles) would need treatment to reduce erosion, compaction and improve vegetative cover. Treatments could include decompaction, recontouring or blocking entrances, restoration of stream crossings, fertilizing, seeding, slashing, and/or mulching. Stored roads would be classified as Maintenance Level I roads, meaning that they need no maintenance until the time that they are opened for future use and are not contributing to degradation of other resources.

Photo 1: Typical Condition of Roads that Would Receive No Treatment

The remaining undetermined roads have been identified as surplus; access is duplicated by a nearby road, they were built in a location that decreases or is a threat to forest health (water quality, fisheries, wildlife), or they were constructed for a logging system that is no longer in use. These roads, totaling approximately 63 miles, would be decommissioned, permanently removed from the forest transportation system, and

corrected coded in the transportation database. The majority of these (about 43 miles) need no treatment; they are stable, well vegetated, naturally recovering sites. About twenty miles of these would need some form of active treatment which could include decompaction, recontouring, blocking entrances, restoration of stream crossings, fertilizing, seeding and slashing. The decommissioned roads would be removed from the forest transportation system following the decision unless otherwise determined for travel purposes by the Travel Planning EIS of the BNF, due in calendar year 2011, thereby placing them back into the FTS.

Prior to completion of Travel Planning, treatment on roads that are being used and proposed for storage or decommissioning would address resource concerns and accommodate potential travel management decisions. Treatments that could change access on those roads addressed in travel planning would be deferred until that analysis is complete.

Several roads, included in the original proposal (3/2010), that were also included in Travel Planning (this would include those that were open and proposed to be put back on the forest transportation system) were dropped from the proposal and will not be analyzed in this project. Other roads included in the original proposal are located in the upper Sleeping Child and Rye Creek drainages were dropped from this project and will be included in the analysis of the Darby Lumber Land watershed restoration. The MCWR project would not address travel on roads included in the decision; this is being covered by Travel Planning that is currently ongoing.

Table 3: Proposed Miles of Road for Storage or Decommission

	No Treatment Needed (miles)	**Additional Treatment Needed (miles)**	**Total Road Miles in Alternative 2**
Stored Roads – Place on the transportation, roads will be available for future use.	46	13	59
Decommissioned Roads – Permanently removed from transportation system.	42	20	62

Map 2 displays the proposed action.

Map 2
Martin Creek Watershed Restoration Project
Alternative 2

mgw, 4/2/2012

Legend

Only roads colored as below are included in Alt. 2

- Decommission-NoTreatment
- Decommission-Treatment Needed
- Store-No Treatment
- Store-Treatment Needed

0 0.250.5 1
Miles

N

Road decommissioning treatments often include decompacting the road surface followed by recontouring. Recontouring can include partial or full recontouring to match the natural slope gradient. Any available slash is often spread across the recontoured slope. Hand crews then spread a native seed mix, an organic fertilizer, and weed seed free straw mulch. Where possible the existing vegetation is reserved and replanted. Additional shrubs from nursery stock can be planted at stream crossings or other sensitive sites to improve vegetation recovery. Disturbance would only occur within the original road disturbance area. Areas outside the road prism and fill slopes should not be disturbed.

Photo 2 is an example of road recontoured treatment. This road was treated in 2009 in the North Rye Creek drainage.

Photo 2: Road Receiving Recontoured Treatment

Road storage treatments often involve decompacting the road surface followed by revegetation treatments. Decompaction can be completed with dozer ripper shanks or with a subsoiling grapple rake mounted on an excavator. The decompaction of the road surface provides for better infiltration and plant growth. This is an ideal treatment for road storage since the road prism can easily be reopened for future use. Stream crossings and ephemeral drainages are recontoured and the road entrance is typically closed by recontouring the first 100 feet of the entrance. More extensive recontouring of the entire road prism can occur but is typically not completed on stored roads, since these roads will be reopened in the future.

Photo 3 is an example of road receiving subsoil treatment. This road was treated in 2010. The vegetation currently visible on the road surface is residual vegetation.

Photo 3: Road Receiving Subsoil Treatment, Similar to what is Proposed for Stored Roads

Appendix A, Table A-1 lists the roads included in Alternative 2 and their proposed treatment.

The project may be accomplished using forest personnel. Implementation costs are estimated at approximately $1,900/mile for road storage and $2,200-$4,500 for decommissioning depending upon the amount of area recontoured and the number of stream crossings that would be restored. These cost estimates include crew salaries, the cost of a rented excavator, supervisory oversight; weed seed free straw, seed, fertilizer and support vehicles. This method has been used successfully in 2009 and 2010 to store and decommission 23 miles of roads in the Burned Area Recovery Project. Work on MCWR could begin when this analysis is completed and proceed as funding is available.

2.9.1 MITIGATION AND PROJECT DESIGN

The following list includes those actions that would reduce environmental effects and improve implementation of the project. These have been used successfully across the Forest for several years for other road storage and decommissioning projects.

A. Mitigation

1. Conduct all work in a manner such that the result is as visually appealing as is practical.
2. Follow all applicable Montana Best Management Practices (BMPs).
3. The Montana Department of Fish Wildlife and Parks in accordance with the Montana Stream Protection Act will review this project where culverts would be removed. Prior to culvert removal or any activities that involve direct disturbance to streams, Streamside Protection Act 124 Permits would be acquired. Permit requirements would include the following:

- All in-stream work would be completed in an expeditious manner to avoid unnecessary impacts to the stream;
- When removing culverts on live streams, divert the water around the construction site to the degree reasonable using lined ditches, coffer dams, pumps, and/or temporary pipes;
- Extra precautions would be taken to preserve existing riparian vegetation;
- All construction activities performed in the stream and immediate vicinity would be conducted in a manner to reduce in-stream turbidity along with minimizing disturbance to the streambed and/or banks of the stream;
- All stream bank and adjacent areas disturbed by the construction activity would be protected with temporary erosion control measures. These areas would be reclaimed with long-term erosion control measures and revegetated immediately after construction;
- When removing culverts, restore appropriate stream channel and valley bottom dimensions and gradients; if rock weirs are installed in streams, they would be designed to pass debris and substrate and not form a fish barrier;
- The excess material and supplies would be placed in an area where they would not damage vegetation or cause erosion or sedimentation after their removal or prior to their use; and
- Work would be completed as outlined in the plans submitted with the permit application and as discussed on site.

4. Excavators would be inspected for leaks before working instream. Leaking or faulty equipment would not be used. Accumulations of oil, grease, or other toxins would be cleaned off before entering water.
5. On all disturbed areas, seed with an approved Forest seed mix and fertilize with an organic fertilizer. On recontoured areas, mulch with weed seed free straw. Areas receiving only decompaction would not be mulched but would be seeded and fertilized as needed. Place slash on disturbed sites to help minimize erosion. Consider planting trees and/or shrubs on disturbed sites where feasible.
6. Weeds, particularly spotted knapweed, are found on some of the roads. Where covered by earlier NEPA analysis, and where spraying would provide a benefit to the revegetation efforts, these populations of weeds may be sprayed prior to decommissioning or storage.
7. Equipment would be cleaned prior to entering the project area to prevent the introduction of new weeds to the area and cleaned when entering areas without weeds.
8. Rip or decompact road surfaces where this would help restore hydrologic function. If road surfaces are not eroding and have grown in with substantial grasses, trees, or brush they would not be ripped.
9. For public safety, work areas would be signed disclosing the operation of heavy equipment. Where public safety is an issue (on steep slopes with open roads below one receiving a stabilizing treatment), post lookouts or signs to alert drivers to hazards.
10. No ground disturbance or use of heavy equipment would occur in wet areas such as seeps, springs or bogs. The exceptions to this would be road prisms with boggy surfaces due to seeps and those areas where roads crossed streams or seeps with culverts. These areas would be rehabilitated.
11. The Heritage Program manager has determined that no cultural resource inventory was necessary due to low site probability and/or sufficient previous surveys. If a site was encountered, the

equipment operator would be required to stop work and the Heritage Program manager notified. The site would then be avoided.

12. Plant native shrubs on sensitive recontoured areas. Stream crossings and wetland areas have highest priority.
13. Fuel storage and refueling of the excavator will not occur within 300 feet of streams. Have a spill prevention plan and materials necessary to contain a spill available on the excavator.
14. Where culverts are removed on live streams, periodically monitor the reconstructed stream crossings until the sites are stable and revegetated.
15. Remove the Forest Road 73729 culvert on Lodgepole Creek between May 15th and September 1st to minimize potential sediment impacts on bull trout spawning and rearing habitat.
15. INFISH amended the Forest Plan in 1995. The INFISH amendment to the Forest Plan established additional Forest-wide fisheries standards. These standards are listed on pages A-6 to A-13 of the INFISH EA/Decision Notice (USDA Forest Service, 1995). The INFISH standards that are pertinent to this project include:

- **RF-2** For each existing or planned road, meet the Riparian Management Objectives (RMOs) and avoid adverse effects to inland native fish by: (b) minimizing road and landing locations in Riparian Habitat Conservation Areas (RHCAs); (c) initiating development and implementation of a Road Management Plan or a Transportation Management Plan; (d) avoiding sediment delivery to streams from the road surface; and (e) avoiding disruption of natural hydrologic flow paths.
- **RF-3** Determine the influence of each road on the RMOs. Meet RMOs and avoid adverse effects on inland native fish by: (c) closing and stabilizing or obliterating, and stabilizing roads not needed for future management activities. Prioritize these actions based on the current and potential damage to inland native fish in priority watersheds, and the ecological value of the riparian resources affected.
- **RF-5** Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams.
- **RA-4** Prohibit storage of fuels and other toxicants within RHCAs. Prohibit refueling within RHCAs unless there are no other alternatives. Refueling sites within RHCAs must be approved by the Forest Service and have an approved spill containment plan.
- **WR-1** Design and implement watershed restoration projects in a manner that promotes the long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and contributes to the attainment of RMOs.

B. Monitoring

Decommissioning work would be inspected for the first three years after the work is completed to assess the level of success with prohibiting vehicle use, reestablishment of hydrologic function, and growth of seeded grasses. A variety of sites would be selected for photo point monitoring that could be revisited to determine project effectiveness. Weeds will be evaluated and need for treatment assessed.

2.10 Comparison of Alternatives

Table 4: Comparison of Alternatives. This Table Briefly Summarizes the Effects of each Alternative

Issue	Alternative 1 – No Action	Alternative 2
Issue #1: The ground disturbing activities associated with decommissioning or storage of roads could affect water quality.	Compacted roads would continue to influence runoff and provide for sediment contributions to the area's streams. There would be no opportunity to improve vegetative cover on the road surface and reduce erosion from them. The opportunity to move towards the goal identified in the TMDL to reduce sediment from forest roads would not occur.	Sediment standards would be met in all drainages. Short-term localized sediment increase could occur from proposed activities. Mitigation is expected to quickly reduce sediment to below pre-treatment levels. Reestablishment of vegetation would reduce sediment contributions of untreated roads. Therefore, Alternative 2 results in sediment standard compliance for all streams.
Issue #2: The proposed action would limit motorized access within the project areas. Concern about closing motorized access routes.	There would be no change in the current road conditions or accessibility. None of the undetermined roads would be improved or opened to motorized vehicles. This alternative does not address motorized access in the area. Travel planning would proceed and decisions made with that process would apply in this project area.	This project is not a travel management proposal; its' purpose is to identify the road system needed to manage and access the lands in the project area. Roads included in the proposed action will be placed in to the storage or decommission category; travel management will be left to the ongoing travel management analysis and decisions made with that process would apply in this project area. Those roads requiring additional treatment will be treated but will allow for continued use of these legacy roads until a travel planning decision is made.
***Issue #3*:** Road and stream crossing densities in the area are contributing to decreased water quality.	No opportunity to reduce road densities or the number of road/stream interaction points in the analysis area. No opportunities to reduce the negative effects of compacted surfaces, improve vegetative cover, or reduce erosion.	The proposed action would reduce road densities by decommissioning 63 miles of road in the project area. 30 stream crossings would be eliminated or improved to reduce erosion at those points. Decompaction of road surfaces would allow for better vegetation cover on road surfaces thus reducing erosion. Storage of another 59 miles of road would not reduce road densities but would reduce the number of sediment contributing sites and improve infiltration.

Chapter 3.0 Affected Environment

3.1 Contents of Chapter

This chapter contains information related to the current environmental conditions (affected environment) and the direct, indirect and cumulative beneficial and adverse environmental consequences of implementing the alternatives. Environmental consequences include the direct, indirect and cumulative effects of Alternatives A and B.

There are no unique characteristics of the area such as prime farmlands, unique wetlands, wild and scenic rivers, or ecologically critical areas. There are no significant historic or cultural resources.

3.2 Water Resources

The project area is found within several hydrologic units: Martin Creek (170102050402), Meadow Creek (170102050404), Bertie Lord Creek (170102050405), Middle East Fork (170102050503) and Cameron Creek (170102050504). While roads can provide important access, they do influence hydrology and stream geomorphology (Switalski, et al, 2004). Roads alter hillslope hydrology by reducing infiltration, concentrating water in ditches, and converting subsurface flow to surface flow when intercepted by the cutslope. Roads also provide a long-term sediment sources, causing sediment contributions even during mild rain events (Luce, 2002).

The East Fork Bitterroot River crosses through the area, but most streams are smaller, many less than 2-3 foot bankful width and it is these smaller streams that are most affected by undetermined road systems. The dominant stream reach types are Rosgen A4 reaches that are characterized by gradients greater than 4%, narrow floodplains, a substrate consisting of mostly gravel with some cobbles, a low degree of sinuosity and a step-pool morphology. At the higher elevations, cobbles and boulders are more common in the substrate resulting in A3 streamtypes. In lower gradient reaches, between 2 and 4% slope, a few B4 stream reaches can be found. These have a gravel/cobble substrate, are more sinuous, and have a wider floodplain than the A streamtypes. In the high elevation meadows of Bugle Creek several reaches of C and sometimes E streamtypes are found. Project File document WAT-2 (PF-WAT-2), display streamtypes.

The most common wetlands in the area are Riverine Perennial and Riverine Intermittent wetlands. These are linear wetlands associated with high velocity streams and are found along the high water margins of streams throughout the analysis area. PF-WAT-3, in the project file display wetland types.

The analysis area has a large road system of both system and non-system (undetermined) roads. Estimates of road densities range from 2.7 to 6.1 miles/square mile in Bertie Lord hydrologic unit. In Section 3.4, a map displays the extent of the road system within the project area and included the undetermined roads.

Roads were inventoried in the Martin Creek watershed in 1994 for the project called Watershed Restoration in the Martin and Bertie Lord Drainages and the results were compared to inventory findings of 2009. Of the 32 roads compared, twenty-two had better conditions, no culverts, vegetation cover, and no sediment issues when compared to conditions in 2009. Based upon this review, the improvements implemented in 1995 reduced the number of sediment contributing points and improved watershed conditions in Martin Creek. It is likely that the comparison of inventories in Bertie Lord Creek would show similar trends in reduction of sediment contributing points. This project did not, however, update the forest transportation database to reflect changes in access or the long-term intent for each road.

The IDT found that eighty-nine miles of roads reviewed were naturally recovering or previously treated and considered to be of neutral effect to the watershed resource. Thirty-three miles of road were compacted, were not well vegetated; only one known culvert is present although there could be others that were missed by the inventory.

A GIS map exercise estimated stream crossings within the analysis area, Table 6, in the fisheries report, identified 129 stream crossings on system and undetermined roads within the hydrologic units found in the analysis area. Most of the undetermined roads are mid-slope roads, crossing small headwater streams at numerous locations. On those roads identified for possible treatment, most culverts have been removed but the removal often resulted in streambanks that are erosive; there is one known culvert on Lodgepole Creek. Several crossings-fords really, are used by motorized vehicles which reduce vegetation recovery and provide sediment sources. Review of the field notes found discussion for 29 stream crossings on the undetermined roads. Of those, 17 are on roads that would receive a stabilizing treatment. The others are on roads that have been identified as needing no treatment due to vegetative recovery or past treatment. Some swales have no culvert but inventories have identified water flowing over the road which creates risk for road fill slumping and are sediment contribution points. Where subsurface flow has been intercepted, roadside ditches collect and transport water to a low spot where it crosses the road. Saturated road fills are at risk of slumping and contributing sediment to downstream areas. In summary, even those roads that are seldom used continue to influence watershed conditions by providing sediment contribution points and increasing runoff from the road surface. These factors alter channel morphology and stability.

Table 5: Road and Stream Crossing Densities in the Analysis Area

6th Order Hydrologic Unit (size in sq. mi.)	Road Miles	Road Densities	No. of Stream Crossings	Stream Crossing Density
Martin Creek, 0402 (31.8)	93.6	2.9	13	0.41
Meadow Creek, 0404 (32.1)	86.8	2.7	23	0.72
Bertie Lord Creek, 0405 (17.2)	104.1	6.1	27	1.57
Middle East Fork, 0503 (39.7)	108.1	2.7	27	0.68
Cameron Creek, 0504 (49.2)	173.1	3.5	39	0.79

Roads affect runoff production and consequently sediment delivery (Elliot et al, 1996, Foltz et al, 2007b). Because their surfaces are compacted, infiltration is limited which potentially increases and speeds runoff and sediment delivery to streams. Ditches route runoff along roads, sometimes depositing it into streams. Streams in the analysis area show above natural levels of depositional sediment based upon field observations.

Roads constrict the channel at stream crossings or where the road parallels streams by limiting the width of the floodplain. As flood waters are confined to a smaller channel, velocities increase and often cannot access a flood plain causing increased bank erosion. The consequences of bank erosion include wider and shallower streams, less efficient transport of sediment and flow. Within the areas affected by the Sleeping Child Fire, woody debris recruitment is reduced due to fire and streamside timber harvest which in turn affects the ability of the stream to dissipate energy. Beavers are uncommon in the area although there is evidence of old, broken beaver dams in Bertie Lord Creek.

The Water Quality Restoration Plan and Total Maximum Daily Loads for the Bitterroot Headwaters Planning Area (2005), also called TMDL, completed an analysis of existing condition of the East Fork related to impaired beneficial uses and forest roads were identified as one of the largest sediment sources to the East Fork. None of the roads actually cross a stream listed as water quality impaired but all are headwater streams to the East Fork Bitterroot River that does have a TMDL and restoration plan developed for sediment. The restoration plan focuses on reduction of sediment from forest roads and reduction in human caused bank erosion (DEQ, 2005, p.171). The East Fork was assigned a sediment TMDL that

recommended a 42% reduction in road associated sediment contributions; and is based upon estimated reductions that would occur if the tread, cut and fill slope lengths of all road crossings were reduced to a maximum of 200 feet. This proposal is an opportunity to move towards that suggested reduction by improving road-stream interaction points and reducing sediment contributions.

3.3 Fisheries Resources

The roads proposed in this project are located in five NRCS 6th code hydrologic units (HUCs). These are:

- 170102050402 – Martin Creek
- 170102050404 – Meadow Creek
- 170102050405 – Bertie Lord Creek
- 170102050503 – Middle East Fork
- 170102050504 – Cameron Creek

The HUCs listed above contain one ESA listed fish species (bull trout, Salvelinus confluentus), one Sensitive fish species (westslope cutthroat trout, Oncorhynchus clarki lewisi), and one recently designated Sensitive mussel species (western pearlshell mussel, Margaritifera falcata). These three species are the focus of this analysis. Table 6 summarizes the existing status of bull trout, westslope cutthroat trout, and western pearlshell mussel in the project area.

Table 6: Status of Bull Trout, Westslope Cutthroat Trout, and Western Pearlshell Mussel in the Project Area

NRCS 6th Code HUC	Current Status
170102050402 Martin Creek	**Bull trout:** present-strong Bull trout are present throughout Martin Creek, Bush Creek, and the lower ends of the larger unnamed tributaries. Bull trout densities are low in the lower half of the drainage, and moderate in the upper half. The bull trout in the Martin Creek drainage consist of a mix of fluvial and resident fish. Low numbers of adult migratory bull trout spawn in the drainage. The bull trout in the Martin Creek drainage are part of the East Fork Headwaters local population. **Westslope cutthroat trout:** present-strong Westslope cutthroat trout are common throughout the Martin Creek drainage. They probably occupy close to 100% of their historic habitat in the drainage. The westslope cutthroat trout in the Martin Creek drainage consist of a mix of fluvial and resident fish. They spawn and rear throughout the suitable habitat in the drainage. Limited genetic testing suggests that the population is pure. **Western pearlshell mussel:** not surveyed – unknown Western pearlshell mussels prefer stable sand and gravel substrates in low gradient trout streams and intermountain rivers. A limited amount of suitable mussel habitat may occur in the lower two miles of Martin Creek. Above that point, suitable habitat is probably not present because gradients increase and Martin Creek and its tributaries are dominated by A and B channel types with larger substrates. The East Fork Bitterroot River near the confluence with Martin Creek was surveyed for mussels in 2007. None were found.

NRCS 6th Code HUC	Current Status
170102050404 Meadow Creek	**Bull trout:** present-strong Bull trout are common throughout Meadow and Swift creeks, and present at low densities in Bugle, Spruce, Lodgepole, and Balsam creeks. The bull trout in the Meadow Creek drainage consist of a mix of fluvial and resident fish. Low numbers of adult migratory bull trout spawn in the drainage. The bull trout in the Meadow Creek drainage are part of the East Fork Headwaters local population. **Westslope cutthroat trout:** present-strong Westslope cutthroat trout are common throughout the Meadow Creek drainage. They probably occupy close to 100% of their historic habitat in the drainage. The westslope cutthroat trout in the Meadow Creek drainage consist of a mix of fluvial and resident fish. They spawn and rear throughout the suitable habitat in the drainage. Limited genetic testing suggests that the population is pure. **Western pearlshell mussel:** surveyed – not found Suitable mussel habitat appears to be present in the low gradient middle reaches of Meadow Creek (stream mileposts 4.5 to 6.5). Those reaches consist of a mix of B and C channel types. Above and below those reaches, suitable habitat may not be present because stream gradients are higher, substrate sizes increase, and gravel is less common. Meadow Creek, Lodgepole Creek, and Swift Creek were surveyed for mussels in 2007. None were found.
170102050405 Bertie Lord Creek	**Bull trout:** present-depressed Bull trout are incidental and rare in the lower mile of Bertie Lord Creek and unnamed tributary 0.4. From time to time an occasional small adult spawner may stray into the lower end of Bertie Lord Creek from the nearby East Fork Bitterroot River. Bull trout are absent in most of the Bertie Lord drainage. The few bull trout that are present in the Bertie Lord drainage are part of the East Fork Headwaters local population. **Westslope cutthroat trout:** present-depressed Westslope cutthroat trout are common throughout the Bertie Lord Creek drainage. They probably occupy close to 100% of their historic habitat in the drainage. The westslope cutthroat trout in the Bertie Lord Creek drainage are believed to be mostly resident fish. They spawn and rear throughout the suitable habitat in the drainage. Limited genetic testing suggests that the population is pure. **Western pearlshell mussel:** not surveyed - unknown A very limited amount of suitable mussel habitat may occur in the lower mile or so of Bertie Lord Creek. That reach is predominantly B4 channel type dominated by gravel and cobble substrates with relatively high fines. The HUC 0405 portion of the East Fork Bitterroot River is a B2/B3 channel type dominated by boulder/cobble substrate. It does not have much gravel and does not appear to have much suitable habitat. None of the streams in HUC

NRCS 6th Code HUC	Current Status
	0405 have been surveyed for mussels.
170102050503 Middle East Fork	**Bull trout:** present-migratory corridor Bull trout are uncommon in the East Fork Bitterroot River, and absent in the tributaries. The bull trout in the East Fork consist of low numbers of migrating adults and rearing juveniles. The river is a migratory corridor and also provides juvenile rearing habitat. **Westslope cutthroat trout:** present-depressed Westslope cutthroat trout are common in the East Fork Bitterroot River, and present at varying densities in Jennings Camp (common), Guide (uncommon), and Reimel (common) creeks. They probably occupy close to 100% of their historic habitat in the drainage. The westslope cutthroat trout in the river are fluvial fish; the westslope in the tributaries are resident fish. The river is a migratory corridor and provides rearing habitat; the tributaries provide rearing habitat and limited amounts of spawning habitat. Most of the tributary populations are isolated from the river by man-made barriers (culverts, dewatering). Limited genetic testing suggests that both pure and hybridized westslope cutthroat trout are present in the river, while the tributary populations are pure. **Western pearlshell mussel:** not surveyed – unknown The HUC 0503 portion of the East Fork Bitterroot River is mostly a B3 channel type upstream of Mink Creek, and mostly a C3 channel type between Mink and Cameron Creeks. Suitable mussel habitat appears to be present, particularly in the East Fork between Mink and Cameron Creeks. The tributaries in the project area (Jennings Camp, Colvert, and Guide creeks) are small and steep with possibly no suitable habitat. None of the streams in HUC 0503 have been surveyed for mussels, but they were found in the East Fork in HUC 0506.
170102050504 Cameron Creek	**Bull trout:** absent Bull trout are absent in the Cameron Creek drainage. **Westslope cutthroat trout:** present-depressed Westslope cutthroat trout are uncommon on private land and common on state and Forest Service land. They probably occupy close to 100% of their historic habitat in the Cameron Creek drainage, but their habitat is fragmented by culvert barriers. The westslope cutthroat trout in the lower end of Cameron Creek consist of a mix of resident and fluvial fish; elsewhere, the westslope are believed to be mostly resident fish. They spawn and rear throughout the suitable habitat in the drainage. Limited genetic testing suggests that the population is hybridized on private land, and pure on state and Forest Service land. **Western pearlshell mussel:** surveyed – found Western pearlshell mussels are present at low-to-moderate densities in Cameron Creek on the floor of French Basin. The state and Forest Service

NRCS 6th Code HUC	Current Status
	portions of Cameron Creek contain very limited amounts of suitable habitat because they are A and B channels with essentially no large patches of gravel. There may be some suitable habitat in the lower reaches of Hart, Doran, and Lyman Creeks near the floor of French Basin.

Table 7 discloses (by 6th code HUC) the existing road density, the total road length, the number of road stream crossings, the perennial stream length within 300 feet of roads, and the road density rating. The road density rating comes from the March 2010 update of the Bitterroot National Forest Section 7 Bull Trout Watershed Baseline (USDI Fish and Wildlife Service, 2010). The other numbers in Table 5 were derived from a GIS exercise conducted by the Bitterroot NF south zone GIS specialist, in December 2010.
Table 7: Existing Road Density, Total Road Length, Number of Road Stream Crossings, Perennial Stream Length (with 300 ft. of roads) and Road Density Rating by 6th code HUC

Table 7: Existing Road Density, Total Road Length, Number of Road Stream Crossing s, Perennial Stream Length and Road Density Rating by 6th Code HUC

NRCS 6th Code HUC	Total Road Length in HUC (miles)	Perennial Stream Length Within 300 Feet of Roads (percent)	Number of Road Stream Crossings in HUC	Road Density in HUC (miles/square mi)	Road Density Rating in HUC **
170102050402 Martin Creek	93.6	19%	13	2.9	FUR
170102050404 Meadow Creek	86.8	36%	23	2.7	FUR
170102050405 Bertie Lord Creek	104.1	35%	27	6.1	FUR
170102050503 Middle East Fork	108.11	24%	27	2.7	FUR
170102050504 Cameron Creek	173.1	26%	39	3.5	FUR

** = In March 2010, the U.S. Fish and Wildlife Service rated the relative risk of roads to bull trout in each of the 6th code HUCs in the Bitterroot River basin (USDI Fish and Wildlife Service, 2010). The risk was rated as either "functioning appropriately (FA)", "functioning at risk (FAR)", or "functioning at unacceptable risk. All of the 6th code HUCs in this project have high road densities that were rated as "functioning at unacceptable risk (FUR)" for bull trout.

To summarize, road densities are high in all of the 6th code HUCs in the project area. In most of the HUCs, about a quarter to a third of the perennial stream length is located within 300 feet of a road. The data in Table 5 support the assertion that roads have reduced watershed health and the quality of fish habitat in the project area. Reducing road densities and the number of road stream crossings is needed to improve fish habitat quality.

This project proposes to remove one fish barrier culvert, and that is located on the Forest Road 73279 crossing of Lodgepole Creek (a tributary to Meadow Creek). The culvert currently blocks the upstream

distribution of mostly westslope cutthroat trout and a few bull trout. There is an estimated 0.3 miles of spawning and rearing habitat upstream of the road crossing that currently is inaccessible due to the culvert barrier. The rest of the culverts that would be removed in this project are either located on non-fish bearing streams or the upper non-fish bearing headwater portions of streams. Some of the roads either do not contain culverts or their culverts were previously removed years ago.

3.4 Roaded and Unroaded Recreation

There has been extensive road system development within the project area including both primary access roads that are open yearlong and those that are closed for some part or year-long. Many of the roads were constructed for timber access and are no longer needed for that purpose because of changes in yarding technology and management philosophy. Although the roads were initially constructed for timber management, they now provide access for management needs as well as recreational activities. Recreation in this area include mostly dispersed uses such as mountain biking, viewing scenery, OHV (off highway vehicle) use, snowmobile riding, recreational driving and dispersed camping. Within the analysis area, no roadless areas are identified. The proposed project area includes those "undetermined" roads summarized in Table 1 and listed in Appendix A that have been abandoned and not maintained for vehicle use. The analysis area is within the roaded natural and semi-primitive motorized Recreation Opportunity Spectrum and in Management Area 1, Timber Management. Roads in the area include both system and undetermined roads. Undetermined roads were constructed for timber harvest or fire management and were abandoned after use; typically these roads have received no maintenance and have fallen into disrepair with vegetation gradually encroaching upon the road travelway. Approximately 150 miles of undetermined roads were walked the summer and fall of 2009 to determine existing conditions; 121 miles of these were carried forward for analysis in this project. Map 3 displays the existing road system in the project area (system and undetermined roads combined).

In 1994 watershed inventories were conducted in Martin and Bertie Lord Creeks to identify sites where roads contributing sediment or otherwise affecting the watershed resource. This inventory resulted in an analysis of conditions by an interdisciplinary team that included a Fisheries Biologist, Hydrologist, Hydrology Technician, Recreation Manager and Transportation Planner and resulted in a Decision Memo titled Watershed Restoration in Martin and Bertie Lord Drainages (1995b) and authorized treatments to reduce effects to the watershed resource. This project was implemented in the summer of 1995 and project roads were decompacted (scarified), blocked, and abandoned where vegetation was recovering the road travelway. Although this work was completed on the ground, this project did not update the forest transportation database to reflect changes in access or the long-term intent for each road. Because data is lacking that does reflect long-term intent for management of each road, roads were coded as "undetermined" in the forest transportation database.

Part of the purpose and need for the Martin Creek Watershed Restoration Project analysis is to identify conditions on the roads identified as undetermined and to use the interdisciplinary team process to identify those needed for future management and access and which could be decommissioned. For this project the IDT included fire and fuels and timber specialists as well as a fisheries biologist, hydrology technician, wildlife biologist, the OHV ranger, and District Ranger who reviewed the condition on each road and evaluated future need, including those roads that might be needed to manage timber or fire/fuels in the project area. This information is found for each road in the Risk Benefit Table in the project file (PF-ROADS-1).

Map 3
Martin Creek Watershed Restoration Project
System and Undetermined Roads

mgw, 4/2/2012

Legend

- Existing System Roads
- Undetermined Roads

0 0.3 0.6 1.2
Miles

N

The field inventory found that there are about 29 miles of undetermined road accessible to motorized vehicles (full sized vehicles, ATV, or motorcycles) in the analysis area. Seven of these miles were scarified decompacted and blocked in the mid-1990's but they are now being used for motorized recreation and another seven miles of these are not being used by motorized vehicles. The remaining undetermined roads inventoried in the project area were not accessible due to previous treatment, partial vegetation recovery or natural recovery.

During analysis, the interdisciplinary team, including recreation specialists from the Sula Ranger District, a transportation planner, various resource specialists and the Sula District Ranger, reviewed each "undetermined" road for possible recreation opportunities as well as risks and benefits to other resources. Roads that were likely to fall into the recreation benefit category included those that provided potential loop opportunities, possible connection between trails and roads, or those that provided sole access to an area. Short, dead-end roads, those that provided duplicate access, or those that presented risks to other resources often were not identified as potential recreation routes. Appendix A lists each road and proposed treatment. The risk benefit table completed during this interdisciplinary effort can be found in the project file as project file document ROADS-1.

Roads Analysis (USDA, 1999), reviewed risks and benefits of system roads that provide access to undetermined roads in this Project and well as the risks and benefits of the undetermined roads. This information is document in the project file as ROADS-7. Although not all National Forest System roads in the project area were analyzed in this EA for future Forest management needs, many have been covered in previous analysis: Watershed Restoration in the Martin and Bertie Lord Drainages (1996), Burned Area Recovery Project (2001), Lyman Salvage Environment Assessment (2004), and Middle East Fork Hazardous Fuels Reduction Project (2006). This analysis addressed future management needs on many of the system roads within the project area. System roads in this Project area were reviewed to determine where undetermined roads would complement system road access; however, no proposals for change were identified on system roads. This proposal would not conflict with the ongoing travel management planning process.

Trail 331 is located in the northern part of the project area in the upper part of Martin Creek and is currently receiving motorized use. No treatments are proposed to this trail.

3.5 Description of resources not directly affected

3.5.1 SILVICULTURE AND FUEL MANAGEMENT

The roads are located in the following management areas:

- Management Area 1-managed for timber, forage, dispersed recreation (USDA Forest Service, 1987: page III-3),
- Management Area 2-big game winter range (USDA Forest Service, 1987: page III-9),
- Management Area 3a, the visually sensitive areas along the East Fork Highway (USDA Forest Service, 1987: page III-15); and
- Management Area 3b, riparian area, comprises a smaller portion of the analysis area (USDA Forest Service, 1987: page III-22).

Much of the area was burned in 1961 by the Sleeping Child Fire and the majority of roads identified for potential treatment were constructed for fire suppression or for salvage harvest immediately following the fire. At the time of the Sleeping Child Fire, it was not uncommon to construct low standard roads or to abandon roads after use, without completing actions to minimize their effect upon other resources. Other system roads are located in these areas also provide access.

The existing road network was found to be more extensive than needed to efficiently manage timber resources or fire in the future. Some of roads in the analysis area would likely be needed for future access for timber stand improvement or fire management but many of the roads reviewed were not constructed to current standards that would allow them to be used, have nearby roads that provide access to the same area, or would require major reconstruction prior to use. All roads determined to be of a 'moderate' or 'high' potential need for future fire or stand management activities were recommended for storage or deferred to travel management. Those actions would retain the road prism, code the road as a Maintenance Level 1 (stored) road in the transportation database and reduce expenditure required to reconstruct the road.

3.5.2 WILDLIFE

Many wildlife species native to Montana are closely associated with aquatic and riparian habitats. Many others inhabit the areas surrounding the proposed treatment areas. Some species such as songbirds or bats, and big game are very mobile, and can easily travel between disjunct patches of habitat. The presence of roads does not directly affect their ability to utilize the available habitat although the roads may affect the access hunters have on big game species. Other species, most notably amphibians and aquatic invertebrates, have very limited movement and dispersal capabilities and may be affected by the poor stream crossing conditions. Since no vegetation treatment would occur under the proposed action, negative effects would be limited to disturbance associated with the road work and this would be temporary and localized in nature. For this reason, the wildlife discussion is limited in this document. Similarly, due to the nature of the proposed activities, snag abundance and old growth stands will not be impacted and will therefore not be addressed in this document. Elk Habitat Effectiveness, a Forest Plan standard concerning road density and elk security, will not be focused upon in this document either. Currently, seven of the third-order drainages within the project area do not meet the EHE standard of 50% (2 mi/mi^2). The proposed action will be bringing these seven drainages closer to compliance with the standard. However, due to the limited nature of the project, closing additional roads will not be addressed. The pending Travel Decision will concentrate on this issue and move these drainages closer to being in compliance with the Forest Plan. The Biological Assessment and Evaluation can be found at the end of the wildlife section in Chapter 4.

Amphibians are important components of many ecosystems, occupying key trophic positions in the food webs of aquatic systems (Blaustein et al., 1995). Adults can be top predators, while the larvae and juveniles are often a major prey source for many species of wildlife (Blaustein et al., 1995). Six species of amphibians are associated with stream habitats in the Bitterroot subbasin (Table 8). These include two salamander, three frog, and one toad species. Three of the six amphibian species are designated as sensitive species by the Regional Forester: (1) the boreal toad, *Bufo boreas*; (2) the northern leopard frog, *Rana pipiens*; and (3) the Coeur d' Alene salamander, *Plethodon idahoensis* (Table 8). Of the three sensitive amphibian species, two (the Coeur d' Alene salamander and northern leopard frog) are very unlikely to occur at the culvert sites because no suitable habitat exists, while one (the boreal toad) occurs at all of the sites. Of the three non-sensitive amphibian species, the Rocky Mountain tailed frog, *Ascaphus montanus* and Columbia spotted frog, *Rana luteiventris* occur at all of the sites, while the long-toed salamander may occur at all or some of the sites.

Table 8: Amphibian Species in the Bitterroot Subbasin

Common Name	Latin Name	Special Management Status	Likely to Occur in the Project Area?
Long-toed Salamander	*Ambystoma macrodactylum*	None	Yes
Coeur d' Alene Salamander	*Plethodon idahoensis*	Sensitive	No
Rocky Mountain Tailed Frog	*Ascaphus montanus*	None	Yes

Common Name	Latin Name	Special Management Status	Likely to Occur in the Project Area?
Columbia Spotted Frog	*Rana luteiventris*	None	Yes
Northern Leopard Frog	*Rana pipiens*	Sensitive	No
Boreal Toad	*Bufo boreas*	Sensitive	Yes

The boreal toad needs wetlands for breeding and early rearing. Juvenile and adult boreal toads become more terrestrial and mobile and typically cross roads by hopping across them. Boreal toads are also known to warm themselves on road surfaces at night during certain times of the year. This tendency makes them vulnerable to crushing by vehicles. Both juvenile and adult boreal toads occur along stream bottoms in the project area. Although a native material stream bottom is not necessary for boreal toads to get past roads, the toads do spend considerable time along the edges of streams during the hot summer months, and giving them an alternative route to hopping across the road would be beneficial. The same is true for Columbia spotted frogs and long-toed salamanders. One species (the tailed frog) has a multi-year larval aquatic life stage (Blaustein et al., 1995) that makes it extremely sensitive to aquatic habitat quality and connectivity.

In addition to amphibians, there are a variety of crustaceans and aquatic insects that inhabit these stream systems, most of which have limited capabilities for movement and dispersal. These invertebrates make up a major portion of the biomass produced in aquatic systems, and play key roles in the aquatic ecosystem. They process the nutrients stored in vegetation and litter entering the stream, and provide major prey sources for a wide variety of aquatic and terrestrial wildlife species.

Only one known culvert is present in the project area. Other crossings are limiting to amphibians due to limited riparian vegetation or exposure at old crossing sites.

Grey wolves have been sighted in the area but there are no known dens. The grey wolf population in the Bitterroot Valley is considered to be an Experimental, Non-essential population and is a result of the wolf re-introduction that took place in Central Idaho during the mid-1990s. Wolverine (a Forest Service sensitive species), goshawk and big horn sheep may also inhabit the project area at various times of the year.

Much of the area is included within the perimeter of the 1961 Sleeping Child Fire and vegetation consists of smaller lodgepole pine regrowth and a portion of this is above 6200 feet. Although Canada lynx are not known to occupy this area, there is suitable lynx habitat available in the Bertie-Lord Lynx Analysis Unit within the analysis area.

3.5.3 BOTANY AND WEEDS

No threatened or endangered plant species have been found and none are known to occur on the Bitterroot National Forest. There are three sensitive plant species [Great Basin Indian-potato (Orogenia linearifolia), dwarf onion (Allium parvum), and western boneset (Ageratina occidentalis)] and two species of interest [candystick (Allotropa virgata) and bitterroot (Lewisia rediviva)] currently known to occur within the analysis area. Great Basin Indian-potato is scattered throughout the analysis area, just north and south of the East Fork River, between Jennings Camp Creek and Martin Creek (to the north) and between Meadow Creek and Vapor Creek (to the south). A population of dwarf onion is located just below FS Road 5778 east of where Tepee Creek comes into the East Fork River. Two populations of western boneset are found within the analysis area: one above and southeast of the Jennings Creek Campground and another near Mink Creek Saddle. Candystick is found in the higher, subalpine zones of Meadow Creek and Sleeping Child Creek and bitterroots are known to occur in the grasslands just south of Shirley Mountain.

Great Basin Indian-potato is associated with Douglas-fir (Pseudotsuga menziesii)/pinegrass (Calamagrostis rubescens) habitat types. It is sometimes found growing in old roadbeds and along the edges of trails.

Dwarf onion is associated with grasslands, sagebrush, and large open areas in ponderosa pine, usually in exposed areas with gravelly or sandy soil. The greatest threat to dwarf onion is knapweed encroachment along with other weeds. Western boneset is found in talus slopes and rock outcrops. Candystick is found in mature lodgepole pine forests, associated with beargrass (Xerophyllum tenax) and grouse whortleberry (Vaccinium scoparium). Bitterroots are usually found in rocky open areas on south facing slopes.

None of the above species are known to occur within the road beds of any of the roads being analyzed in this document. The potential disturbance areas were previously disturbed by the initial road construction. The proposed activities should not result in the loss of viability of any of these species or lead to federal listing.

Spotted knapweed (Centaurea stoebe ssp. micranthos) was noted at many sites during the field inventory. Houndstongue (Cynoglossum officinale) is known from the Guide and Lyman Creek drainages. Other noxious weed species found in the analysis include sulfur cinquefoil (Potentilla recta), oxeye daisy (Leucanthemum vulgare), a small population of meadow hawkweed (Hieracium caespitosum) near the Martin Creek Campground, and a small population of whitetop (Cardaria draba) is located in Bunch Gulch. The 2003 Noxious Weeds Environmental Impact Statement (USFS, 2003) and the 1997 Noxious Weeds Environmental Assessment identify a few potential treatments sites in the analysis area. Should these sites overlap with known noxious weed populations in the Martin Sleeping Child Watershed Restoration project area, herbicide treatment prior to storage or decommissioning could occur.

3.5.4 CULTURAL RESOURCES

Seventy-five cultural resource inventories have been performed in the affected watersheds since 1979, twenty-three of those occurring since 2000. No significant cultural resources were discovered within the area of potential effect (APE) for this project (existing road prism). Because areas of previous disturbance such as road prisms and slopes exceeding 40% are defined as low probability terrain for cultural site discovery in the Forest's Site Identification Strategy, no additional inventory was conducted for this project. Compliance with the National Historic Preservation Act Section 106 was fulfilled under terms of the Programmatic Agreement among the Forest Service Northern Region (Montana), the Advisory Council on Historic Preservation, and the Montana State Historic Preservation Office, with the inclusion of a No Inventory justification in the Forest's 2011 Compliance Report to the Montana SHPO. Consultation with the Confederated Salish and Kootenai Tribal Preservation Office was completed on May 27, 2010 regarding the watershed improvement work, with no cultural resource concerns identified. Refer also the document in the project file, SPEC-1, the Cultural Resource Survey Form.

3.5.5 SOILS

Soils in this area are mostly of granitic origin with some inclusions of sedimentary belt rocks. Most of it is highly weathered, coarse textured and erodible. Where there is a potential for sediment delivery, such as at crossings, areas of bare soil increase the erosion risk.

The roads in the analysis area provide a compacted surface that limit infiltration, vegetation growth and provide an environment ripe for weed infestations. Of the roads reviewed, 89 miles are recovering, either due to some past mechanical treatment or from lack of use and natural recovery. It is likely that the roads classified as naturally recovering were used for only a short time and by relatively few vehicles. Natural recovery is described as vegetation invading the site, growing vigorously, often woody shrubs or trees are growing on the surface with roots growing into the road prism and decompacting it. Slumping of the cut or fill slopes would naturally narrow the driving surface. Table 9 below lists road miles by condition.

Table 9: Existing Condition of Roads

Existing Condition	Miles of Road
Compacted road surface, limited vegetation recovery – active rehabilitation treatments required.	33
Natural recovery ongoing, vegetation colonizing site or road previously decompacted or scarified.	88

Approximately 33 miles of roads will require active treatments to remediate compaction. Treatments to remediate compaction will include subsoiling or ripping on stored roads and decommissioned roads. Recontouring will also be completed on many of the decommissioned roads. Stored and decommissioned roads will also be slashed (where it's available), seeded, and fertilized.

Chapter 4.0 Environmental Consequences

4.1 Introduction

Chapter 4 of this document provides the basis for comparison between alternatives presented in Chapter 2. This chapter presents the predicted environmental effects of Alternative 1, No Action and the Proposed Action, Alternative 2. It provides the necessary information to determine whether or not to prepare an Environmental Impact Statement. Further analysis and conclusions about the potential effects are available in the project record as cited and are available on request.

4.1.1. CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT

The following critical elements of the human environment are not expected to be adversely affected by the proposed action:

- Air quality
- Farmlands, prime or unique
- Threatened, Endangered, and Sensitive plants
- Threatened and Endangered wildlife species
- Wild and scenic rivers
- Wilderness values
- Cultural resource values
- Native American religious concerns

Minor short-term impacts from the proposed action could occur to:

- Amphibians (tailed frogs, Columbia spotted frogs, and long-toed salamanders)
- Floodplains
- Threatened and Sensitive Species (bull trout, westslope cutthroat trout, and boreal toads)
- Soil productivity
- Water Quality
- Wetlands and riparian zones

Long term beneficial effects from the proposed action would occur to:

- Amphibians (tailed frogs, Columbia spotted frogs, and long-toed salamanders)
- Floodplains
- Threatened and Sensitive Species (bull trout, westslope cutthroat trout, and boreal toads)
- Soil productivity
- Water Quality
- Wetlands and Riparian Zones

4.2 Description of affected resources

4.2.1 WATER QUALITY, WETLANDS, AND RIPARIAN HABITATS

The Affected Environment includes the actual road prism and streams affected by road crossings, and portions of the East Fork Bitterroot watershed that would be directly affected by the proposed action. The culverts are located within Forest Plan Management Area 3b, which consists of the riparian corridors 100 feet on either side of streams (USDA Forest Service, 1987: page III-22). The roads are located in Management Area 1-managed for timber, forage, dispersed recreation (USDA Forest Service, 1987: page III-3), and Management Area 2-big game winter range (USDA Forest Service, 1987: page III-9).

A. Alternative 1

There would be no opportunity to reduce road densities, the number of road/stream interaction points, to reduce the negative effects of compacted surfaces, improve vegetative cover, or reduce erosion. There would be no change to road densities or to the conditions at sites where roads intersect streams. Compacted roads would continue to influence runoff and provide for sediment contributions to the area's streams. There would be no opportunity to improve vegetative cover on the road surface and reduce erosion from them.

The risk of culvert or crossing failure during periods of heavy precipitation or following fire would not be reduced with Alternative 1. The photo below shows an old road in the head of Cameron Creek that was abandoned without restoring drainage or decompacting the road surface. The road is not a sediment source during dry periods but high moisture levels resulted in crossing failure and erosion at a small, unnamed drainage that is a tributary to Cameron Creek.

Photo 4: Example of Crossing Failure on Abandoned Road

Over the next 50 years, growth of plants on road surfaces would gradually reduce compaction slightly but vegetation would grow slowly and root systems would not extend deep into the compacted soil. Where culverts were removed but the slopes not laid back to the angle of repose, ravel would continue to make it difficult for vegetation to become better established on constantly moving soils. Erosion into streams from these same slopes would continue for a much longer time period than when slopes are flatter and vegetation is better able to become established.

Photo 5: Example of Erosion on Stream Crossing Without Restoration

There would be no change in the current road conditions or accessibility. None of the undetermined roads would be improved or opened to motorized vehicles.

The Forest wouldn't move towards the goal identified in the TMDL of a 42% reduction of sediment yields from forest roads. The Forest Plan direction to reduce sediment contributions from forest roads would not be met.

B. Alternative 2

Implementation of Alternative 2 would allow for a quicker recovery trend than currently exists. With reduction in compaction, vegetation on the road surface would develop better root systems and grow more quickly. Instead of spotty vegetation, vegetation on treated road surfaces would become denser with a deeper rooting depth. Monitoring of recent decommissioning and storage projects have shown that the treatments proposed with this alternative result in good vegetation cover within one to two years following implementation. PF-WAT-16, displays the results of a project implemented in North Rye Creek in 2009. Similar monitoring, conducted by fisheries biologists has found that the removal of culverts known to be fish barriers and restoration of the crossings to allow fish passage have been successful (PF-WAT-17) with fish being captured above sites where culverts previously prevented upstream migration.

Table 10: Miles of Road Treated (numbers have been rounded) with Alternative 2

Road Treatment	No Treatment Needed	Treatment Needed	Total Miles
Stored	46	13	59
Decommissioned	42	20	62

With implementation of Alternative 2, sixty-three miles of road would be decommissioned, with about 20 miles of this receiving some stabilizing treatments. Treatments could include such activities as decompaction of the road surface, recontouring of stream crossing or the entrance to the decommissioned road, and full recontouring. All treatments would be followed by revegetation efforts in the form of seeding, fertilizing, mulching on recontoured sections, and placement of slash to provide for shade and moisture retention. In the short term, disturbance adjacent to streams would increase sediment contributions due to removal of vegetation, use of equipment to reduce the slope angle, and removal of

culverts (Foltz et al. 2007b). Decompaction, removal of road prisms that narrow stream channels, removal of culverts and revegetation would reduce sediment yields in the long term, and allow for better infiltration of storm water and snow melt improved vegetation cover. Removal of roads adjacent to streams would reduce sediment contributions (Ketcheson and Megahan, 1996, Foltz et al. 2007a).

Approximately 59 miles of "undetermined" road would be placed into the storage category and returned to the Forest Service transportation system. About 13 miles of these require a stabilizing treatment that could vary from a full recontour to a partial recontour and decompaction of the road surface. These treatments though less intense than would occur on the decommissioned roads would decompact the road surface, making it more rough so that instead of water running off it could infiltrate and be available for vegetation use thus reducing runoff and erosion of the road surface (Elliot et al. 1996) and restore stream crossings so that their characteristics are similar to undisturbed conditions. Although road storage would not contribute to decreased road densities, the treatments on stored roads would bring the project area closer to a more natural hydrology (Foltz et.al., 2007b) yet retain the option to use the road in the future. Based upon monitoring of recent projects, vegetative conditions would be improved by road storage (Forest Plan Monitoring Report, 2008).

Field inventories have only identified one culvert that would need to be removed during storage or decommissioning. Work on crossing areas where culverts have already been removed would be limited to upper bank excavation intended to slope the road fill to match the surrounding landscape and allow for soil stabilization and revegetation. Mitigation in wet areas would include slashing, mulching, seeding, and fertilizing. Typically native shrubs are planted in wet areas following restoration to improve vegetation recovery near streams and improve soil stabilization thus reducing erosion. Although only one culvert has been identified for removal, it is possible that there are additional culverts to be removed. Appropriate permits would be obtained as necessary.

Sediment produced during culvert removal or when road fill around stream crossings were removed and could be deposited within a few hundred feet of the crossing site. Studies found that sediment concentrations and turbidity returned to levels measured above the culvert within about 800 feet of the work zone (Foltz, et.al. 2009). All crossing sites are located in relatively remote areas with limited development downstream. Due to the scale of the project, the number of crossings to be treated and the remoteness of the project, it is unlikely that proposed activities would affect public health or safety. Foltz found that where crossings were removed sediment levels returned to pre-project levels within two days of implementation.

The disturbed areas (mulched and seeded) would produce a small amount of sediment during the first heavy rain event following replacement. Once vegetation is established on those areas, there should be negligible erosion or sedimentation. The risk of large quantities of sediment being deposited during large storm events would be reduced by removing excess road fill at the crossings, removing any culverts and revegetating. Removal of a small amount of riparian shrubs would occur in the vicinity of the road grade, but this should not significantly impact soil and hillslope stability and viable plants would be replanted where feasible. Redistribution of stream substrates would occur immediately above, within, and just below the crossing restoring a more natural gradient to the stream.

Mitigation associated with culvert removal would include possible diversion of flows during culvert removal (through a lined ditch), use of sediment traps below the culvert during removal, and disposal of the culvert off the National Forest. Other mitigation includes a containment kit should a fuel spill occur and a Spill Prevention and Containment Plan.

Off-stream wetlands would not be affected by the proposed activities because they do not occur close enough to the work sites to be impacted by project activities. Where wetlands were formed by the compacted road prism, activity would be limited to protect the wetland resource where it does not affect stability risk.

Monitoring of road decommissioning projects on the Bitterroot National Forest (Forest Plan Monitoring Report, 2008 and 2007) found that BMP's were properly applied as State water quality standards were met. Implementation of this alternative would move the East Fork watershed towards the goal identified in the TMDL of a reduction of 42% of the road generated sediment.

Road densities would be decreased in the project area after implementation. Decompacted road surfaces, and improved vegetative cover would result in less erosion and reduce the potential for sediment deposition in streams from the road system (Ketcheson and Megahan, 1996, Foltz, et.al. 2007a, Elliot et.al.1996).

C. Cumulative Effects

The cumulative effects area for the watershed analysis is the East Fork drainage downstream to the confluence with Cameron Creek. This area was chosen because it's past, current, and foreseeable activities have or will contribute to sediment to the East Fork and the area affected by Alternative 2. The East Fork below Cameron Creek was not included because it is at the downstream end of the project area and annual monitoring (2000-2008) at three sites on the East Fork below Cameron Creek has shown that despite pulses of sediment from Highway 93 road construction and fire related debris flows the amount of sediment deposition in this section of the river changed little (USDA Forest Service, 2007 and 2008).

Watershed cumulative effects for the MCWR project is documented in Project File document WAT-4 and summarized below. The activities considered included past, current and foreseeable future actions as listed in the Schedule of Proposed Actions dated 7-1-2010 through 9-30-2010 and includes the following foreseeable projects:

- Bitterroot National Forest Travel Management Planning
- Echo Gulch Fuel Reduction
- Cameron Blue Ecoburn
- Sula District Fish Culverts
- Tepee Face Ecoburn
- West Tolan Ecoburn
- Kerlee Dowling Project

Alternative 1 (No Action)

Watershed conditions would likely continue on the same trend as currently exists. There would be no opportunity to improve infiltration or vegetation cover, sediment deposition from the undetermined roads would continue. Other activities within the project area would continue as planned, with a decision on Travel Planning occurring when that analysis is complete. Travel Planning does not identify or prescribe treatment needs but when it is completed, motorized use within the area would be identified as allowed on specific roads and areas whether or not the undetermined roads were treated to reduce watershed effects .

Alternative 2 (Proposed Action)

Sediment increases from the proposed action in the subwatersheds are small and when combined with other sediment producing activities would not lead to decreased channel conditions in the small streams of the analysis area or the East Fork. This conclusion is based on monitoring of recent similar watershed improvements have shown that sediment contributions were short-term in nature and affected only short reaches of stream (USDA FS, 2007 and 2008). Based upon this information it is unlikely that the proposed action would result in measurable changes in small tributary streams or the East Fork Bitterroot River.

In the longer term, roads placed into storage could be opened and used for timber or fire/fuels management sometime in the future. At this time, culverts would be installed and the travel-way compacted for create a drivable road. These actions, especially culvert installation would cause changes in stream channels at

crossing sites and would require additional analysis and likely mitigation at the time the roads were opened to protect water resources.

In summary, in the East Fork, it is very unlikely that short-term project-generated sediment would combine with other incremental sources to cause measurable degradation in stream channel conditions in small streams or in the East Fork Bitterroot River. In the long-term, reduction in sediment sources from the undetermined roads would contribute to improved channel conditions in the vicinity of the crossings and an overall reduction in sediment in the East Fork Bitterroot River watershed.

Consistency with the Bitterroot Forest Plan and other Regulatory Direction

A. Forest Plan Standards

The Forest Plan directs reduction of sediment from existing roads in Management Areas 1, 2, 3a and 3b (Bitterroot National Forest Land Management Plan p. III-6, III-12 and 913, III-18 and -19, and II-27). Management Area 3a, the visually sensitive East Fork Corridor, includes goals to maintain soil productivity and stability, minimize soil erosion, surface disturbance, and stream sedimentation (p. III-18).

- Alternative 1 would not be consistent with the Forest Plan because it doesn't make effort to reduce sediment from forest roads.
- Alternative 2 is consistent with the Forest Plan because it would reduce sediment from existing roads by decompacting road surfaces, restoring drainage pathways, improving vegetation cover. These actions would improve infiltration of precipitation, reduce erosion and foster plant growth on the treated surfaces. .
- Streamtypes and wetlands have been mapped (PF-WAT-2 and -3). The watershed conditions are discussed by stream in Existing Condition section of this report.

B. Best Management Practices

The application of BMPs (ARM 16.20.603) is the foundation of water quality standards for Montana. The application of BMPs would meet the State of Montana requirement for the maintenance of beneficial uses.

Mitigation as described on pages 16 - 18 of this report is a summary of management practices that reduce long-term watershed effects. Any mitigation associated with permits obtained for instream work would also be included in project implementation.

C. Clean Water Act

Section 303(d) directs states to list water quality impaired streams (WQLS) and develop total maximum daily loads (TMDL) to control non-point source pollution. The analysis area is within the East Fork of the Bitterroot drainage and a TMDL and Restoration Plan was completed for the area in 2005. With the implementation of Alternative 2, a portion of the sediment sources in the East Fork Bitterroot watershed would be reduced or eliminated after implementation and revegetation.

Alternatives 2 would be consistent with the TMDL and Clean Water Act. The Headwaters TMDL included a restoration plan that directed the Forest to reduce sediment from forest roads by 42%. This action would move towards that reduction. The Montana Department of Environmental Quality has been included in scoping and will be sent a copy of this EA and their input requested.

4.2.2 FISHERIES

A. Alternative 1

Under the No Action alternative, the existing road impairments (primarily sediment contributions at road stream crossings) are expected to continue at roughly their same magnitude. The upper 0.3 miles of spawning and rearing habitat in Lodgepole Creek would remain inaccessible to westslope cutthroat trout and bull trout because of the fish barrier culvert on Forest Road 73279. There would be no change in road densities or the number of road stream crossings. Roads would continue to pose an unacceptable risk to

bull trout recovery. Also, the Endangered Species Act (ESA) states, "…it is the responsibility of the agency to carry out programs for the conservation of threatened or endangered species" (Section 7 (a), (USDI Fish and Wildlife Service, 1988). Selecting the No Action alternative would not support the agency's obligation to meet its ESA responsibilities for the threatened bull trout.

B. Alternative 2

Under Alternative 2, construction-generated sediment and turbidity increases would temporarily impact small numbers of bull trout and westslope cutthroat trout individuals and localized patches of habitat. These short-term impacts would be followed by long-term reductions in road sediment and improvements in watershed health. The improvements would commence when healthy vegetative cover returns to the obliterated road prisms, which typically occurs within three years of obliteration.

The scientific literature reviewing roads almost universally agrees that watersheds with higher road densities, roads in use, and road-stream crossings have higher amounts of sediment in their streams compared with watersheds that have lower levels of road influence (Furniss et al. 1991; Quigley and Arbelbinde, 1997; Baxter et al. 1999). Few studies, however, have examined whether decommissioning reverses these effects. On the Flathead National Forest, McCaffery et al. (2007) found less sediment in watersheds where decommissioned roads had a high amount of vegetation regrowth versus watersheds where decommissioned roads contained only sparse vegetation, and concluded that decommissioning roads that lead to a high level of revegetation probably reduces sediment in streams. Wegner (1999) documented a 48% decline in sediment and 16% increase in bull trout redds in a Kootenai National Forest watershed in the 5 years following road decommissioning.

Obliterating roads would temporarily increase sediment in localized patches of bull trout and westslope cutthroat trout habitat when culverts are removed and road fills are recontoured. However, the direct effect on bull trout and westslope cutthroat trout populations would be minimal because most of the road stream crossings in this project are located on small, non-fish bearing headwater streams (many are intermittent) which do not contain suitable fish habitat within the first half mile of stream below their road crossings. In many cases, the nearest suitable fish habitat occurs at least a mile downstream of the affected road crossing. Foltz et al. (2007a) reported that removing a culvert during road obliteration contributed an average of 67 kilograms (kg) of sediment to streams without use of a straw bale sediment trap, and an average of 1.6 kilograms with a straw bale sediment trap. Sediment concentrations 100 meters downstream of the culverts were reduced by an order of magnitude, and sediment concentrations an average of 810 meters downstream remained similar to pre-activity concentrations throughout the entire excavation period (Foltz et al. 2007a). Based on that data, most of the bull trout and westslope cutthroat trout that occur in the project area would not be exposed to direct sediment or turbidity impacts.

During subsequent high flow events, some of the sediment that is deposited below the road crossings would eventually get transported downstream into occupied bull trout and westslope cutthroat trout habitat, but by that time, it would be so widely scattered over a considerable distance that it would have an invisible effect on bull trout and westslope cutthroat trout individuals or habitat quality.

In the few localized patches of suitable habitat where bull trout and westslope cutthroat trout are present immediately downstream of road crossings, the short-term sediment inputs caused by obliterating roads and removing culverts could cause small numbers of bull trout and westslope cutthroat trout to temporarily vacate their territories below the road crossings for short periods of time (usually < 24 hours). Once the turbidity settles out of the water column (usually within 24 hours of removing the culvert – see Foltz et al. 2007a), those fish are likely to reoccupy their territories and resume social behaviors. Turbidity could also have sub-lethal effects on individual bull trout and westslope cutthroat trout such as gill flaring, coughing, avoidance, and increase in blood sugar levels. These sub-lethal effects could affect fish for periods of less than two hours, and minor behavior modifications could persist for less than eight hours (National Marine Fisheries Service 2006; USDI Fish and Wildlife Service 2006). The place where bull trout and westslope cutthroat trout are most likely to temporarily vacate their territories or be exposed to sub-lethal effects is in

Lodgepole Creek downstream of the FSR 73279 culvert. Both species occur at low densities downstream of the culvert.

The sediment deposition caused by the removing the FSR 73279 culvert would remain until the next scouring peak flow occurs, which is typically an 8-9 month period between summer low flows and the next spring's peak flows. During that time, bull trout and westslope cutthroat trout spawning and rearing habitat, hiding cover, and aquatic insect food supply would be locally reduced and degraded below the FSR 73279 crossing, with the most affected area likely being the first 600 feet of stream immediately below the road crossing (National Marine Fisheries Service, 2006: pgs 63-64). After the peak flows flush the sediment from the area, visual deposition is likely to disappear and habitat quality is expected to rebound to, or close to, it's pre-disturbance condition.

Although sediment and turbidity could negatively affect small numbers of bull trout and westslope cutthroat trout individuals in the short-term, we do not expect it to cause mortality of juvenile or adult bull trout and westslope cutthroat trout, nor do we expect it to create long-term reductions in habitat quality (National Marine Fisheries Service 2006; USDI Fish and Wildlife Service 2006). Because mortality of juveniles and adults is not expected to occur, bull trout and westslope cutthroat trout populations would remain at or near their existing levels. Depending on timing of the work, it is possible that suspended and deposited sediments could reduce egg survivorship and fry emergence in a few westslope cutthroat trout redds in Lodgepole Creek. Replacing or removing culverts during seasonal low flows (typically late July and throughout August) avoids the westslope cutthroat trout (May/June) and bull trout (September/October) spawning periods, and would minimize sediment impacts on incubating eggs and emerging fry. Implementing the mitigation measures would limit sediment inputs to the least extent possible.

When healthy vegetative cover returns to the obliterated road prisms (typically within three years of obliteration), Alternative 2 is expected to improve bull trout and westslope cutthroat trout habitat and overall watershed health. The following beneficial changes would occur in the affected 6th code HUCs:

- road densities would decrease
- the number of road stream crossings would decrease
- the active drainage network would be reduced
- infiltration rates would increase on the treated roads
- there would be less overland flow and erosion on the treated roads
- road sediment inputs would decrease
- the risk of road failures would be reduced
- the number of runoff events triggered by large storms is likely to decrease

The numbers in Table 10 were derived from a GIS exercise conducted by Abby Kirkaldie, Bitterroot NF south zone GIS specialist, in December 2010.

Table 11: Road Attributes Before and After Treatment

NRCS 6th Code HUC	Number of Road Stream Crossings in HUC	Road Density in HUC (miles/miles^2)	Perennial Stream Length Within 300 Feet of Roads (percent)
170102050402 Martin Creek	13 (before) 4 (after)	2.9 (before) 1.4 (after)	19 (before) 6 (after)
170102050404 Meadow Creek	23 (before) 21 (after)	2.7 (before) 2.5 (after)	36 (before) 29 (after)

NRCS 6th Code HUC	Number of Road Stream Crossings in HUC	Road Density in HUC (miles/miles^2)	Perennial Stream Length Within 300 Feet of Roads (percent)
170102050405 Bertie Lord Creek	27 (before) 18 (after)	6.1 (before) 4.3 (after)	35 (before) 12 (after)
170102050503 Middle East Fork	27 (before) 26 (after)	2.7 (before) 2.5 (after)	24 (before) 23 (after)
170102050504 Cameron Creek	39 (before) 32 (after)	3.5 (before) 2.9 (after)	26 (before) 18 (after)

"before" is the existing condition
"after" is the new condition after the road treatments (decommissioning and storage) in this project have been implemented (Alt. 2)

The effect of road storage and decommissioning is the same on fisheries resource: connectivity is improved, the risk of sediment contributions decreases. This is because the treatment at crossings is the same for road storage or decommissioning. The road decommissioning and storage treatments would eliminate a total of 28 road stream crossings, which would reduce road sediment inputs to streams. These reductions would commence when healthy vegetative cover returns to the obliterated road prisms, which typically occurs within three years of obliteration.

Removing the FSR 73279 culvert in the Lodgepole Creek drainage would eliminate a barrier to the upstream movement of bull trout and westslope cutthroat trout, and reconnect approximately 0.3 miles of potential spawning and rearing habitat for both species. Following removal of the FSR 73279 culvert, there would no longer be any man-made fish passage impediments in Lodgepole Creek.

C. Cumulative Effects

The fisheries cumulative effects analysis area consists of the five 6th code watersheds where road decommissioning and storage activities would occur. Those watersheds are:

- Martin Creek, 6th code HUC 170102050402
- Meadow Creek, 6th code HUC 170102050404
- Bertie Lord Creek, 6th code HUC 170102050405
- Middle East Fork, 6th code HUC 170102050503
- Cameron Creek, 6th code HUC 170102050504

The five watersheds listed above were chosen as the fisheries cumulative effects area because ongoing or reasonably foreseeable activities that occur in those watersheds could have the potential to combine with this project to affect bull trout, westslope cutthroat trout, and western pearlshell mussel populations and habitat. Any projects that occur outside of the five watersheds listed above would be too far away to combine with this project and create cumulative effects.

Alternative 1 (No Action)

Any sediment produced by ongoing and foreseeable activities would be contributed to streams at the same time as sediment produced by the roads in this project. However, because the majority of the roads in this project are not major sediment producers (most of the roads are not accessible to OHVs and have decent vegetative cover) and the ongoing and foreseeable activities are unlikely to contribute measurable amounts of sediment, the combination of sediment from all activities is unlikely to change fish habitat and populations to a degree that could be detected and measured. Most of the roads in this project affect non-

fish bearing tributaries where the nearest occupied bull trout and westslope cutthroat trout habitat occurs a considerable distance downstream of the road. In the few areas where combined sediment inputs could directly occur in occupied fish habitat and overlap in time and space, it is unlikely that the combined inputs would be large enough that we would be able to see and measure changes to habitat. Where permitted grazing occurs (Meadow, Cameron, and Middle East Fork HUCs), a few of the roads in this project provide livestock with easy access to riparian areas, which increases bank trampling and habitat impacts on the reach and habitat unit scale. This is most evident along the lower half mile of Bugle Creek. Elsewhere, the roads in this project provide livestock with easy access to a few stream crossings, but none are known to have widespread stream bank damage. To summarize, the combined effects resulting from no action and ongoing/foreseeable activities are likely to be too small to be seen and measured. However, there would be no improvement in overall watershed health, which is a negative outcome for the native fishery. At best, bull trout and westslope cutthroat trout habitat quality would continue at roughly the same suppressed condition as currently exists.

For bull trout, the No Action alternative typically results in a "no effect" ESA determination. However, this project is a unique because the U.S. Fish and Wildlife Service has already determined that the existing condition (i.e. high road densities, a large number of road stream crossings, and a high percentage of perennial streams within 300 feet of roads) poses an unacceptable risk to the recovery of bull trout (USDI Fish and Wildlife Service, 2010). Taking no action to lessen the risk to bull trout would be inconsistent with the Forest Service's obligation to meet its ESA responsibilities. Therefore, for the No Action alternative, the ESA determination for threatened bull trout populations and their critical habitat is "MAY AFFECT, LIKELY TO ADVERSELY AFFECT".

For westslope cutthroat trout, the project determination for the No Action alternative is "MAY IMPACT INDIVIDUALS OR HABITAT, BUT WITH NO LOSS OF VIABILITY OR TREND TOWARDS FEDERAL LISTING". The high road densities in the project area suppress westslope cutthroat trout individuals and habitat in some streams, but the impact does not appear to be significant or widespread. Westslope cutthroat trout are still common and widely distributed throughout the project area despite the high road densities. With the No Action alternative, viable populations of westslope cutthroat trout are likely to be maintained at both the project and Forest-wide scales. The fisheries Biological Evaluation is available in the project file.

For western pearlshell mussel, the project determination for the No Action alternative is "NO IMPACT". Mussels have not been found near the roads being analyzed in this project. Where mussels have been found, they occur considerable distances downstream of the project area in the East Fork Bitterroot River or the lower ends of the project area HUCs. Other overriding factors (grazing, dewatering, highways, etc) influence the quality of mussel habitat. The roads being analyzed in this project have negligible impact on the quality of mussel habitat. Little is known about the viability of the western pearlshell mussel in the Bitterroot River drainage. However, the No Action alternative is unlikely to affect current viability. The fisheries Biological Evaluation is available in the project file.

Finally, selecting the No Action alternative would be inconsistent with the Forest Plan (USDA Forest Service, 1987) as amended by the Inland Native Fish Strategy (INFISH) (USDA Forest Service, 1995). INFISH standard RF-3c directs the Forest to "close, stabilize, or obliterate roads not needed for future management activities, and prioritize these actions based on the current and potential damage to inland native fish in priority watersheds and the ecological value of the riparian resources affected" (USDA Forest Service, 1995: pg A-8). INFISH standard RF-5 directs the Forest to "provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams" (USDA Forest Service, 1995: pg A-8). Neither of those standards would be met with the No Action alternative.

Alternative 2 (Proposed Action)

Alternative 2 has a low risk of causing non-significant cumulative effects on the fishery. Sediment is the only possible cumulative effect that could result from this project. However, because project-generated

sediment inputs would be highly localized in place and time, they are very unlikely to combine with sediment produced by ongoing/foreseeable activities and create negative effects on the fishery. Most of the roads in this project are stable, vegetated, and recovering naturally. For the most part, they have been dormant for at least several decades, and none are currently known to be large sediment producers to fish habitat. OHV and full-size vehicle use, where it occurs on a subset of the roads, is not a large sediment producer to fish habitat. OHV and vehicle use has negligible potential to create cumulative sediment impacts when combined with sediment from this project.

The majority of the roads in this project are located in drainages where no other management activities are occurring or likely to occur that would pose a cumulative sediment concern to the fishery. Also, most of the roads in this project affect non-fish bearing tributaries where the nearest occupied bull trout and westslope cutthroat trout habitat occurs a considerable distance downstream of the road. In the few areas where cumulative sediment inputs could occur in occupied fish habitat and overlap in time and space, it is unlikely that the combined inputs would be large enough that we would be able to see and measure changes to habitat.

Where permitted grazing occurs (Meadow, Cameron, and Middle East Fork HUCs), a few of the roads in this project provide livestock with easy access to riparian areas, which increases bank trampling and habitat impacts on the reach and habitat unit scale. This is most evident along the lower half mile of Bugle Creek. Decommissioning or storing those roads will help keep cows out of sensitive riparian areas, which is beneficial to the fishery. Elsewhere, the roads in this project provide livestock with easy access to a few stream crossings, but none are known to have widespread stream bank damage. The grazing allotments that are active in the project area (Meadow Tolan, East Fork, and Sula Peak) are not major sediment producers, and are unlikely to pose a cumulative sediment risk to the fishery.

The timber harvest, thinning, and prescribed burning activities in the Middle East Fork and Kerlee Dowling projects are either mostly completed (Middle East Fork) or on hold due to poor economic conditions (Kerlee Dowling). Because of the protection afforded by INFISH Riparian Habitat Conservation Areas and yarding system mitigation measures, these projects have either been shown to be negligible sediment producers (Middle East Fork), or are considered to be very low risk of producing sediment (Kerlee Dowling). The Middle East Fork and Kerlee Dowling projects would not combine with this project to cumulatively increase sediment in fish habitat.

Sediment produced by road maintenance has negligible potential to combine with sediment produced by this project. The roads that would be decommissioned or stored in this project have not had any maintenance for many years, and there are no stream reaches where sediment produced by this project is likely to overlap in space and time with sediment produced by road maintenance.

The Sula District Fish Culverts project is a reasonably foreseeable activity that proposes to replace 16 fish culvert barriers in scattered locations throughout the Sula Ranger District. The culvert replacements would be implemented over the next decade, with roughly 1-2 culverts being replaced or removed per year. Only one of the culverts is located in a 6th code HUC where this project would occur (Bush Creek, FSR 726 crossing). The sediment produced by replacing that culvert is too far away from the areas potentially affected by this project to create cumulative effects on the fishery.

To summarize, the cumulative sediment effects resulting from Alternative 2 and the ongoing and foreseeable activities are predicted to be insignificant. Combined overlap of sediment in space and time is unlikely to occur in the majority of streams. In the few instances where overlap may occur, the combined quantities of sediment would be too small to be seen and measured. There is no risk of cumulative impacts occurring to any other fish population or habitat attributes. The combined effect of this project with all other ongoing and reasonably foreseeable projects would be to maintain existing water temperatures.

For bull trout and their critical habitat, the ESA project determination for Alternative 2 is “MAY AFFECT, LIKELY TO ADVERSELY AFFECT”. Although this project would be beneficial to bull trout in the long-

term, there is risk of short-term sediment inputs adversely affecting a few individual bull trout, particularly in Lodgepole Creek downstream of the FSR 73279 culvert removal site. A project-specific Biological Assessment was not prepared for this project because Section 7 Endangered Species Act consultation has already been addressed in the Biological Opinion of the Effects to Bull Trout and Bull Trout Critical Habitat from Road Management Activities on National Forest System and Bureau of Land Management Lands in Western Montana (USDI Fish and Wildlife Service 2008). This Biological Opinion was signed on April 29, 2008, and is commonly referred to as the "Montana LAA Roads Programmatic BO." The Biological Opinion allows beneficial road-related projects such as road decommissioning and storage to proceed without individual consultations as long as they incorporate certain sediment mitigations and timing windows. Those mitigations have been incorporated into this project. In the Biological Opinion, the U.S. Fish and Wildlife Service concluded that sediment produced by road decommissioning and storage is "not likely to jeopardize the continued existence of bull trout or result in destruction or adverse modification of critical habitat." The incidental take statement in the Biological Opinion acknowledges some risk that individual bull trout or their habitats could be negatively affected by sedimentation in the short-term. However, the negative impacts on habitat would be limited in scope and duration and would only affect small numbers of bull trout. Finally, the long-term impact on bull trout would be beneficial at both the local stream population scale and the regional meta-population scale. A copy of the Biological Opinion is available in the project file.

For westslope cutthroat trout, the project determination for Alternative 2 is "MAY IMPACT INDIVIDUALS OR HABITAT, BUT WITH NO LOSS OF VIABILITY OR TREND TOWARDS FEDERAL LISTING" in the short-term, and "BENEFICIAL IMPACT" in the long-term. Viable populations of westslope cutthroat trout would be maintained at both the project and Forest-wide scales. The Fisheries Biological Evaluation is available in the project file.

For western pearlshell mussel, the project determination for Alternative 2 is "NO IMPACT" in the short-term, and "BENEFICIAL IMPACT" in the long-term. Implementation of Alternative 2 is unlikely to cause sediment deposition in any areas where mussels are known to occur (lower Cameron Creek) or where suitable habitat is thought to be present. In the long-term, although direct habitat improvements may be difficult to demonstrate or measure, the improved watershed health and water quality produced by Alternative 2 would be beneficial to the western pearlshell mussel. Little is known about western pearlshell mussel viability; however, Alternative 2 would improve habitat conditions for mussels in the long-term and is unlikely to affect mussels in the short-term. As a result, current viability would be maintained. The fisheries Biological Evaluation is available in the project file.

Alternative 2 is consistent with the Forest Plan as amended by INFISH. Alternative 2 would not impede attainment of the riparian management objectives, and would adequately protect riparian habitat conservation areas and inland native fish. Alternative 2 would meet INFISH standards RF-2b (road locations in riparian areas would be minimized and natural hydrologic flow paths would be restored), RF-3c (roads not needed for future management would be obliterated and stabilized), RF-5 (fish passage would be provided at all road crossings) and WR-1 (project would promote long-term ecological integrity, conserve genetic integrity, and contribute to the attainment of riparian management objectives). INFISH standards have been incorporated into the project design and mitigations. Decommissioning and storing roads for fisheries improvement purposes is consistent with Forest Plan goals, objectives, and standards for Management Area 3b (USDA Forest Service, 1987; pages III-22 to III-28).

Consistency with the Bitterroot Forest Plan and other Regulatory Direction

Forest Plan goals, standards, and objectives for the fishery are contained in two documents:

1. The 1987 Bitterroot National Forest Plan (USDA Forest Service, 1987)
2. The Inland Native Fish Strategy (commonly referred to as INFISH) (USDA Forest Service, 1995)

In the 1987 Forest Plan, the Forest-wide goals, standards, and objectives that are pertinent to this project include:

- Provide habitat to support viable populations of native and desirable non-native wildlife and fish (goal, pg II-3)
- Maintain habitat for the possible recovery of threatened and endangered species (goal, pg II-3)
- Maintain riparian flora, fauna, water quality, and recreation activities (goal, pg II-3)
- Maintain soil productivity, water quality, and water quantity (goal, pg II-3)
- Design transportation systems and road management programs that are responsive to public concerns and protect resource goals (goal, pg II-3)
- Maintain habitat to support current populations of catchable trout (objective, pg II-5)
- Maintain or enhance fish habitat by…minimizing the miles of road needed for management, requiring high standards for road construction and maintenance, reducing sediment from existing roads…(objective, pg II-5)
- Manage riparian areas to prevent adverse effects on channel stability and fish habitat (objective, pg II-6)
- Minimize the extent of the road system needed for resource management (objective, pg II-7)
- Minimize adverse effects on water quality and fish habitat during construction and maintenance (objective, pg II-7)
- Cutthroat trout populations will be used as an indicator of fisheries habitat changes (standard, pg II-20)
- Watershed project analysis will estimate the effects of sediment on fish habitat (standard, pg II-20)
- The habitat needs of sensitive species, as listed by the Regional Forester, will be considered in all project planning (standard, pg II-21)
- Actively reduce sediment from existing roads…(standard, pg II-25)
- Roads will be maintained to design standards (standard, pg II-27)
- Roads will be closed to public use if adequate road maintenance funds are not available (standard, pg II-27)

Most of the roads in this project have segments located within Forest Plan Management Area (MA) 3b, which consists of the riparian habitat along stream corridors. The MA 3b goals and standards that are pertinent to this project include:

- Manage riparian areas to maintain flora, fauna, water quality, and water-related recreation activities. Emphasize water and soil protection, dispersed recreation, visual quality, and old growth…Roading in riparian areas will be restricted to meet water quality and fish objectives (goal, pg III-22)
- Nonfisheries riparian areas will be managed to provide for old growth and woody debris recruitment to prevent degradation of stream channel conditions, water quality, downstream fisheries capability, and wildlife habitat (standard, pg III-23)
- Stream channel equilibrium and downstream fisheries habitat capability will be maintained by protecting the riparian characteristics needed to naturally filter overland flows through riparian areas, stabilize stream channels, and provide woody debris for stream sediment traps (standard, pg III-23)
- Interdisciplinary teams will analyze the effect of each project on riparian areas and will document the analysis and management recommendations in project environmental analysis reports…(standard, pg III-24)
- Manage roads so that open road mileage adjacent to fisheries streams is limited to the current

level (standard, pg III-25)
- Utilize watershed rehabilitation projects, such as road cut or fill slope slump stabilization, to repair problems (standard, pg III-27)

INFISH amended the Forest Plan in 1995. The INFISH amendment to the Forest Plan established additional Forest-wide fisheries standards. These standards are listed on pages A-6 to A-13 of the INFISH EA/Decision Notice (USDA Forest Service, 1995). The INFISH standards that are pertinent to this project include:

- **RF-2** For each existing or planned road, meet the Riparian Management Objectives (RMOs) and avoid adverse effects to inland native fish by: (b) minimizing road and landing locations in Riparian Habitat Conservation Areas (RHCAs); (c) initiating development and implementation of a Road Management Plan or a Transportation Management Plan; (d) avoiding sediment delivery to streams from the road surface; and (e) avoiding disruption of natural hydrologic flow paths.
- **RF-3** Determine the influence of each road on the RMOs. Meet RMOs and avoid adverse effects on inland native fish by: (c) closing and stabilizing or obliterating, and stabilizing roads not needed for future management activities. Prioritize these actions based on the current and potential damage to inland native fish in priority watersheds, and the ecological value of the riparian resources affected.
- **RF-5** Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams.
- **RA-4** Prohibit storage of fuels and other toxicants within RHCAs. Prohibit refueling within RHCAs unless there are no other alternatives. Refueling sites within RHCAs must be approved by the Forest Service and have an approved spill containment plan.
- **WR-1** Design and implement watershed restoration projects in a manner that promotes the long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and contributes to the attainment of RMOs.

This project would comply with all of the pertinent Forest Plan standards, objectives, and guidelines as amended by INFISH. The Forest Plan, and particularly INFISH, takes a strong and consistent view that road impacts should be minimized in riparian areas. This project would comply with INFISH standards RF-2, RF-3, RF-5, RA-4, and WR-1. It would also be consistent with the MA 3b goals and standards that emphasize protecting water quality and reducing road impacts on riparian areas and the fishery.

4.2.3 ROADS AND UNROADED RECREATION

A. Alternative 1

Enforcement of motorized use restrictions and other regulations would continue. The area would continue to be patrolled and monitored by our OHV Ranger. Existing road and regulatory signs, including travel management, would be posted and replaced as needed.

There would be no change in access, road conditions, or the status of the undetermined roads within the project area. There would continue to be over 121 miles of undetermined roads in the project area, plus those system roads that also provide access. The long-term need for these undetermined roads would not be clarified. None of the undetermined roads that need stabilizing treatment (33 miles) would receive maintenance (they are not part of the forest road system). It is likely that OHV use would continue on those roads presently being used. The Forest Plan directs managers to “minimize the extent of the road system needed for resource management” (page II-7).

B. Alternative 2

Enforcement of motorized use restrictions, and other regulations would continue. The area would continue to be patrolled and monitored by Bitterroot National Forest OHV Ranger. Existing road and regulatory signs, including travel management, would be posted and replaced as needed.

Alternative 2 would identify those undetermined roads that are needed to effectively manage and provide access to the National Forest in this area and place them on the forest transportation system. Fifty-nine miles of undetermined road have been found needed for future access or management of the National Forest. These roads will be restored as needed to reduce soil and water concerns and be returned to the Forest road system as stored roads, they will be available for use in the future. Treatment on stored roads would include restoration of crossings (removal of culverts and excess fill), decompaction of the road surface, blocking of entrances either by recontouring or other methods. The remainder of the undetermined roads would be decommissioned and where needed, treated to reduce sediment and soil concerns, these would not be available for use as a road suitable for use by full sized vehicles in the future. **Treatments on road segments within this project area will address resource concerns and accommodate travel management decisions made in the Bitterroot National Forest Travel Planning Project EIS.**

Alternative 2 does not address motorized access, meaning that it does not identify where motorized travel is appropriate. This decision will be made with the Travel Planning EIS (Travel Planning) .The following table identifies roads that reside within the Martin Creek watershed restoration project and are specifically mentioned in Travel Planning. Portions of these roads are on the forest transportation system; these sections are not part of this project and would not receive any treatment with this project. A portion of these roads are identified as undetermined in the database; these are the sections that are proposed for treatment with Alternative 2. The following table has been edited to display the system road segment separately from the section of the road that is listed as undetermined in the forest roads database.

Table 12: Roads Residing in Martin Creek Watershed Restoration Project that are discussed in Travel Planning

Road Number	Watershed Area	Total Miles	Alternative 2 Proposed Treatment
722	Martin Creek	0.0-0.8 0.8-4.6	System Road, no change Undetermined Road, Store – No Treatment
73008	Bertie Lord Creek	3.7	Undetermined Road, Store – No Treatment
73016	Bertie Lord Creek	1.0	Undetermined Road, Store – No Treatment
73076	Martin Creek	1.4	Undetermined Road, Store – No Treatment
73264	Dowling Creek	0.8	Stored System Road, remove from project
73623	Bugle Creek	0.1	Spot Treatment at Stream Crossing
73624	Bugle Creek	1.1	Remove from project

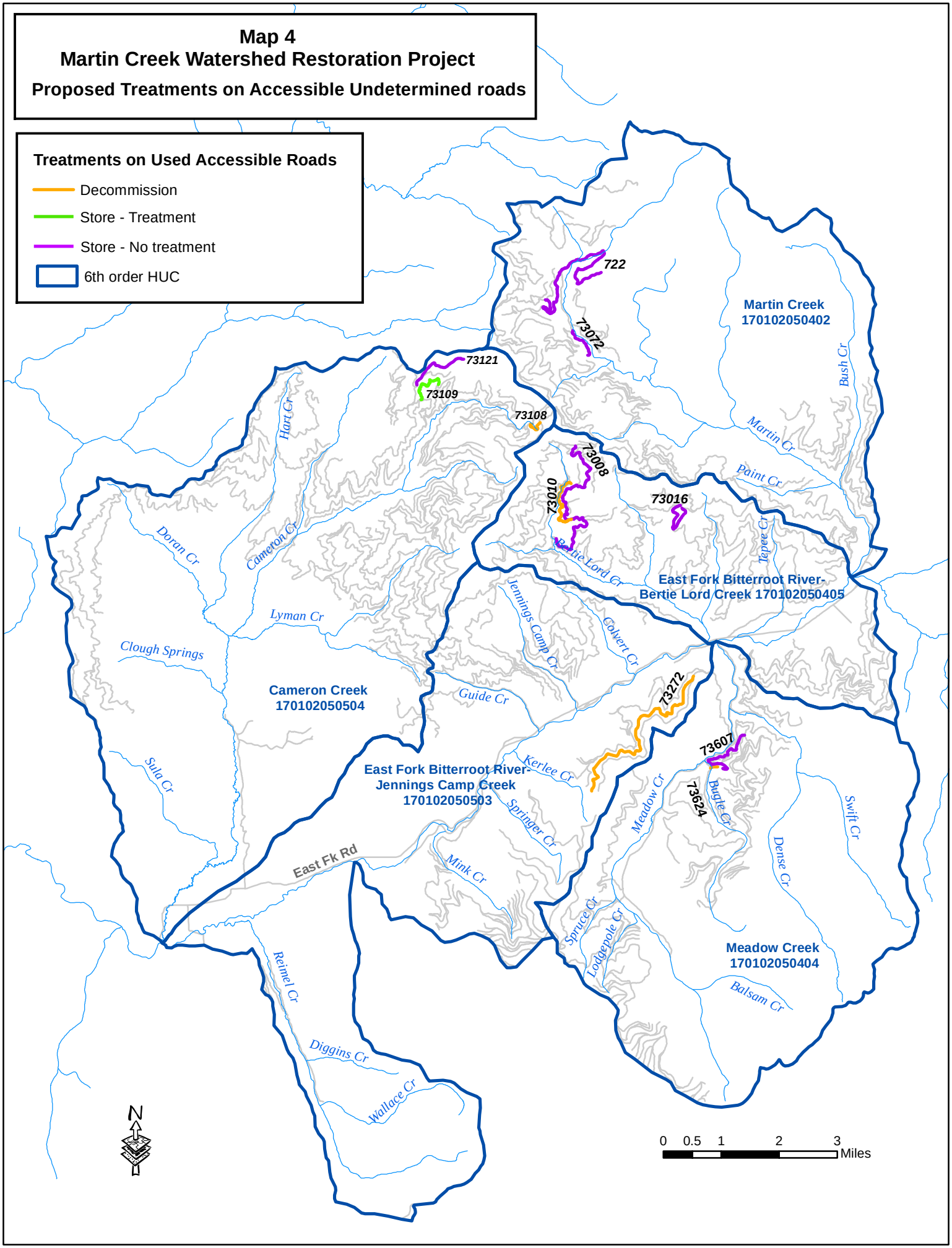
No system roads are proposed for treatment with this project.

Table 13, below displays undetermined roads that are currently being used at some level by motorized vehicles as reported in the 2009 field inventory. Map 4 shows these roads and used and the treatment as proposed in Alternative 2.

Table 13: Undetermined Road Used by Motorized Vehicles in the 2009 Field Inventory

Road Number	Proposed Alternative 2 Treatment	Road Number	Proposed Alternative 2 Treatment
73272	Decommission with Treatment	73010	Decommission with Treatment
722	Store without Treatment	73072	Store without Treatment
73121	Store without Treatment	73016	Store without Treatment
73108	Decommission with Treatment	73008	Store without Treatment
73607	Store without Treatment	73109	Store .9 miles with Treatment, no treatment on the remainder
73624	Dropped from project	73623	Already decommissioned, treat eroding stream crossing

Map 4 shows Proposed Treatment on Undetermined Roads:


Map 4
Martin Creek Watershed Restoration Project
Proposed Treatments on Accessible Undetermined roads
Treatments on Used Accessible Roads
Decommission
Store - Treatment
Store - No treatment
6th order HUC
722
73072
73121
73109
73108
73008
73010
73016
73272
73607
73624
Martin Creek
170102050402
East Fork Bitterroot River-
Bertie Lord Creek 170102050405
Cameron Creek
170102050504
East Fork Bitterroot River-
Jennings Camp Creek
170102050503
Meadow Creek
170102050404
Hart Cr
Bush Cr
Martin Cr
Paint Cr
Tepee Cr
Bertie Lord Cr
Doran Cr
Cameron Cr
Lyman Cr
Clough Springs
Jennings Camp Cr
Golvert Cr
Guide Cr
Kerlee Cr
Springer Cr
Sula Cr
East Fk Rd
Mink Cr
Meadow Cr
Bugle Cr
Swift Cr
Dense Cr
Spruce Cr
Lodgepole Cr
Balsam Cr
Reimel Cr
Diggins Cr
Wallace Cr
N
0 0.5 1 2 3
Miles

Forest Road 73094 is a 0.8 mile long road with a kelly hump that is intended to restrict full sized vehicle travel beyond that point. Two roads 73097, 73095, and Trails 330 and 331, are not on current maps but are located beyond the kelly hump located at milepost 0.8. No treatment is proposed either on the system road section of FSDR 73094 or on the undetermined roads beyond milepost 0.8. FSDR 73094 is proposed for storage without treatment with Alternative 2.

For information regarding motorized travel on National Forest System Roads or Trails within MCWR project, please reference the Bitterroot National Forest Travel Planning Project EIS. The Draft can be found at the following website: http://www.fs.fed.us/nepa/fs-usda-pop.php/?project=21183 . There are no potential conflicts between the proposed action and Travel Planning. MCWR will not limit motorized travel in the project area, instead it identifies which undetermined roads are needed for future forest management, and potential treatments for hydrologic stabilization for roads within the project area. Treatments on road segments identified in Alternative 2 would address resource concerns and accommodate travel management decisions made in Travel Planning.

C. Cumulative Effects

The cumulative effects area for the Roads and Roaded Recreation resource includes the system and non-system roads within the analysis area. This was selected as the cumulative affects area because these roads provide access for forest management as well as recreation within the project area.

Alternative 1 -No Action

There would be no changes in the existing road system, the status of the undetermined roads be determined at a later date.

Travel planning, a large ongoing project, would continue and determine where motorized access is appropriate and which areas of the forest would be closed to motor vehicle use. Travel planning would not identify the long term management need for the undetermined roads nor address restoration needs to protect and improve water quality or other resources.

The cumulative effect of the no action alternative would be that Travel Planning and other projects in the area would continue as planned but the long-term need for undetermined road system would not be identified. The minimum road system would still need to be identified to comply with 36 CFR 212 Subpart A, Section 212.5 (b) (1) Identification of road system.

Alternative 2- Proposed Action

Martin Creek Restoration Alternative 2 does not address where motorized use is appropriate. Travel planning would determine where motorized access is appropriate and which areas of the forest would be closed to motor vehicle use, Alternative 2 is intended to compliment travel planning by addressing watershed concerns. Proposals for roads that initially conflicted with travel planning were either dropped from Alternative 2 or were amended to eliminate conflict.

Alternative 2 would not reduce motorized recreation opportunities when combined with other reasonably foreseeable projects. Should the Martin Creek Watershed Restoration decision be made prior to completion of Travel Planning, only those treatments in Alternative 2 necessary to protect the aquatic resource would be implemented on roads that are currently accessible to motorized vehicles. Travel planning would identify where motorized use was appropriate and after completed, more intensive restoration activities on roads currently accessible to motorized vehicles would be implemented. Combined with Travel Planning, Alternative 2 would contribute to effectiveness of Travel Planning restrictions on those roads included in this project due to the types of treatments (decompaction, restoration (recontouring) of stream crossings and drainage paths and entrances but it would not be the cause of travel restrictions.

The Bitterroot Headwaters TMDL developed a restoration plan to reduce sediment from forest roads, with selection and completion of Alternative 2, the Forest would move to closer to reaching the goal of reducing sediment from forest roads in the East Fork Bitterroot watershed.

Consistency with the Bitterroot Forest Plan and other Regulatory Direction

Alternative 2 is consistent with the Forest Plan as described for Management Area (MA) 1 on page III-6, MA 2 on page III-13, MA 3a on page III-19, and MA3b on page III-27. These sections describe that road density will be determined through transportation planning and interdisciplinary team review and documented in project environmental reports. In the Martin Creek Watershed Restoration Project, the interdisciplinary team, along with a transportation planner reviewed all of the undetermined roads in the project, and evaluated current and future access needs as provided by the undetermined and the nearby system roads. This project is designed to provide reasonable access while protecting or improving aquatic resources to meet the intent of the Clean Water Act and Bitterroot Headwaters TMDL.

4.3 Description of Resources not directly affected

4.3.1 SILVICULTURE AND FUELS MANAGEMENT

A. Alternative 1 - No Action

Alternative 1 would not alter access for vegetation or fire management. The existing system roads provide adequate access in the short-term. In the long-term, it would be necessary to identify which roads were needed for vegetation and fuels management access.

B. Alternative 2 – Proposed Action

Selection of Alternative 2 would change but not eliminate access for fire, fuels, or vegetation management. The majority of the roads proposed for treatment under this alternative are currently in a condition that does not allow use for fire or vegetation management. The majority of suppression fires are accessed by foot from the nearest drivable system road. The preferred travel routes for forest management were identified during project planning and roads analysis (PF-ROAD-1) and these, along with the regular system roads would be available for use for forest management activities.

There would be no cumulative effects on vegetation, fuels or fire management considering past, present and reasonably foreseeable activities and projects in conjunction with selection of this alternative because there are no direct or indirect effects.

Sufficient access is maintained to manage fire, fuels and vegetation and for potential future timber management activities in the Timber Management Areas identified in the Forest Plan. This is consistent with Forest Plan direction to use environmentally acceptable methods for accessing and harvesting timber.

4.3.2 WILDLIFE

A. Alternative 1 – No Action

Wildlife conditions would remain the same. Most culverts have already removed with the exception of one known culvert on Lodgepole Creek. There would be no opportunity to improve the crossings by reducing slope and improving vegetative cover, the crossing areas would continue to make wildlife crossing through crossing areas more vulnerable to predation.

There would be no improvement or treatment on thirty-four miles of road that would to reduce compaction or improve vegetation recovery. Compacted soils would continue to limit the variety of species colonizing road-beds and the vigor of their growth. There would be no opportunity to improve vegetative cover and forage on roadbeds.

Opportunities to restore the continuity of the stream ecosystems would be foregone. The potential for genetic exchange between stream populations of amphibian and invertebrate species would remain limited. There would be no opportunity to improve elk habitat effectiveness (EHE) in the project area.

B. Alternative 2 -Proposed Action

Each road was evaluated as to its risk or benefit to the wildlife resource. This information is recorded in the project file document ROADS-1. The proposed changes in the road system would benefit wildlife species. Reduction in compaction would improve the rate of vegetation recovery (both in the variety of species and rate of growth) on 33 miles of road, this could provide better hiding cover and forage than exists presently. Reduction in road densities would reduce hunter/wildlife interactions. Security for elk, and other big game and riparian dependent species would all benefit from improved vegetation conditions on the roads and along stream banks that would result from improved infiltration and stream bank stabilization.

Storage or decommissioning of roads would reduce open road density. This would reduce the influence that motorized travel would have of elk movement year-long. Less area accessible by vehicles may reduce the hunting pressure on big game in this area.

The remaining 89 miles of road that has already been treated or is naturally recovering would receive no additional treatment and recovery would continue at the current rate.

Stream crossing restoration would restore natural gradients at crossings allowing amphibians to more easily access upstream habitats. Culverts would be removed (one known culvert), allowing for passage of amphibian and invertebrate species. This would allow movement and dispersal of species to upstream habitats. The removal of these barriers would improve migrations (deMaynadier and Hunter, 1995). Native shrubs planted at crossing would provide shade and vertical diversity at a quicker rate that is currently occurring. Alternative 2 meets Forest Plan standards for management of sensitive wildlife species.

Table 14: Effects of the Proposed Action on Wildlife

Species	Preferred Habitat	Project Area Status	Effect of Project on Habitat	Determination	Comments
Gray Wolf (Endangered, 10(j))	Forests in western MT, Habitat generalists.	Resident, transient	None	No Effect	Project would not negatively affect ungulates
Canada Lynx (Threatened)	Alpine/subalpine coniferous forest - deep snow / snowshoe hare.	Bitterroot NF is currently not occupied lynx habitat.	Reduction in road density and access, some disturbance during activities	Not Likely to Adversely Affect	Project occurs within lynx analysis units, covered by programmatic NLAA
Bald Eagle (Sensitive)	Mature Forested riparian - associated with lakes and rivers	Transients probable, no nesting habitat.	None	No Impact	No suitable nesting habitat present
Black-backed Woodpecker (Sensitive)	Coniferous forests, especially those portions recently, highly infested or burned (foraging for insects). Primary cavity nester.	Individuals present in area, not specifically along road sites.	None	No Impact	No salvage or burned or insect-infested trees
Boreal Toad (Sensitive)	Beaver ponds, streams, marshes, wet meadows and lake shores including high elevation permanent water near conifer forests. Key is breeding habitat of shallow open water through growing season.	Individuals present in area, and specifically use culvert sites to travel across and warm-up on.	Impacts to habitat and behavior disruption will be minimal and temporary. Project does not impact key habitat components.	May Impact Individuals or Habitat, No Impact on Population	Impacts would be temporary and localized, will not lead to listing of species
Coeur d'Alene Salamander (Sensitive)	Cool, damp mosses and rocks near springs, seeps, and waterfall spray zones and stream edges.	Individuals not known to be in area.	None	No Impact	No suitable habitat present in project area
Fisher (Sensitive)	Dense, mesic late successional conifer forest especially spruce-fir associated with riparian habitats	Habitat available throughout project area, individuals not recorded, but are thought to use the area.	Reduction in road density and access, some disturbance during activities	May Impact Individuals or Habitat, No Impact on Population	Impacts would be temporary and localized, will not lead to listing of species, Overall gain in security
Flammulated Owl (Sensitive)	Open ponderosa pine or mixed conifer forests with large trees for cavity nesting (secondary nester).	Individuals present in area, not specifically at project site.	None	No Impact	No timber harvest or forest modification
North American Wolverine (Sensitive)	Resident, transient; Alpine/subalpine coniferous forest - preferring remote areas.	Key habitat components not present. Transients may occur, although this is unlikely.	Reduction in road density and access, Some disturbance during activities	May Impact Individuals or Habitat, No Impact on Population	Impacts would be temporary and localized, will not lead to listing of species, Overall gain in security
Northern Bog Lemming	Moss dominated fens/ bogs in or adjacent to conifer	Individuals not known to be in	None	No Impact	No suitable habitat present in project

Species	Preferred Habitat	Project Area Status	Effect of Project on Habitat	Determination	Comments
(Sensitive)	forest especially alpine zones.	area.			area
Northern Leopard Frog (Sensitive)	Low elevation (<6,700 feet) wetland habitats such as springs, slow streams, beaver ponds, reservoirs and lakes with permanent open water and rooted aquatic vegetation.	Individuals not known to be in area.	None	No Impact	No suitable habitat present in project area
Peregrine Falcon (Sensitive)	Cliffs with ledges for nesting typically near major water.	Individuals not known to be in area.	None	No Impact	No suitable habitat present in project area
Townsend's Big-eared Bat (Sensitive)	Wide range of habitats - key issue is roosting and hibernacula.	Individuals present in area, not specifically at project site.	None	No Impact	No suitable habitat present in project area
American Marten (Management Indicator Species)	Moderately dense mixed conifer forests with large trees for cavity denning.	Habitat available throughout project area, individuals not recorded, but are thought to use the area.	Reduction in road density and access, some disturbance during activities	May Impact Individuals or Habitat, No Impact on Population	Impacts would be temporary and localized, will not lead to listing of species, Overall gain in security
Elk (Management Indicator Species)	Variable mature and immature conifer forests - key habitat items are thermal cover, effectiveness (Veg. / open road ratios).	Individuals present in area, not specifically at project site.	Reduction in road density and access, some disturbance during activities	May Impact Individuals or Habitat, No Impact on Population	Impacts would be temporary and localized, will not lead to listing of species, Overall gain in security
Pileated Woodpecker (Management Indicator Species)	Various ponderosa pine or mixed conifer forests with large trees for cavity nesting (Primary nester).	Individuals present in area, not specifically at culvert sites.	None	No Impact	No timber harvest or forest modification

C. Cumulative Effects

The cumulative effects analysis area for wildlife includes the East Fork above Cameron Creek where most of the proposed treatments could occur. These areas were chosen because the proposed activities are within these areas.

Ongoing activities that could affect the wildlife resource that occur in the cumulative effects analysis area include routine road maintenance, periodic roadside herbicide spraying, fire suppression, recreational campgrounds, dispersed camping, livestock grazing (Meadow Tolan and Sula Peak/East Fork allotments), hunting, and recreational motorized use. Reasonably foreseeable activities include-travel planning, Sula District Fish Culvert Replacements, Cameron Blue Ecoburn, Echo Gulch Fuel Reduction, Kerlee Dowling Project, Tepee Face Ecoburn .

Alternative 1 – No Action

With no action, there would be no direct or indirect effects, and therefore no measurable cumulative effects to wildlife are expected.

Alternative 2 – Proposed Action

Long term negative cumulative effects to wildlife are not expected due to the limited temporal and spatial nature of this project. All effects to various wildlife species are expected to be temporary and will not contribute to effects of other projects within the same area.

4.3.3 BIOLOGICAL ASSESSMENT/EVALUATION FOR THREATENED, ENDANGERED AND SENSITIVE WILDLIFE SPECIES

A. Biological Assessment

THREATENED & ENDANGERED SPECIES
SUMMARY OF CONCLUSIONS

Project Name: Martin Creek Watershed Restoration

SPECIES	ALT 1	ALT 2
Canada Lynx (*Lynx canadensis*)	NE	NLAA
Gray Wolf (*Canis lupus*)	NE	NE

NE = No Effect; NLAA = Not Likely to Adversely Affect

/s/ Andrea E. Shortsleeve
Andrea E. Shortsleeve Date: January 7, 2011
South Zone Wildlife Biologist

B. Biological Evaluation

SENSITIVE SPECIES
SUMMARY OF CONCLUSIONS

Project Name: Martin Creek Watershed Restoration

SPECIES	ALT 1	ALT 2
Bald Eagle (*Haliaeetus leucocephalus*)	NI	NI
Black-backed Woodpecker (*Picoides arcticus*)	NI	NI
Boreal Toad (*Bufo boreas*)	NI	MIIH
Coeur d'Alene Salamander (*Plethodon idahoensis*)	NI	NI
Fisher (*Mares pennanti*)	NI	MIIH
Flammulated Owl (*Otus flammeolus*)	NI	NI
Northern Bog Lemming (*Synaptomys borealis*)	NI	NI
Northern Leopard Frog (*Rana pipiens*)	NI	NI
Peregrine Falcon (*Falco peregrinus*)	NI	NI
Townsend's Big-eared Bat (*Plecotus townsendii*)	NI	NI
Wolverine (*Gulo gulo*)	NI	MIIH

NI = No Impact; MIIH = May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or loss of viability to the population or species

/s/ Andrea E. Shortsleeve
Andrea E. Shortsleeve Date: January 7, 2011
South Zone Wildlife Biologist

Consistency with the Bitterroot Forest Plan and other Regulatory Direction

The regulatory framework providing direction for the protection and management of wildlife populations and their habitat comes from the following principal sources:

Endangered Species Act of 1973 (as amended)
Section 7 of the Endangered Species Act (ESA) directs that actions authorized, funded, or carried out by federal agencies do not jeopardize the continued existence of any threatened or endangered species, or result in the adverse modification of habitat critical to these species. The Bitterroot National Forest (Bitterroot NF) has incorporated United States Fish and Wildlife Service (USFWS) recommendations into the project design and alternatives. The south zone wildlife biologist will prepare a stand-alone Biological Assessment (BA) for the Marten Creek Restoration project that addresses the direct, indirect, and cumulative effects of the selected alternative on threatened or endangered wildlife species, species habitat, individuals, and populations to comply with the ESA requirements.

National Forest Management Act of 1976
The National Forest Management Act (NFMA) provides for balanced consideration of all resources. The Forest Service is required to manage for viable populations of native and desired non-native species, and to maintain and improve habitat of management indicator species.

Bitterroot National Forest Plan (Forest Plan)
The 1987 Bitterroot NF Plan (Forest Plan) in compliance with NFMA establishes Forest-wide management direction, goals, objectives, standards and guidelines for the management of wildlife species and habitats on the Bitterroot NF. Direction covers old growth habitat, management indicator species, sensitive species, and threatened and endangered species.
Other Forest Plan standards not addressed in this analysis related to the maintenance of wildlife populations include the amount and distribution of old growth habitat by management area (MA), retention of snags, maintenance of elk populations and habitat, and management of elk habitat effectiveness (USDA, 1987).

The following forest-wide management goals addressing issues and concerns related to wildlife populations were developed:

- Provide habitat that supports viable populations of native and desired non-native wildlife (USDA, 1987: II-3), and
- Maintain habitat for the recovery of threatened and endangered species (USDA, 1987: II-3).

The Forest Plan provides the following direction regarding Threatened, Endangered and Sensitive (TES) species:

- The habitat needs of sensitive species, as listed by the Regional Forester, will be considered in all project planning (USDA, 1987: II-21).
- (The Forest will) participate in the identification and protection of threatened and endangered species (USDA, 1987: II-21).

4.3.4 BOTANY AND WEEDS

No direct, indirect, or cumulative impacts are expected to threatened, endangered, or sensitive plant species or their habitat because no species are known to occur on the road prisms. These areas are previously disturbed and proposed actions should improve conditions to allow for colonization of native plants onto the restored prisms. All disturbed areas should be seeded as soon as possible after work is completed to reduce the risk of noxious weed establishment. Under the No Action alternative, current site conditions are not expected to change. Noxious weeds, particularly spotted knapweed are found on some of the roads. Where covered by earlier NEPA analysis, and where spraying would provide a benefit to the revegetation efforts, these populations of weeds may be sprayed prior to decommissioning or storage.

Weed density and composition is expected to remain at or near its existing level. The project determination for sensitive plants is "No Impact".

Consistency with the Bitterroot Forest Plan and other Regulatory Direction

The Forest Plan specifies (Forest Plan Chapter II, page 21) that vascular plants identified as rare, pending study and proposed as threatened or endangered be identified and protected. Because no direct, indirect, or cumulative impacts to these plants are expected, either alternative is consistent with the Forest Plan. Since no threatened or endangered plants are found on the Bitterroot National Forest, alternatives are consistent with the Endangered Species Act.

4.3.5 CULTURAL RESOURCES

No direct, indirect, or cumulative impacts are expected to cultural resources as none are known to occur within the road prisms. All road locations have been previously disturbed during initial road construction. Because the proposed work would occur within areas of previous disturbance (existing modern road prisms), the potential for new site discovery is extremely low and the Forest's Heritage program manager has determined that no additional survey is needed. The requirements of Section 106, National Historic Preservation Act have been fulfilled under terms of the Programmatic Agreement Among the USDA Forest Service Northern Region (Montana), the Advisory Council on Historic Preservation and the Montana State Historic Preservation Officer Regarding Cultural Resources Management on National Forests in the State of Montana with the inclusion of a "No Inventory" justification in the Forest's 2011 PA Compliance Report to the Montana SHPO (March 2011), (PF-SPEC-1). Consultation with the Confederated Salish and Kootenai Tribal Preservation Office was completed on May 27, 2010, with no Tribal cultural concerns associated with this project.

4.3.6 SOILS

A. Direct and Indirect Effects

Alternative 1

No active rehabilitation treatments would be completed to rehabilitate soils on "undetermined" roads in Alternative 1. Compacted roads would continue to limit soil productivity and vegetative conditions on the 33 miles of road needing active treatment. Over the next 50 years, growth of plants would gradually reduce compaction but vegetation would grow slowly.

Alternative 2

Detrimental soil conditions currently present on the 33 miles of "undetermined" roads requiring active treatments will be improved following the proposed storage and decommissioning. Compaction and loss of productive soil horizons are the main concerns for soil productivity on these roads. Decompaction treatments will improve infiltration and rooting potential for vegetation on stored roads. Recontouring of decommissioned roads will remediate compaction and provide a deep soil medium for vegetation to establish. Slashing, seeding, and fertilizing are important for providing initial vegetative cover to build the soils and minimize erosion. Improved vegetative conditions will increase organic matter needed to build productive topsoil horizons on the rehabilitated sites. Native vegetation surrounding treated roads is expected encroach into the rehabilitated soils over time.

B. Cumulative Effects

The cumulative effects analysis for soils covers several hydrologic units: Martin Creek (170102050402), Meadow Creek (170102050404), Bertie Lord Creek (170102050405), Middle East Fork (170102050503) and Cameron Creek (170102050504). For the soil resource, the main areas of consideration within the watershed are the roads proposed for active rehabilitation treatments since effects to soils are site specific. Soil erosion is an exception. Soil erosion is discussed in the watershed resource section.

Alternative 1 (No Action)

With no active rehabilitation treatments, there would be no direct or indirect effects, and therefore no measurable cumulative effects to soils are expected.

Alternative 2 Proposed Action

The active road storage and decommissioning treatments will cumulatively improve soil productivity in Martin Creek, Meadow Creek, Bertie Lord Creek, Middle East Fork, and Cameron Creek. Road decommissioning will return 63 miles of road (315 acres) back into the productive land base. The decommissioning will re-establish hydrologic flow and rooting potential for vegetation. Decommissioning would involve seeding and fertilizing to help improve plant establishment. Most importantly, the treatments would inhibit access and eliminate further disturbances to these areas which would also speed along natural recovery processes.

Consistency with the Bitterroot Forest Plan and Region 1 Supplement 2500-99-1

All proposed activities are designed to meet the Region 1 soil quality guidelines and Supplement direction. These guidelines require that soil properties and site characteristics be managed in a manner consistent with the maintenance of long-term soil productivity, soil hydrologic function, and ecosystem health. Activities within harvest areas are designed to detrimentally disturb less than 15 percent of the activity area. None of the proposed activities in the action alternatives are estimated to cumulatively exceed the 15 percent guideline after treatments are completed.

Forest wide standards for soil resources in the Forest Plan are found in Chapter II, pages 17-33, and Chapter III under the individual management areas, page II-46. The Bitterroot Forest Plan does not have numeric Soil Quality Standards; however, the plan addresses soils in the following standards and guidelines.

- Page III-6(3) Provide soils technical support for management activities on sensitive soils.
  - **How addressed:** The Forest Soil Scientist participated on the IDT and will participate in the implementation as needed.
- Page II-25(7) Plan and conduct land management activities so that reductions of soil productivity potentially caused by detrimental compaction, displacement, puddling, and severe burning are minimized.
  - **How addressed:** The Forest Soil Scientist field reviewed all reconnaissance data for the undetermined road segments.
  - Utilizing this data, the Forest Soil Scientist was able to plan, design, and prepare rehabilitation treatments to rehabilitate soil productivity on roads requiring active rehabilitation treatments.
- Page II-25(8) Plan and conduct land management activities so that soil loss, accelerated surface erosion, and mass wasting caused by these activities will not cause an unacceptable reduction in soil productivity and water quality.
  - **How addressed:** See above discussion under Page II-25(7).
- Page II-25(9) Design or modify all management practices as necessary to protect land productivity and maintain land stability.
  - **How addressed:** See above discussion under Page II-25(7).

4.4 Irreversible and Irretrievable Commitments

An irreversible commitment of resources refers to the use or commitment of resources that is incapable of being reversed or changed. Irretrievable commitment of resources refers to actions that result in changes to resources that cannot be recovered or regained.

The physical change in the landscape when roads are constructed is an irreversible loss in the aesthetic quality of the area, soil productivity, and to some extent the hydrologic function of the watersheds. Under Alternative 1, no change would occur and under Alternative 2, many road prisms would not be completely recontoured. There would always be some road prism visible, especially if a fire removed the overstory vegetation. In addition, to some extent this would always have some effect on the hydrology of the area. No matter how thorough the decommissioning job is, the area would never be as it was prior to constructing the roads. Over the very long term Alternative 2 would reduce the time the roads are visible and would remove most of the detrimental effect the roads have on the hydrologic function of the watersheds. The majority of roads in the project area are in MA1-Timber Management which means that there is an expected loss in visual and other resource quality with mitigation minimizing the effect to the extent possible.

Alternative 1 would result in an irretrievable loss of stream health. High road densities are present in the analysis area and Alternative 1 would not allow for stabilization of areas affecting aquatics in a negative manner. Alternative 2 would provide an opportunity for stabilizing sediment contributing areas and improving aquatics given the need for a subset of the roads for forest management.

Access for logging may not be an irreversible loss since logging technology of today can compensate for the reduced road densities. As it relates to motorized access, decommissioning roads is not an irreversible commitment. Decommissioned and stored roads could be reconstructed if the need arises.

There is some controversy regarding the social attributes of storing or decommissioning roads and the effect of that on OHV use. This project does not preclude areas from future OHV use and is not an effort to manage travel. It is not precedence setting since road decommissioning is a common practice and implementation of this project would not change National Forest programs or policies. There are no future actions that would become imminent or necessary as a result of this decision.

4.5 Required Disclosures and Potential Conflicts with Plans and Policies of other Jurisdictions

Implementation of Alternative 1 would not comply with the Bitterroot Headwater TMDL and Restoration Plan. The TMDL recommended a reduction in sediment contribution from forest roads of 42% and therefore, Alternative 1 would not be consistent, whereas Alternative 2 is consistent. Monitoring of similar projects on the Bitterroot National Forest has shown that actions, such as those proposed in Alternative 2, do allow for better vegetative cover on road surfaces (USDA FS, 2007 and 2008).

The proposed action would comply with applicable laws and regulations.

4.6 Environmental Justice

Executive order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations, directs federal agencies to integrate environmental justice considerations into federal programs and activities. Environmental justice means that, to the greatest extent practicable and permitted by law, all populations are:

- provided the opportunity to comment before decisions are rendered on;
- allowed to share in the benefits of;
- not excluded from;
- not affected in the disproportionately high and adverse manner by;

- Government programs and activities affecting human health or the environment (E.O. 12898 and Departmental Regulation 5600-2).

None of the alternatives would have a discernible effect on minorities, American Indians, or women, or the civil rights of any United States citizen. No alternative would have a disproportionate adverse impact on minorities or low-income individuals.

4.7 Conservation Potential of Alternatives

Alternative 1 would require no commitment of energy since no equipment would be used to implement any activity. Alternative 2 on the other hand would require the fuel used by the heavy equipment during the decommissioning and storage process plus the fuel used by vehicles traveling to a from the work site. Project implementation would use several hundred gallons of fuel. This amount is not a substantial or an unusual amount since projects throughout the Bitterroot valley consume this amount of fuel on a daily basis.

4.8 Environmental Effects that Can Not be Avoided

Under Alternative 1 (No-action) degradation of water quality would continue and is an unavoidable effect of the alternative as are losses in habitat for wildlife and the continued disruption of watershed hydrology. As stated, some sediment would enter the streams if Alternative 2 were implemented. This is expected to be short-term but could cause some localized adverse effects on water quality. This is especially true for the first few hours after stream crossings are treated. Roads provide access for fire management. While Alternative 2 would slightly reduce access to fires, there are still roads remaining and many opportunities for fire management.