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Environmental Assessment

Travel Plan Map Revision

Elimination of Motorized Cross-Country Travel and Motorized Route Designation

Sawtooth National Forest
Fairfield Ranger District, Camas County, Idaho
Ketchum Ranger District, Blaine County, Idaho
Minidoka Ranger District, Twin Falls, Cassia, Power, and Oneida Counties, Idaho; Box Elder County, Utah

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Acronyms, Abbreviations, and Initialisms

ºC	degrees Celsius
APE	area of potential effect
ARPA	Archaeological Resources Protection Act
ATV	all-terrain vehicle
BA	biological assessment
BE	biological evaluation
BLM	Bureau of Land Management
BSIA	botanical special interest area
BTEX	benzene, ethylene dibromide, and bromobenzene
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CMRD	construction and maintenance, roads
DD	detrimental disturbance
EA	environmental assessment
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FA	functioning appropriately
FR	functioning at risk
FR	forest road
FR	Federal Register
ft	foot/feet
FUR	functioning at unacceptable risk
GIS	geographical information system

GMU	game (big) management unit
HU	hydrological unit
ICDC	Idaho Department of Fish and Game Data Conservation Center
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDL	Idaho Department of Lands
IDT	interdisciplinary team
in.	inch(es)
IRA	inventoried roadless area
LAU	lynx analysis unit
LRMP	Land and Resource Management Plan
LWD	large woody debris
MA	management area
mi	mile(s)
MIS	management indicator species
MOU	memorandum of understanding
MTBE	methyl tertiary-butyl ether
MU	management unit
MVUM	motor vehicle use map
NEPA	National Environmental Policy Act
NF	national forest
NFS	National Forest System
NHPA	National Heritage Protection Act
NRHP	National Register of Historic Places
NVUM	National Visitor Use Monitoring
OHV	off-highway vehicle

PAH	polycyclic aromatic hydrocarbons
PVG	potential vegetation group
RCA	riparian conservation area
RD	ranger district
RNA	resource natural area
SAC	sage-grouse advisory committee
SGPA	sage-grouse planning area
SHPO	State Historic Preservation Office
SNF	Sawtooth National Forest
SNRA	Sawtooth National Recreation Area
TEPCS	threatened, endangered, proposed, candidate, or sensitive
TMDL	total maximum daily load
TSRC	total soil resource commitment
UDWR	Utah Division of Wildlife Resources
USDI	U.S. Department of Interior
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WARS	watershed aquatic recovery strategy
WMA	wildlife management area
YCT	Yellowstone cutthroat trout

Preface

The Sawtooth National Forest (SNF) proposes to revise the current summer SNF Visitor/Travel Plan Map (Travel Plan Map, U.S. Department of Agriculture [USDA] 1989) to restrict motor vehicle use to designated roads and trails. The 1989 Travel Plan Map was reprinted in 2002, but no changes were made to routes with the re-printing. However, the 2002 printing did divide the travel plan map into two maps: a north-end map, which covers the Sawtooth National Recreation Area (SNRA), Ketchum Ranger District (RD), and the Fairfield RD; and a south-end map covering the Minidoka RD (2002 Travel Plan Map, north and south versions, USDA 2002).

The proposal to revise the travel plan map was in part, generated in response to the *Travel Management; Designated Routes and Areas for Motor Vehicle Use; Final Rule*, published November 9, 2005 (70 *Federal Register* [FR] 261, 2005; hereinafter referred to as Final Rule for Travel Management). This Final Rule for Travel Management requires that the U.S. Forest Service (USFS), with input from the public, prepare a motor vehicle use map (MVUM) designating those roads, trails, and areas that will be open to motorized travel. In addition, the SNF Forest Plan (USDA 2003a) includes direction to manage motorized and non-motorized travel to provide for public safety; meet resource objectives and access needs; mitigate road and trail damage; and minimize maintenance costs and user conflicts.

This environmental assessment (EA) presents an analysis of the environmental effects of the proposed route designation alternatives and addresses comments and concerns expressed by the public during the EA comment period. A no action alternative is also evaluated.

To facilitate reading and understanding, the proposal to revise the current summer SNF 2002 Travel Plan Map (USDA 2002) to restrict motor vehicle use to designated roads and trails is referred to from this point forward as a route designation project; the project area may also be referred to as the route designation area(s). This EA is also referred to as the route designation EA. References to the travel plan map is to the most current map(s) available to the public and includes both the north and south-end maps (USDA 2002). The project/analysis areas for the route designation EA are located within the Ketchum, Fairfield, and Minidoka RDs of the SNF located in both Idaho and Utah.

CHAPTER 1—Introduction

Document Structure

The USFS has prepared this EA in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. This EA discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into four parts:

- *Chapter 1: Introduction*—The chapter includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the USFS informed the public of the proposal and how the public responded.

- *Chapter 2: Comparison of Alternatives, including the Proposed Action*—This chapter provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes possible mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.

- *Chapter 3: Affected Environment and Environmental Consequences*—This chapter describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by resource area. Within each section, the affected environment is described first, followed by the effects of the No Action Alternative that provides a baseline for evaluation and comparison of the other alternatives that follow.

- *Chapter 4: Agencies and Persons Consulted*—This chapter provides a list of preparers and agencies consulted during the development of the environmental assessment.

- *Appendices*—The appendices provide more detailed information to support the analyses presented in the environmental assessment.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project record located at the at SNF Supervisor's Office in Twin Falls, Idaho.

Background

Most SNF visitors use motorized vehicles to access the SNF either for recreational purposes such as sightseeing, camping, hiking, hunting and fishing; commercial purposes such as logging, mining, grazing, outfitting and guiding; administrative purposes such as inspecting and maintaining utilities and research stations; or for a host of other multiple uses the SNF serves. For many visitor types, most notably recreationists, motor vehicles represent an integral part of their experience. Pickup trucks, all-terrain vehicles (ATVs), motorcycles, and a variety of other conveyances are used by visitors to access SNF roads and trails. Motor vehicles are a legitimate and appropriate way for visitors to enjoy their SNF—in the right places, at the right time, and with proper management.

The SNF travel plan map was first established in 1989 (USDA 1989) and reprinted in 2002 as two maps: a north-end map, which covers the SNRA, Ketchum RD, and the Fairfield RD; and a south-end map covering the Minidoka RD (Travel Plan Map, north and south versions, USDA 2002). The purpose of a travel plan map is to show visitors the system of roads and trails they may use, as well as how and when they may use them. The SNF motorized transportation system ranges from paved roads designed for passenger cars to single-track trails used by motorcycles. Many roads designed for high-clearance vehicles (i.e., sport utility vehicle) also allow use by ATVs, and other off-highway vehicles (OHVs) not normally found on city streets. Almost all SNF trails also serve non-motorized users including hikers, bicyclists, and equestrians.

In addition to this managed system of roads and trails, portions of the SNF contain a significant number of user-created roads and trails. These routes are concentrated in areas where cross-country travel by motor vehicles is currently allowed, and often include dense networks of intersecting paths. Generally these routes have not been properly designed and many are located in environmentally sensitive areas such as riparian areas and on lands with highly erosive soils. It has been 18 years since the last comprehensive inventory of user-created routes on the SNF was completed. Continued increases in such routes has made a definitive inventory difficult to document.

Consistent with the Forest Plan (USDA 2003a), the SNF has initiated phased site-specific travel management planning (Forest Plan Objective REOB17).

Purpose and Need for Action

The SNF is proposing to revise the summer SNF 2002 Travel Plan Map (USDA 2002) to restrict motor vehicle use to designated roads and trails. This project was in part, generated in response to the Final Rule for Travel Management (70 FR 261, 2005), as it is implemented through 36 *Code of Federal Regulations* (CFR) §§ 212, 251, 261 and 295, which requires the USFS, with input from the public, to prepare an MVUM eliminating cross-country motorized travel and designating roads, trails and areas available for motorized use on all National Forest System (NFS) lands. Route designation is particularly important as the SNF has, and continues to receive, increased motorized use that has resulted in increased user conflicts, public safety concerns, resource damage, and wildlife related impacts.

While complying with the Final Rule for Travel Management, the SNF must also meet SNF Forest Plan (USDA 2003a) requirements to manage motorized and non-motorized travel in such a manner to minimize damage to SNF resources such as soil, water, wildlife, and vegetation; and to minimize the potential for conflicts among different types of visitors.

Proposed Action

The SNF proposes to revise the summer travel plan map (USDA 2002) to eliminate cross-country travel and restrict motor vehicle use to designated roads and trails. Proposed revisions include the following:

1. Designation for use of certain existing roads and trails that physically exist on the ground, and are receiving use, but are not currently on the SNF transportation system of roads and trails. The proposed revision would add additional routes to the transportation system.

2. Changes in type of use or season of use to the current SNF transportation system of roads and trails.

3. Closure of a limited number of system trails and roads that are redundant, not needed for administrative purposes, or are causing resource impacts.

4. Designation of dispersed motorized camping sites or corridors. Dispersed motorized camping would be allowed within 300 feet (ft) of designated roads or 100 ft of designated trails.

5. Elimination of cross-country motorized travel throughout the entire area, except for provisions for parking vehicles on the edge of designated roads for purposes other than camping.

6. Prohibition of the use of motorized vehicles off designated roads or trails for big game retrieval.

7. Designation of some roads as “mixed use,” open to both highway legal vehicles and ATVs.

In addition to revising the travel plan map, the SNF has identified trail and/or road proposals that are being considered for future planning. No new roads or trails are proposed for construction under the route designation EA. Any new construction or major reroutes required to bring trails up to standard will require site-specific, project-level National Environmental Policy Act (NEPA) analysis before they may be added to the system.

Maps that detail the proposed revisions are provided in an appendix to this EA and are referenced through their associated discussions, in Chapter 2, Alternatives. In addition to displaying the proposed changes to the travel plan map, the maps reflect the entire designated trail system within the Fairfield, Ketchum, and Minidoka RDs. Based on the decisions made, an MVUM will be prepared in accordance with the SNF Forest Plan (USDA 2003a). The MVUM shall become the authoritative document governing motorized travel on the SNF as well as the enforcement tool for all public motorized travel on the SNF. Under the Final Rule for Travel Management (70 FR 261, 2005), the MVUM must be reviewed and revised, as necessary, annually.

It should be noted that:

- This EA only applies to changes and additions to the summer travel plan map (USDA 2002) as addressed in this document. Previous travel management decisions made through SNF planning activities, NEPA decisions, or special orders will remain in effect until specifically analyzed or unless changes to them are being proposed.

- Winter motorized use is not addressed in this analysis. Over-snow use will continue to be managed under the current SNF Travel Plan Map (USDA 2002).

- Activities that are exempt from the Final Rule for Travel Plan Management include aircraft, watercraft, over-snow vehicles, limited administrative use, emergency and law enforcement response, national defense purposes, and uses specifically authorized under a written authorization (70 FR 261, 2005).

Area to be Analyzed

The project area, also known as the “route designation area” analyzed throughout this EA includes the following areas on the SNF:

- Areas G and H on the Ketchum and Fairfield RDs

- Portions of Area A in and around Kelley Creek Flats on the Fairfield RD

- Seasonal closures throughout the Fairfield RD

- Section 7, T3N, R13E, and Sections 12–14, T3N, R12E ,on the Fairfield RD, and areas shown as K, L, and Q on the Cassia, Albion, Black Pine, and the Sublett divisions of the Minidoka RD

- The Raft River Division (Utah) of the Minidoka RD is included in this analysis and was covered under a previous special order implementing Box Elder County Ordinance 222.

Motorized use on the SNRA, the northern two-thirds of the Ketchum RD, and the northern half of the Fairfield RD is already restricted to designated routes and is not part of this project area or EA. These areas will continue to be managed according to the SNF Travel Plan Map (USDA 2002).

Decision Framework

There are three Deciding Officials—the District Rangers for the Minidoka, Fairfield, and Ketchum RDs. Each District Ranger will make a decision that applies to the land for which the Ranger is responsible. Given the purpose and need, the deciding official reviews the proposed action and the other alternatives to make the following decisions:

1. Will the proposed action proceed as proposed, as modified by an alternative, or not at all?

2. What mitigation measures and monitoring requirements will the USFS apply to the decision?

3. Will the decision require a Forest Plan amendment?

Public Involvement

The SNF began the process of involving the public in developing the initial motorized route proposal in September 2004. The proposal was provided to the public and other agencies for comment during the scoping period of July 1–September 30, 2006, and the proposal has been listed in the Schedule of Proposed Actions since October 1, 2006. Public involvement efforts included the following:

- Placing comment cards, which requested public comment and involvement in the process, on vehicles parked at trailheads throughout the project area

- Publicizing, through two news releases, the need for public involvement through comments and participation in open-house presentations

- Contacting, via telephone and meetings, 28 organizations and government entities, which included riding clubs, environmental and recreation groups, and County Commissions

- Meeting and making presentations to the Idaho Department of Fish and Game (IDFG), Idaho Department of Parks and Recreation, as well as numerous user groups, organizations, and Tribes.

- Conducting open-house presentations in Fairfield, Malta, Burley, Twin Falls, Hailey, and Gooding.

As a result of initial public involvement efforts, the SNF received written comments from 111 individuals or organizations. Twenty commentors provided detailed maps of roads, trails, and connectors proposed for designation.

The formal 30-day comment period was initiated on October 4, 2006, and continued through November 4, 2006. Written comments were received from 222 parties during the formal scoping period. Comments received during the scoping periods were used to develop a list of issues to be considered during the route designation EA.

Issues

The USFS reviewed and separated the issues identified through the public comments into two groups: significant and non-significant issues. Significant issues were defined as those directly or indirectly caused by implementing the proposed action. Significant issues require project-specific alternatives, mitigation measures or design elements to address the effects that proposed activities might have on them. Non-significant issues were identified as those outside the scope of the proposed action; already decided by law, regulation, Forest Plan, or other higher level decision; irrelevant to the decision to be made; or conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) has implementing regulations (40 CFR Vol. 30 §§1500 et seq. 2004) for NEPA that explain this delineation in Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review" (40 CFR Vol. 30 §1501.7, 2004). A list of non-significant issues and reasons regarding their categorization as non-significant can be found in the project record.

The USFS identified the following seven significant issues from topics raised during scoping. Brief summaries of these significant issues are presented after the list.

- Recreation
- Vegetation
- Soil and Hydrology
- Fisheries
- Wildlife
- Heritage
- Economics.

Issue 1: Recreation

The issue raised is that under the proposed action, removal of cross-country motorized travel as well as loss of some non-classified travel routes may adversely affect the motorized recreation experience.

Some commenters expressed concern that elimination of some non-classified roads and trails, as well as elimination of cross-country travel will reduce access for firewood, hunting, dispersed motorized camping, OHV recreation, and general travel. By reducing the amount of roads and trails open to motorized use, it may focus use on fewer trails creating more user conflicts. Some people said that eliminating motorized roads and trails or converting them to non-motorized use would discriminate against people with disabilities or advanced age by denying them the opportunity to use those roads and trails and to enjoy the SNF. Some commenters expressed a desire to have access to quality ATV trail opportunities.

In contrast, others stated that the quantity and location of motorized routes to be designated in the proposed action would adversely affect their non-motorized opportunities. They seek a more silent recreation experience and desire less motorized routes. Some requested that areas currently being managed for motorized recreation be converted to a non-motorized management emphasis. Others thought there is already enough SNF land being managed for non-motorized use.

Some hunters also requested more non-motorized hunting opportunities as it provided them with a quality hunt experience. In response to the quality hunt issue, others suggested that seasonal motorized closures of areas during hunting season be applied *only* to hunters and that other motorized users should not have to honor the closures.

Issue 2: Vegetation

The issue raised is that the proposed action may affect the health, vigor, and diversity of native plants and riparian vegetation, as well as threatened, endangered, proposed, candidate, or sensitive (TEPCS) plant species.

The SNF is home to many endemic species. Given the potential for increased use on designated routes, there is a concern that routes designated within known populations or potential habitat may pose greater threats, including the introduction of noxious weeds, to these sensitive areas. Disturbance of soil surfaces and vegetation can set the stage for weed establishment. Concerns were raised that OHV use spreads noxious weeds, which in turn harms native vegetation as well as TEPCS species. Additionally, non-native plants can spread quickly and affect the amount and distribution of native plant species, as well as the animals that have evolved to rely on them. Travel routes are often invasion corridors for the spread of noxious weeds and other invasive species. By concentrating use to designated routs, there is the increased potential for higher concentrations of non-native plants to establish along these corridors given increased disturbance and opportunity for weed introduction. However, eliminating cross-country travel would reduce the potential for new infestations away from main travel routes going undetected. Some commentors do not accept the idea that motorized use is more impactive to vegetation or entails more risk of noxious weed spread than non-motorized use.

Issue 3: Soil and Hydrology

The issue raised is that the proposed action may affect soils and water quality.

Water Quality. Travel routes can impact water quality by increasing water temperatures resulting from either, a combination, or all, of the following: loss of riparian vegetation, increases in sediment, or increases in chemical pollution (hydrocarbons). Riparian vegetation can be lost by trampling; water quality can be altered by the delivery of increased sediments from improperly designed or maintained routes and from chronic or catastrophic erosion from routes and upland sources; and pollutants can wash off or leak from vehicles at stream crossings.

Slope Hydrology. Travel routes can alter slope hydrology by concentrating and re-routing overland flows and intercepted ground water, causing gullies where too much water is drained from the road and trail surface or ditchlines to a single location, and increasing stream densities within the watershed by directly draining road and trail treads and ditchlines into the channel network. Repeated motorized cross-country travel can lead to user-created routes that often have greater impacts than routes that have been constructed and engineered to reduce interactions with the water cycle and erosional processes.

Wetland and Riparian Conservation Area Condition. Wetland and riparian areas are particularly vulnerable to motorized vehicle impacts because human use is concentrated in and near these areas and the terrain and gradient often provide easy access. Off-route use can modify wetland hydrology by causing headcutting or by altering or concentrating diffuse water flows. Either process induces erosion, and can drain the local water table, affecting wetland and riparian condition and function. Rutting and compaction can lead to a loss of organic content of wetland soils from oxidation, which can lead to a loss of productivity and hydrologic function.

Issue 4: Fisheries

The issue raised is that the proposed action may affect the fish species and their habitat.

Aquatic Habitat. Travel routes can impact aquatic habitat when a route encroaches on a stream, removing riparian vegetation and increasing streambank erosion and sedimentation. Loss of riparian vegetation and increased bank erosion can widen stream channels and alter aquatic habitat. Increased sediment delivery to streams can fill in spawning and rearing habitats for aquatic organisms decreasing their numbers. Road and trail crossings can fragment aquatic habitats by creating migration barriers.

Issue 5: Wildlife

The issue raised is that the proposed action (amount of designated roads and trails) may cause disturbance to wildlife.

Roads and trails can create habitat fragmentation, and human use of these roads and trails can cause disturbance to wildlife. The density of roads and trails and the amount and frequency of their use can impact wildlife due to disturbance during critical life stages, compromised security, and/or impacts to habitat. Particular concerns exist for the following:

- Big game (elk, deer) security during hunting seasons and critical life stages such as calving and fawning
- Existing big horn sheep populations and the effects to future potential reintroductions
- Effects to SNF management indicator species (MIS)
- Effects to federally listed threatened, endangered, proposed, and candidate wildlife species
- Effects to Region 4 USFS sensitive wildlife species
- Effects to other native and desirable non-native species, such as migratory bird habitat.

Issue 6: Heritage

The issue raised is that the proposed action (amount of designated roads and trails) may cause disturbance to heritage resources.

Ground-disturbing maintenance and closing and decommissioning user-created routes and system routes have potential to affect heritage resources. If at some time in the future it is determined that new routes are needed, or other ground-disturbing work would occur, National Historic Protection Act (NHPA, 16 U.S.C. 1A §§470 et seq. 2000) Section 106 compliance will be conducted prior to any ground-disturbing activities. Examples of this include new construction, reconstruction, or removal of existing facilities. If cultural resources are located during the Section 106 field review, avoidance and or mitigation of potential impacts would be developed in consultation with appropriate Tribes and the Idaho State Historic Preservation Office (SHPO).

Field survey and site monitoring found that there are currently no known sites being affected by existing motorized routes. However, it cannot be assumed that no impacts to heritage resources exist. While this was not a specific issue raised through public scoping, it is required to address the full range of effects to heritage resources in the analysis.

Issue 7: Economics

The issue raised is that the proposed action may have economic effects on the maintenance and administration of the designated system.

In compliance with 36 CFR 212.55 (a), an analysis must be completed of the anticipated economic effects of route designation on the SNF road and trail maintenance funds and the changes in actual maintenance that can be expected. The need for maintenance and administration of roads, trails, and areas that would arise if the proposed action or an alternative is implemented, and the availability of resources for that maintenance and administration must be analyzed. Disclosing economic effects is required by 36 CFR 212 Subpart B (36 CFR §212 2007) and will be addressed in this EA.

Findings Required by Other Laws

Consistency with Sawtooth Land and Resource Management Plan

The EA is consistent with the SNF Forest Plan (USDA 2003a) goals, objectives, standards and guidelines. A complete consistency checklist is part of the project record.

National Environmental Policy Act (1970)

NEPA directs all federal agencies to consider and report the potential environmental impacts of proposed federal actions. The analysis document was prepared in compliance with NEPA and the CEQ regulations for implementing NEPA (40 CFR §§1500 et seq. 2004).

Endangered Species Act (1973)

The Endangered Species Act (ESA) provides for the protection and conservation of threatened and endangered plant and animal species. All action alterantives were assessed to determine their effects on threatened and endangered plant and animal species. A biological assessment/evaluation consistent with the requirements of this act was prepared on the preferred alternative. Coordination with the U.S. Department of Interior (USDI) Fish and Wildlife Service (USFWS) through SNF personnel will occur. Concurrence from the USFWS on the biological assessment/evaluation will be obtained prior to a Decision Notice being issued on the selected alternative and a copy will be placed within the project planning file.

Environmental Justice

In accordance with Executive Order (EO) 12898 (59 FR 32, 1994), all action alternatives were assessed to determine whether they would have disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority or low-income human populations. This EA considered such programs, policies, and activities. No effects were identified during scoping or the formal 30-day comment period on the proposed action.

National Historic Preservation Act

The NHPA provides for the protection of prehistoric and historic resources. Archeological site investigation did not reveal known sites that would be jeopardized by the designation of a system of motorized routes. The proposed action and alternatives were reviewed and determined to have no effect on any historic properties or heritage resources. Concurrence from the Idaho SHPO will be obtained prior to a decision.

Fort Bridger Treaty of July 3, 1868

The relationship of the U.S. Government with American Indian tribes is based on legal agreements between sovereign nations. The Fort Bridger Treaty of July 3, 1868, provided for the establishment of the Fort Hall Indian Reservation. It also granted hunting and fishing rights to Shoshone–Bannock tribal members on “all unoccupied lands of the United States.” This right applies to all public domain lands that were reserved for NFS purposes that are presently administered by the SNF. These rights are still in effect, and management actions recognize these rights.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (16 U.S.C. §§703-712. 2006) and subsequent EO 13186 (66 FR 3853, 2001) and memorandum of understanding (MOU) between the USFWS and USFS (USFWS and USDA 2001) provide for the protection of migratory birds.

The proposed action and alternatives complies with the USFWS 724 FW 2, Migratory Bird Permits (USFWS 2003a), related to the applicability of the Migratory Bird Treaty Act to federal agencies and requirements for permits for “take.” In addition, the alternative complies with EO 13186 because the analysis meets agency obligations as defined under the January 16, 2001, MOU between the USFS and USFWS designed to complement EO 13186. High priority migratory bird species breeding habitats are analyzed and discussed in the effects analysis chapter in this EA. If new requirements or direction result from subsequent interagency MOUs pursuant to EO 13186, the Decision Notice will be evaluated to ensure that it is consistent.

Wild and Scenic Rivers Act

River segments and their corridors that are eligible, suitable, or designated as Wild and Scenic Rivers are managed to retain their free-flowing status, classification, and outstandingly remarkable values for scenery, wildlife, cultural, fish, geology, hydrology, and ecological/ botanical resources. Opportunities are provided so the public can understand the uniqueness of eligible, suitable, and designated Wild and Scenic Rivers. The proposed action and alternatives do not make changes to routes within eligible Wild and Scenic Rivers; therefore, does not affect their status.

Federal Water Pollution Control Act and Amendments of 1972

The Federal Water Pollution Control Act and Amendments of 1972 (Clean Water Act, 33 U.S.C. §§1251 et seq. 2002) was enacted to restore and maintain the chemical, physical, and ecological integrity of the Nation’s waters. The proposed action and alternatives are consistent with the Clean Water Act and its amendments. The proposed action and alternatives do not affect any wetlands and, therefore, no permit is required from the U.S. Army Corps of Engineers. A State of Idaho permit for streambed alteration is not required because no streambeds are affected by the proposed action or alternatives.

Inventoried Roadless Areas

Inventoried roadless areas (IRAs) possess social and ecological values and characteristics that are becoming scarce in our Nation’s increasingly developed landscape. Protecting air and water quality, biodiversity, and opportunities for personal renewal are highly valued qualities of roadless areas. Conserving IRAs leaves a legacy of natural areas for future generations. The Roadless Area Conservation Rule (66 FR 9, 2001) limits or prohibits activities that would most negatively affect these values.

The project area includes 19 IRAs. There are no new roads proposed, nor are there any improvements to existing routes proposed within any of the IRAs. Therefore, the proposed action and alternatives would not affect the status of IRAs. A worksheet documenting the effects to the IRA attributes is part of the route designation EA project record.

36 CFR §§ 212, 251, 261, and 295 Travel Management; Designated Routes and Areas for Motor Vehicle Use

These regulations address travel management on NFS-managed public lands related to motor vehicle use, including the use of OHVs. The final rule requires designation of those roads, trails, and areas that are open to motor vehicle use. Designations will be made by class of vehicle and, if appropriate, by time of year. The final rule also prohibits the use of motor vehicles off the designated system, as well as use of motor vehicles on routes and in areas that are not consistent with the designations.

CHAPTER 2—Alternatives, Including the Proposed Action

This chapter describes and compares the alternatives considered for the SNF route designation project. This chapter presents a description of each alternative considered. Maps of each alternative are provided in Appendix A.

This chapter also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public, as shown in comparison of alternatives tables provided at the back of this chapter. Some of the information used to compare the alternatives is based upon the design objectives of the alternative and some of the information is based upon the environmental, social, and economic effects of implementing each alternative.

The process of formulating alternatives began with the scoping process presented in Chapter 1. Analysis of comments identified the following issues as sufficiently important to warrant alternatives, mitigation, and/or an effects analysis addressing them. The issues identified in Chapter 1 include the following:

- Recreation
- Vegetation
- Soil and Hydrology
- Fisheries
- Wildlife
- Heritage
- Economics (maintenance costs).

The resulting range of alternatives is consistent with the purpose and need for action and with the issues raised.

The interdisciplinary team (IDT) recommended, and the District Rangers approved, the following alternatives in addition to the required no action alternative. The alternatives respond to public input and the issues, while addressing the purpose and need. Each alternative has specific effects associated with it, and how and to what degree it addresses the purpose and need. The environmental effects of implementing each of the alternatives are discussed in Chapter 3, Affected Environment and Environmental Consequences.

Alternatives Considered in Detail

This section describes the No Action alternative and three other alternatives for management of motorized use on the Fairfield, Ketchum, and Minidoka RDs on the SNF.

Alternative 1, No Action (Baseline)

Fairfield, Ketchum, and Minidoka RDs

Under the no action alternative (referred to hereinafter as “Alternative 1”) current management plans would continue to guide management of the route designation areas within all three RDs. The USFS would not restrict motor vehicle use to designated roads and trails (except in areas that are currently restricted) and would not add any new restrictions nor would any other changes in the SNF transportation system be made at this time. Cross-country motor vehicle use would continue to be allowed. Motorized use of non-classified routes would continue and new routes would continue to be established. Changes to the transportation system would continue to be made on a case-by-case basis.

This alternative has the greatest amount of routes available on the ground. This alternative represents what the USFS has either been able to inventory or is aware exists as of this analysis. This alternative does not address several issues including trails not designed or built to standard, management of a system that is sustainable long term, and quality trail experiences.

Action Alternatives 2–4

The following three paragraphs are short descriptions of the intent of each alternative and how they respond to the issues identified through scoping.

Alternative 2, Proposed Action—Modified

The “modified proposed action” alternative (hereinafter referred to as “Alternative 2”) was created in response to suggestions on the original USFS proposal. The proposed action was modified to correct mapping errors, to close routes, to change designated uses, and to add seasonal closures. This alternative’s objective is to provide improved motorized and non-motorized recreation while reducing effects to wildlife and their habitats. The USFS would restrict motor vehicle use to designated roads and trails, and changes would be made to the SNF transportation system. Cross-country motor vehicle use would be eliminated. The majority of motorized use of non-system (user-created) routes would be eliminated.

Alternative 3

Under Alternative 3, travel route management proposals were based on providing additional and improved motorized recreation opportunities and respond directly to Issue 1, Recreation. This alternative has additional ATV and motorcycle trails proposed using the routes that in the past were not shown within the previous travel plan map (USDA 2002) as an open route. The USFS would restrict motor vehicle use to designated roads and trails. Cross-country motor vehicle use would be eliminated. This alternative would provide more opportunity for motorized use by designating more roads and trails than are being designated under Alternative 2.

Alternative 4

This alternative was created in response to the comments that were received during the scoping process concerning the negative effects of motorized recreation on wildlife populations and habitat. Alternative 4 responds directly to Issue 5 and indirectly to Issues 2, 3, 4, 6, and 7. The USFS would restrict motor vehicle use to designated roads and trails. Cross-country motor vehicle use would be eliminated. Motorized use of non-system (user-created) routes would be eliminated. This alternative concentrates motorized access in areas where these types of activities are presently occurring while reducing existing routes or avoiding new trail and road designations. This alternative would provide for improved wildlife security and habitat by designating fewer motorized roads and trails than are designated under Alternative 2.

Actions Common to Alternatives 2–4

In response to public comments on the proposal, mitigation measures were developed to ease some of the potential resource impacts the various alternatives may cause. The mitigation measures may be applied to any of the action alternatives.

1. Any new construction of a trail or road will require site-specific project level NEPA analysis before it could be added to the system.
2. Dispersed camping accessed by motor vehicles would be allowed within 300 ft of designated roads or 100 ft of designated trails. Problem areas will continue to be mitigated and managed through administrative actions and larger scale analysis including site setbacks/delineation, signing, designation of sites, restoration and closures.
3. Cross-country motorized travel will be eliminated throughout the entire route designation area.
4. Big game retrieval using motorized vehicles will be prohibited off of designated roads or trails.
5. Vehicle parking will be allowed on the edge of designated roads for purposes other than camping (see No. 2 above).
6. Some roads will be designated as “mixed use,” open to both highway legal vehicles and ATVs.
7. Activities that are exempt from the Final Rule for Travel Plan Management include aircraft, watercraft, over-snow vehicles, limited administrative use, emergency and law enforcement response, national defense purposes and uses specifically authorized under a written authorization (e.g., firewood cutting permit, grazing permit, special-use authorization).
8. Non-system routes that become system roads or trails in this process will be maintained to appropriate standards for trail class and road maintenance level.
9. New routes on private, state, or Bureau of Land Management (BLM) lands within the SNF boundary will be open to public use only through right-of-way or easements obtained for the purposes of public access. Travel management decisions considered under this EA pertain only to USFS-administered public lands.
10. For the purposes of this analysis, SNF roads are routes that are available to motorized vehicles when used consistent with state laws.
11. The USFS Manuals and Handbooks have specific guidance for reducing or eliminating impacts from the construction or maintenance of trails and roads.

Alternative Description by RD

Below are narrative descriptions of each alternative presented by RD (Fairfield, Ketchum, and Minidoka). Maps of each alternative are provided in Appendix A.

Fairfield RD

Alternative 1

Under Alternative 1, current management plans would continue to guide management of the route designation areas within the Fairfield RD. The USFS would not restrict motor vehicle use to designated roads and trails (except in areas that are currently restricted) and would not add any new restrictions nor would any other changes in the SNF transportation system be made at this time. Cross-country motor vehicle use would continue to be allowed. Motorized use of non-system (user-created) routes would continue and new routes would continue to be established. Changes to the transportation system would continue to be made on a case-by-case basis.

The Fairfield RD has become a destination for single-track motorized recreation. In addition to the established system, there are 310 miles (mi) of non-system routes within the route designation area. These numbers represent an estimate of the number of non-system trails and roads as the best data available at this time. These numbers were gathered from both private and USFS current and historical databases. It is reasonable to assume that there could be more unreported routes on the ground.

Existing trails are currently used by both motorized and non-motorized users. With direction to eliminate cross-country travel, and in consideration of the increasing number of ATV riders visiting the RD, it was determined that new trails and loops needed to be considered, and that trail widths need to be wide enough to accommodate ATVs.

Actions Common to Alternatives 2–4 on the Fairfield RD

A development plan has been completed for Kelley Creek Flats camping area on the Fairfield RD and is included in Alternatives 2, 3, and 4. This popular dispersed camping site has become a base for motorized recreation. Camping and associated use of ATVs and motorcycles in this area created new management issues that were analyzed under a separate action. To implement these actions, designation of existing roads and trails in this area is included under all action alternatives.

Closure of portions of the Wine Creek and Devils Dive trails is included under Alternatives 2, 3, and 4 to provide greater habitat buffers for wildlife.

Alternative 2

The proposed action was modified through scoping to consider additional changes in trail use, designation of existing user-created routes, and seasonal closures.

To address the desire for non-motorized trails in close proximity to the town of Fairfield, and in particular to Soldier Mountain Ski Area, the North Fork Soldier Creek trail is proposed for non-motorized use only. Salt Creek Trail is being changed from a motorized single-track trail to a non-motorized trail.

Motorized access is provided at Free Gold for ATVs (trails less than 50 inches [in.] wide) and at South Fork Soldier Creek Trail for single-track motorized. Motorized single-track trail is also proposed in Gardner Gulch and Cold Spring Ridge.

Existing motorized single-track trails that have been widened by ATVs are proposed for a change in use on the Blue Ridge and Cannonball Mountain trails. Existing user-created routes are proposed as motorized trails for vehicles less than 50 in. wide in the Grouse Butte Area and on Kelley Creek Flats.

It is recognized that recreational use is occurring on non-system roads throughout the project area. Thirty miles of non-system roads, most of which were developed for timber or mining purposes, are proposed for designation as trails less than 50 in. or motorized trails greater than 50 in.

Alternative 2 was also developed to balance recreational use with the need to provide additional protection for big game populations and their habitat. Hunting season closures are proposed on the North Fork, Middle Fork, Roanhide and Cold Spring trails. Additional seasonal road closures are also proposed in the Williams and Rosetta Creek drainages. Bounds Creek Trail and the lower 1.5 mi of Beaver Creek Trail would be eliminated from the system.

Trails identified for future planning include the West Fork Kelley Creek, which is proposed as a motorized trail for vehicles under 50 in. This trail will require major re-construction and site-specific analysis will need to be completed. The Soldier Mountain Front Trail is an existing single-track trail that has been widen by ATVs and is proposed as a motorized trail for vehicles under 50 in. Over 3 mi of this trail traverses BLM-managed public land and will require coordination on the right-of-way.

Alternative 3

In response to public comment on the proposed action, additional ATV and motorcycle opportunities are considered under Alternative 3. In addition to the routes proposed under Alternative 2, a change in use is considered for ATVs on portions of trails 7832 and 7087, north of Smoky Dome. Existing motorized single-track routes are proposed for designation and are located between Roanhide and Deer Point, in West Fork Willow Creek off of Forest Road (FR) 70017 and include two connectors to Dollarhide Summit.

Deer Mountain and Elk Ridge are existing user-created routes that were identified to be designated as ATV trails. These routes currently exist on the ground but may require re-routes to address resource concerns. If these routes require major construction, a separate analysis would be required.

Alternative 4

This alternative is based upon providing greater habitat buffers for wildlife by reducing trail densities. This alternative would provide fewer motorized trail opportunities as compared to Alternative 2. The Miller Creek Road is proposed for closure under this alternative, and the majority of non-system roads would not be designated for public use. Table 2-1 shows a comparison of the alternative components discussed in this section for the Fairfield RD.

Table 2-1. Fairfield RD comparison of alternative components.

Alternative Component	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Acres within the project area	217,789[a]	—	—	—
Acres of National Forest System lands open for cross-country motorized travel	203,913	0	0	0
Miles of non-motorized system trails	0	12	1	12
Miles of single-track motorized system trails	195	146	169	143
Miles of ATV system trails, motorized trails under 50 in. (wide)	9	50	69	47
Miles of jeep trails, motorized trails over 50 in.	0	29	30	12
Miles of road open to the public	161	162	162	149

a. Includes total acres within the SNF boundary even though there are private and other government lands.

Ketchum RD

Alternative 1

Under Alternative 1, current management plans would continue to guide management of the route designation areas within the Ketchum RD. The USFS would not restrict motor vehicle use to designated roads and trails (except in areas that are currently restricted), would not add any new restrictions, nor would any other changes in the SNF transportation system be made at this time. Cross-country motor vehicle use would continue to be allowed. Motorized use of non-system (user-created) routes would continue and new routes would continue to be established. Changes to the transportation system would continue to be made on a case-by-case basis.

The Ketchum RD has a well-established motorized single-track trail system. In addition to the established system, there are 82 mi of non-system routes within the route designation area. These numbers represent an estimate of the number of non-system routes that the SNF has data on at this time. These numbers were gathered from both private and USFS current and historical databases. It is reasonable that there could be more unreported routes on the ground.

Alternative 2

This alternative was developed to provide a managed system of trails and roads with a focus on backcountry travel.

Proposed single-track motorized trail system additions under Alternative 2 would include an existing motorized route between the Cow Creek and Mahoney Ridge trails. The previously closed Sawmill Creek Trail out of the Greenhorn Trailhead would be added to the system inventory for use by hikers, equestrians, and bicyclists.

Alturas Gulch connecting to the Cow Creek–Greenhorn system is proposed for single-track motorized trail but will require construction of 3.0 mi of trail, and will require additional analysis. A connector from the end of the Panther Gulch Road to Howard's Trail is proposed for motorized single track, but the existing route will need reroutes and may need additional analysis.

Other major changes occur in the Cove Creek area. A system of single-track trails would be designated connecting Cove Creek Road to the Indian Creek, Quigley Creek, and Baugh Creek roads. Some of these trails would require coordination and approval from the BLM. Lower portions (0.4 mi or less) of the Scree Quarry, Finley Gulch, Fowler Gulch, and Big Witch Creek non-system roads would be designated as trails open to all vehicles under Alternative 2.

Prior to the construction or reconstruction of any new trail proposed for addition to the SNF trail inventory, additional site-specific analysis and disclosure of environmental effects would be required.

The Rough Canyon and Red Rock timber sale roads, which access multiple dispersed camping sites, are non-system roads proposed for addition to the inventoried trail system. Addition of these roads would allow for continued dispersed camping in the area south of Warm Springs Road.

Through development of Alternative 2, two areas were prioritized to provide for OHV opportunities in the near future. These include the Wolftone–Kinsey Creek Loop and a system of trails in the Middle Fork Warm Spring, South Fork Warm Spring, and Meadow Creek areas south along the Smoky Mountain crest to the head of Frys Gulch. Designation of the Wolftone–Kinsey Creek Loop to an OHV loop would require coordination and approval from the BLM.

Alternative 3

This alternative is based upon increasing motorized opportunities available compared to Alternative 2. Additional motorized trail opportunities in this alternative include an OHV loop connecting lower Finley Gulch to lower Big Witch Creek, a single-track trail connecting Baugh Creek to Fisher Canyon via Trail Canyon, and designating the Meadow Creek Trail as open to all vehicles. This alternative would also designate the existing trail from Dollarhide Summit connecting to the Middle Fork Warm Spring Trail. Reconstruction and designation of this trail would require approval and coordination with the Idaho Department of Lands (IDL).

The previously closed Sawmill Creek Trail, off of the Greenhorn Trailhead, would be added to the system inventory for use by hikers, equestrians, bicyclists, and motorcyclists.

Alternative 4

This alternative was developed to provide greater habitat buffers for wildlife. The most significant changes in Alternative 4 from Alternative 2 are the elimination of all motorized trails in the Cove Creek area except for Driveway Gulch; elimination of the Alturas Gulch trail and the Panther Gulch–Howard's Trail connector; and redesignation of the Wolftone–Kinsey OHV Loop Trail to a single-track trail. The Limekiln Road, 70101, would be closed at the SNF boundary. All non-system roads proposed as trails open to all vehicles would also be eliminated.

Table 2-2 shows a comparison of the alternative components discussed in this section for the Ketchum RD.

Table 2-2. Ketchum RD comparison of alternative components.

Alternative Component	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Acres within the project area	76,822[a]	–	–	–
Acres of National Forest System lands open for cross-country motorized travel.	74,982	0	0	0
Miles of non-motorized system trails	8	8	7	8
Miles of single-track motorized system trails	83	87	90	86
Miles of ATV system trails, motorized trails under 50 in. (wide)	0	14	11	8
Miles of jeep trails, motorized trails over 50 in.	4	4	10	0
Miles of road open to the public.	34	34	36	33
a. Includes total acres within the SNF boundary even though there are private and other government lands.				

Minidoka RD

Alternative 1

Under Alternative 1, current management plans would continue to guide management of the route designation areas within all five divisions of the Minidoka RD. The USFS would not restrict motor vehicle use to designated roads and trails (except in areas that are currently restricted), would not add any new restrictions, nor would any other changes in the SNF transportation system be made at this time. Cross-country motor vehicle use would continue to be allowed. Motorized use of non-system (user-created) routes would continue and new routes would continue to be established. Changes to the transportation system would continue to be made on a case-by-case basis.

The Minidoka RD has become a destination for ATV motorized recreation. In addition to the established system, there are 53 mi of non-system routes on the Albion Division; 41 mi of non-system routes on the Black Pine Division; 443 mi of non-system routes on the Cassia Division; 142 mi of non-system routes on the Raft River Division; and 65 mi of non-system routes on the Sublett Division. These numbers represent an estimate of the number of non-system trails and roads that the SNF has data on at this time. These numbers were gathered from both private individuals and USFS current and historical databases. It is reasonable that there could be more unreported routes on the ground.

Minidoka RD—Albion Division

Alternative 2

Alternative 2 on the Albion Division was developed to provide improved motorized and non-motorized recreation. Alternative 2 on the Albion Division includes designation of the Skyline Trail, 7513, as single-track motorized, Brim Canyon as a jeep trail open to vehicles over 50 in., system trail 7014 as open to vehicles under 50 in., designation of the Cassia Creek trail open to vehicles under 50 in., trail 7805 as open to under 50 in., and trail 7806 open to vehicles under 50 in. The RD is also considering a proposal for future planning to develop an ATV trail from Brim Canyon to Marsh Creek.

Alternative 3

Alternative 3 recommends the same routes as are recommended for Alternative 2.

Alternative 4

Alternative 4 was developed to address public concern for the protection of wildlife security and habitat by reducing total miles of motorized routes and adding temporary closures during hunting season.

Table 2-3 shows a comparison of the alternative components discussed in this section for the Minidoka RD, Albion Division.

Table 2-3. Minidoka RD, Albion Division, comparison of alternative components.

Alternative Component	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Acres within the project area	66,760[a]	–	–	–
Acres of National Forest System lands open for cross-country motorized travel	65,340	0	0	0
Miles of non-motorized system trails	11	7	7	7
Miles of single-track motorized system trails	6	11	11	11
Miles of ATV system trails, motorized trails under 50 in. (wide)	14	14	14	10
Miles of jeep trails, motorized trails over 50 in.	0	2	2	2
Miles of road open to the public	50	50	50	50

a. Includes total acres within the SNF boundary even though there are private and other government lands.

Minidoka—Black Pine Division

Alternative 2

Alternative 2 on the Black Pine Division was developed to provide improved motorized and non-motorized recreation. Alternative 2 on the Black Pine Division designates a route for vehicles under 50 in. between Mud Springs and West Dry Canyon and designates the War Eagle trail, 7833, as single-track motorized. The Minidoka RD–Black Pine division map displays the recommended routes for Alternative 2.

Alternative 3

Alternative 3 recommends the same routes as are recommended for Alternative 2.

Alternative 4

Alternative 4 was developed to address public concern for the protection of wildlife and habitat by reducing total miles of motorized routes and adding temporary closures during hunting season. Alternative 4 on the Black Pine Division proposes seasonal closures during the deer hunt for War Eagle trail, 7833, and Pole Canyon, 70761. Table 2-4 shows a comparison of the alternative components discussed in this section for the Minidoka RD, Black Pine Division.

Table 2-4. Minidoka RD, Black Pine Division, comparison of alternative components.

Alternative Component	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Acres within the project area	76,710[a]	–	–	–
Acres of National Forest System lands open for cross-country motorized travel	73,883	0	0	0
Miles of non-motorized system trails	0	0	0	0
Miles of single-track motorized system trails	4	4	4	4
Miles of ATV system trails, motorized trails under 50 in. (wide)	0	2	2	0
Miles of jeep trails, motorized trails over 50 in.	0	0	0	0
Miles of road open to the public	101	101	101	101

a. Includes total acres within SNF boundary even though there are private and other government lands.

Minidoka RD—Cassia Division

Alternative 2

Alternative 2 on the Cassia Division was developed to provide improved motorized and non-motorized recreation.

Under Alternative 2, the annual closure during hunting season will be continued in the Fifth Fork drainage. A similar closure is proposed in the Ibex Peak area involving six road sections for a total of approximately 5 mi. Two short sections of system road will be closed: 72138, Bear Hollow, and 72087, Pickett Hollow.

Phantom Falls is currently a motorized trail but is proposed to change to non-motorized to improve public safety. A portion of the Lower Big Cottonwood Trail, 7007, is currently open to motorized travel.

However, this section of trail, which crosses onto IDFG management units (MUs), is proposed to change to non-motorized. The Rim View trail will remain non-motorized and non-mechanized.

Alternative 3

Alternative 3 was developed in response to a public desire for increased motorized routes and includes 27 mi of additional routes above what were considered for Alternative 2.

Alternative 4

Alternative 4 was developed to address public concern for the protection of wildlife and habitat by adding temporary closures during hunting season on several system roads west of Thoroughbred Springs and the Langford Flat areas and FR 70542 in the lower Goose Creek and Nevada Gulch areas on the southwest portion of the Cassia Division.

Table 2-5 shows a comparison of the alternative components discussed in this section for the Minidoka RD, Cassia Division.

Table 2-5. Minidoka RD, Cassia Division, comparison of alternative components.

Alternative Component	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Acres within the project area	297,096[a]	–	–	–
Acres of National Forest System lands open for cross-country motorized travel	290,633	2,455	2,455	2,455
Miles of non-motorized system trails	3	8	7	15
Miles of single-track motorized system trails	0	83	92	73
Miles of ATV system trails, motorized trails under 50 in. (wide)	88	65	86	59
Miles of jeep trails, motorized trails over 50 in.	0	2b	2b	2b
Miles of road open to the public	634	620	620	617

a. Includes total acres within the SNF boundary even though there are private and other government lands.

b. Conversion of system roads to jeep trails.

Minidoka RD—Raft River Division

Alternative 2

Alternative 2 for the Raft River Division designates the unnamed road from FR 600017 to FR 60026 as open for all motorized vehicles and closes a portion of FR 600090 (in accordance with Box Elder County ordinance), designates a single-track route from Wildcat to Johnson Creek, designates a route for vehicles under 50 in. in the Meadows area to avoid private land, and designates the ATV trail in Sheep Springs as open.

Alternatives 3 and 4

Alternatives 3 and 4, for the Raft River Division, recommend the same routes as described for Alternative 2. Table 2-6 shows a comparison of the alternative components discussed in this section for the Minidoka RD, Raft River Division.

Table 2-6. Minidoka RD, Raft River Division, comparison of alternative components.

Alternative Component	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Acres within the project area	92,245[a]	–	–	–
Acres of National Forest System lands open for cross-country motorized travel.	71,895	0	0	0
Miles of non-motorized system trails	0	0	0	0
Miles of single-track motorized system trails	9	12	12	12
Miles of ATV system trails, motorized trails under 50 in. (wide)	0	0	0	0
Miles of jeep trails, motorized trails over 50 in.	0	2	2	2
Miles of road open to the public.	96	98	98	98

a. Includes total acres within the SNF boundary even though there are private and other government lands.

Minidoka RD—Sublett Division

Alternative 2

Alternative 2 on the Sublett Division was developed to provide improved motorized and non-motorized recreation. Alternative 2 on the Sublett Division designates routes in Van Camp, Fall Creek, and Mud Springs as open to vehicles less than 50 in. wide. Indian Fork, 7188, is designated as single track and Lower Mill Canyon, an old logging road, as an ATV trail. Alternative 2 also designates a portion of jeep trail in Fall Creek to facilitate dispersed camping.

Alternative 3

Alternative 3 was developed in response to a public desire for increased motorized routes and recommends the same routes as are recommeneed for Alternative 2. Alternative 3 on the Sublett Division designates a portion of a jeep trail as open to motorized travel in Fall Creek, up to the stream crossing only, to facilitate dispersed camping.

Alternative 4

Alternative 4 was developed to address public concern for the protection of wildlife and habitat by adding seasonal closures of Trail 7188 (Indian Fork) and Trail 7837 (Line Canyon).). In addition to the seasonal closures, Alternative 4 recommends the same routes as are recommended for Alternative 2.

Table 2-7 shows a comparison of the alternative components discussed in this section for the Minidoka RD, Sublett Division.

Alternatives Considered but Dismissed from Further Analysis

Alternative 5—Original Proposed Action

This original proposed action was sent out for public comment in July 2006. This alternative included elimination of cross-country travel across the route designation area and identified non-system routes and trails to be added to the system. This alternative did not include proposed seasonal closures.

Rationale for Dismissal

The original proposed action was modified to address mule deer and elk vulnerability. The SNF Forest Plan (USDA 2003a) directs the SNF to *"Implement temporary, seasonal, or permanent area and* *transportation route closures through special orders to address big game vulnerability and public access needs”* (WIOB12, p. III-26).

The original proposal was also modified in response to requests for further changes in use for motorized and non-motorized trail opportunities. Because the effects of the original proposed action would be covered by the existing alternatives, there is no need for further analysis.

Table 2-7. Minidoka RD, Sublett Division, comparison of alternatives components.

Alternative Component	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Acres within the project area	78,262[a]	–	–	–
Acres of National Forest System lands open for cross-country motorized travel	77,637	0	0	0
Miles of non-motorized system trails	0	0	0	0
Miles of single-track motorized system trails	0	3	3	3
Miles of ATV system trails, motorized trails under 50 in. (wide)	12	14	14	14
Miles of jeep trails, motorized trails over 50 in.	0	1	1	1
Miles of road open to the public	114	114	114	114

a. Includes total acres within the SNF boundary even though there are private and other government lands.

Alternative 6—Designate All Existing “On-the-Ground” Routes

Under this alternative, all existing on-the-ground routes would be designated and incorporated into the transportation system. This includes classified as well as non-system (user-created) roads and trails. Cross-country travel would be eliminated. New user-created routes would not be allowed.

Rationale for Dismissal

This alternative would implement the Final Rule for Travel Plan Management. However, this alternative would only meet a portion of the purpose and need statement. In some cases, there are duplicate user-created roads and trails within a few hundred yards of each other. They often include dense, braided networks of intersecting paths. In other situations the user-created roads and trails because of their poor placement and lack of design are causing resource damage. Some of these user-created roads and trails would not meet SNF Forest Plan direction for resource and recreation management. Considerable work would be needed to bring some of these routes into compliance with applicable standards. Duplicate routes adjacent to one another would still exist.

The need to minimize damage to soil, water, wildlife, vegetation, and other forest resources associated with motorized recreation use would not be met. More specifically, the following Forest Plan (USDA 2003a) direction would not be met under this alternative:

- Objective REOB17—Initiate a process of phased, site-specific travel management planning as soon as practicable. Prioritize planning based on areas where the most significant user conflicts and resource concerns are occurring. Identify and address inconsistent access management of roads, trails, and areas across the SNF, RDs, and interagency boundaries

- Guideline REGU07—Where recreation facilities or practices have been identified as potentially contributing to degradation of water quality, aquatic species, or occupied sensitive and watch plant habitat, facilities and practices causing degradation should be considered for relocation, closure, changes in management strategy, alteration, or discontinuance.

Alternative 7—Designate the Existing Classified Road System/Eliminate Non-System "User-Created" Routes and Eliminate Cross-Country Travel

This alternative is similar to the proposed action (Alternative 2) in that it would designate the existing system routes on the transportation system and it would eliminate cross-country travel. However, it would eliminate all the existing non-system (user-created) routes. This alternative would be compliant with the purpose and need and the Final Rule for Travel Plan Management.

Rationale for Dismissal

This alternative is somewhat similar to Alternative 2 but the main difference would be the elimination of all non-system user-created routes. The Final Rule for Travel Management's purpose is to provide for a system of NFS roads, trails, and areas with the opportunity for the public to participate in the designation process. This alternative does not address public demand to provide for quality ATV trails and would not give the USFS an opportunity to design a system of high quality, sustainable recreation experiences for motorized users. Therefore, this alternative was eliminated from further analysis.

Alternative 8—Eliminate all classified roads within IRAs

Under this alternative, the USFS would restrict motor vehicle use to designated roads and trails, cross-country motor vehicle use would be eliminated, and roads within all existing IRAs in the project area would be closed.

Rationale for Dismissal

The 2001 Roadless Area Conservation Rule (66 FR 9, 2001) did not eliminate roads within IRAs. The 2001 Roadless Rule directs how certain activities may be conducted within IRAs and how the USFS must comply with that direction. Should an area be designated as wilderness, the USFS must also comply with that direction. None of the action alternatives contain Level 3 system roads (defined as suitable for passenger vehicles), or higher, within IRAs for route designation. Therefore, this alternative was eliminated from further analysis.

Comparison of Effects from the Alternatives

This section provides a summary of the effects of implementing each alternative for each resource in table form, by resource, by RD. Information found in Table 2-8 to Table 2-24 is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives. The respective analyses and conclusions upon which these tables were derived are presented in Chapter 3, Affected Environment and Environmental Consequences.

Recreation

Table 2-8. Fairfield RD—Recreation.

Indicators	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Miles of road and trail maintained for motorized and non-motorized recreation opportunities	Motorized: 365 Non-motorized: 0	Motorized: 387 Non-motorized: 12	Motorized: 430 Non-motorized: 1	Motorized: 351 Non-motorized: 12
The Recreation Opportunity Spectrum (ROS)	ROS Class acreages are maintained	ROS Class acreages are maintained	ROS Class acreages are maintained	ROS Class acreages are maintained
Recreation Niche	Compatible with the Sawtooth National Forest (SNF) Recreation Niche goals Marginally compatible with the Recreation Niche settings	Compatible with the SNF Recreation Niche goals	Compatible with the SNF Recreation Niche goals	Compatible with the SNF Recreation Niche goals
Forest Plan Compliance	Alternative 1 does not actively help to achieve Forest Plan Objectives	Complies with the SNF Forest Plan direction, and helps achieve Forest Plan Recreation Objectives 0730, 0840, 0929, and 1028, which call for reducing soil erosion caused by OHVs, and Objectives 0733, 0847, 0930, and 1031	Complies with the SNF Forest Plan direction, and helps achieve Forest Plan Recreation Objectives 0730, 0840, 0929, and 1028, which call for reducing soil erosion caused by OHVs, and Objectives 0733, 0847, 0930, and 1031	Complies with the SNF Forest Plan direction, and helps achieve Forest Plan Recreation Objectives 0730, 0840, 0929, and 1028, which call for reducing soil erosion caused by OHVs, and Objectives 0733, 0847, 0930, and 1031

Table 2-9. Ketchum RD—Recreation.

Indicators	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Miles of road and trail maintained for motorized and non-motorized recreation opportunities	Motorized: 121 Non-motorized: 8	Motorized: 139 Non-motorized: 8	Motorized: 147 Non-motorized: 7	Motorized: 127 Non-motorized: 8
The Recreation Opportunity Spectrum (ROS)	Desired ROS Class acreages are maintained	Desired ROS Class acreages are maintained	Desired ROS Class acreages are maintained	Desired ROS Class acreages are maintained
Recreation Niche	Marginally compatible with the Sawtooth National Forest (SNF) Recreation Niche settings	Compatible with the SNF Recreation Niche goals	Compatible with the SNF Recreation Niche goals	Compatible with the SNF Recreation Niche goals
Forest Plan Compliance	Alternative 1 does not actively help to achieve Forest Plan Objectives	Complies with Recreation Objective 0464 by reducing the number of routes available for motorized use and putting more trails into the system where they will receive regular maintenance and patrols	Complies with Recreation Objective 0464 by reducing the number of routes available for motorized use and putting more trails into the system where they will receive regular maintenance and patrols	Complies with Recreation Objective 0464 by reducing the number of routes available for motorized use and putting more trails into the system where they will receive regular maintenance and patrols

Table 2-10. Minidoka RD—Recreation.

Indicators	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Miles of road and trail maintained for motorized and non-motorized recreation opportunities	Motorized Albion: 74 Black Pine: 105 Cassia: 722 Raft River: 107 Sublett: 126 Non:motorized Albion: 11 Black Pine: 0 Cassia: 3 Raft River: 0 Sublett: 0	Motorized Albion: 77 Black Pine: 107 Cassia: 770 Raft River: 111 Sublett:132 Non:motorized Albion: 7 Black Pine: 0 Cassia: 8 Raft River: 0 Sublett: 0	Motorized Albion: 77 Black Pine: 107 Cassia: 802 Raft River: 112 Sublett: 132 Non:motorized Albion: 7 Black Pine: 0 Cassia: 7 Raft River: 0 Sublett: 0	Motorized Albion: 73 Black Pine: 105 Cassia: 753 Raft River: 111 Sublett: 132 Non:motorized Albion: 7 Black Pine: 0 Cassia: 15 Raft River: 0 Sublett: 0
The Recreation Opportunity Spectrum (ROS)	Desired ROS Class acreages are maintained	Desired ROS Class acreages are maintained	Desired ROS Class acreages are maintained	Desired ROS Class acreages are maintained
Recreation Niche	Compatible with the Sawtooth National Forest (SNF) Recreation Niche goals Marginally compatible with the Recreation Niche settings	Compatible with the SNF Recreation Niche goals	Compatible with the SNF Recreation Niche goals	Compatible with the SNF Recreation Niche goals
Forest Plan compliance	Does not actively help to achieve Forest Plan Objectives	Fulfills Recreation Objectives 1227, 1333, and 1414. Helps achieve Recreation Objectives 1128 1331, 1131 and 2018	Fulfills Recreation Objectives 1227, 1333, and 1414. Helps achieve Recreation Objectives 1128 and 1331 and Objectives 1131 and 2018	Fulfills Recreation Objectives 1227, 1333, and 1414. Helps achieve Recreation Objectives 1128 and 1331 and Objectives 1131, and 2018

Vegetation

Table 2-11. Fairfield RD—Vegetation.

Indicators	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Infested (non-native & noxious weeds) acres accessible by motorized travel based upon route location and designation	19	0.33	0.33	0.33
Estimated total acres at risk of introduction/spread of noxious weed invasion based susceptibility	60,651	5,367	5,453	5,272
Estimated total acres of threatened, endangered, proposed, candidate, or sensitive plant species occupied and potential habitat within open-use areas and designated routes	Ute Ladies'-tresses Orchid: 13,251 acres potential habitat Bugleg Goldenweed: 190 Least Phacelia: 8	Ute Ladies'-tresses Orchid: 8,953 acres potential habitat Bugleg Goldenweed: 103 Least Phacelia: 0	Ute Ladies'-tresses Orchid: 9,138 acres potential habitat Bugleg Goldenweed: 104 Least Phacelia : 0	Ute Ladies'-tresses Orchid: 8,810 acres potential habitat Bugleg Goldenweed: 99 Least Phacelia : 0

Table 2-12. Ketchum RD—Vegetation.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Infested acres accessible by motorized travel based upon route location and designation.	89	83	83	83
Estimated total acres at risk of introduction/spread of noxious weed invasion based susceptibility	17,511	1,983	2,063	1,859
Estimated total acres of threatened, endangered, proposed, candidate, or sensitive plant species occupied and potential habitat within open-use areas and designated routes	Ute Ladies':tresses Orchid: 4,342 acres potential habitat Bugleg Goldenweed: 14	Ute Ladies':tresses Orchid: 3,056 acres potential habitat Bugleg Goldenweed: 9.4	Ute Ladies':tresses Orchid: 3,196 acres potential habitat Bugleg Goldenweed: 9.4	Ute Ladies':tresses Orchid: 2,919 acres potential habitat Bugleg Goldenweed: 9.4

Table 2-13. Minidoka RD—Vegetation.

Indicators	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Infested acres accessible by motorized travel based upon route location and designation.	Albion: 0 Black Pine: 355 Cassia: 318 Raft River: 221 Sublett: 871	Albion: 0 Black Pine: 239 Cassia: 74 Raft River: 158 Sublett: 717	Albion: 0 Black Pine: 239 Cassia: 74 Raft River: 158 Sublett: 717	Albion: 0 Black Pine: 239 Cassia: 74 Raft River: 158 Sublett: 717
Estimated total acres at risk of introduction /spread of noxious weed invasion based susceptibility	Albion: 12,674 Black Pine: 17,012 Cassia: 83,974 Raft River: 31,762 Sublett: 38,991	Albion: 861 Black Pine: 1,633 Cassia: 12,252 Raft River: 3,021 Sublett: 3,488	Albion: 861 Black Pine: 1,633 Cassia: 12,468 Raft River: 3,021 Sublett: 3,488	Albion: 834 Black Pine: 1,633 Cassia: 12,162 Raft River: 3,021 Sublett: 3,488
Estimated total acres of threatened, endangered, proposed, candidate, or sensitive plant species occupied and potential habitat within open-use areas and designated routes	All Divisions Ute Ladies'-tresses Orchid: 31,329 acres potential habitat Albion Division Christ Indian Paintbrush: 16 Davis' wavewing: 122 Cassia Division Goose Creek Milkvetch: 0 Idaho Penstemon: 18	All Divisions Ute Ladies'-tresses Orchid: 15,248 acres potential habitat Albion Division Christ Indian Paintbrush: 0 Davis' wavewing: 0 Cassia Division Goose Creek Milkvetch: 0 Idaho Penstemon: 4.7	All Divisions Ute Ladies'-tresses Orchid: 15,188 acres potential habitat Albion Division Christ Indian Paintbrush: 0 Davis' wavewing: 0 Cassia Division Goose Creek Milkvetch: 0 Idaho Penstemon: 4.7	All Divisions Ute Ladies'-tresses Orchid: 14,937 acres potential habitat Albion Division Christ Indian Paintbrush: 0 Davis' wavewing: 0 Cassia Division Goose Creek Milkvetch: 0 Idaho Penstemon: 4.7

Soil and Hydrology

Table 2-14. Fairfield RD—Soil and Hydrology.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Percent detrimental disturbance	14.3	7.8	8.1	7.1
Percent total soil resource commitment	0.7	0.4	0.4	0.4
Miles of open or designated routes	702	387	430	351
Miles of open or designated routes on high surface erosion lands	446	247	270	225
Miles of open or designated routes in riparian conservation areas	235	147	160	143
Miles of open or designated routes in riparian conservation areas on high surface erosion lands	95	66	69	61

Table 2-15. Ketchum RD—Soil and Hydrology.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Detrimental disturbance	11.1	6.8	7.1	6.4
Total soil resource commitment	0.5	0.3	0.3	0.3
Miles of open or designated routes	224	139	147	127
Miles of open or designated routes on high surface erosion lands	47	32	33	31
Miles of open or designated routes in riparian conservation areas	95	66	69	61
Miles of open or designated routes in riparian conservation areas on high surface erosion lands	47	32	33	31

Table 2-16. Minidoka RD—Soil and Hydrology.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Detrimental disturbance	Albion: 10.8 Black Pine: 15.2 Cassia: 10.8 Raft River: 18.2 Sublett: 16.9	Albion: 6.6 Black Pine: 9.0 Cassia: 6.6 Raft River: 7.2 Sublett: 9.4	Albion: 6.6 Black Pine: 9.0 Cassia: 6.6 Raft River: 7.3 Sublett: 9.4	Albion: 6.5 Black Pine: 9.0 Cassia: 6.5 Raft River: 7.2 Sublett: 9.4
Total soil resource commitment	Albion: 0.6 Black Pine: 0.8 Cassia: 0.6 Raft River: 1.0 Sublett: 0.9	Albion: 0.3 Black Pine: 0.5 Cassia: 0.3 Raft River: 0.4 Sublett: 0.6	Albion: 0.3 Black Pine: 0.5 Cassia: 0.3 Raft River: 0.4 Sublett: 0.6	Albion: 0.3 Black Pine: 0.5 Cassia: 0.3 Raft River: 0.4 Sublett: 0.6
Miles of open or designated routes	Albion: 130 Black Pine: 154 Cassia: 1,212 Raft River: 258 Sublett: 191	Albion: 74 Black Pine: 109 Cassia: 770 Raft River: 111 Sublett: 132	Albion: 77 Black Pine: 110 Cassia: 802 Raft River: 111 Sublett: 132	Albion: 73 Black Pine: 107 Cassia: 753 Raft River: 110 Sublett: 132
Miles of open or designated routes on high surface erosion lands	Albion: 0 Black Pine: 16 Cassia: 217 Raft River: 221 Sublett: 39	Albion: 0 Black Pine: 16 Cassia: 127 Raft River: 84 Sublett: 21	Albion: 0 Black Pine: 16 Cassia: 128 Raft River: 85 Sublett: 21	Albion: 0 Black Pine: 16 Cassia: 122 Raft River: 84 Sublett: 21
Miles of open or designated routes in riparian conservation areas	Albion: 28 Black Pine: 58 Cassia: 320 Raft River: 49 Sublett: 116	Albion: 16 Black Pine: 46 Cassia: 188 Raft River: 27 Sublett: 80	Albion: 16 Black Pine: 46 Cassia: 196 Raft River: 27 Sublett: 80	Albion: 16 Black Pine: 46 Cassia: 179 Raft River: 27 Sublett: 80
Miles of open or designated routes in riparian conservation areas on high surface erosion lands	Albion: 0 Black Pine: 12 Cassia: 97 Raft River: 40 Sublett: 24	Albion: 0 Black Pine: 10 Cassia: 53 Raft River: 21 Sublett: 16	Albion: 0 Black Pine: 11 Cassia: 54 Raft River: 22 Sublett: 16	Albion: 0 Black Pine: 10 Cassia: 52 Raft River: 21 Sublett: 16

Fisheries

Table 2-17. Fairfield RD—Fisheries.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Number of subwatersheds where route density exceeds 1.7 mi/mi^2	11	5	7	3
Miles of system trails receiving maintenance	195	231	265	208
Miles of system routes closed to motorized use	0	18.11	12.47	34.94
Percent of riparian conservation areas open to motorized use and dispersed camping	40	27	28	27

Table 2-18. Ketchum RD—Fisheries.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Number of subwatersheds where route density exceeds 1.7 mi/mi^2	1	0	0	0
Miles of system trails receiving maintenance	115	133	140	101
Miles of system routes closed to motorized use	0	0.80	0.80	1.47
Percent of riparian conservation areas open to motorized use and dispersed camping	49	34	36	33

Table 2-19. Minidoka RD—Fisheries.

Indicators	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Number of subwatersheds where route density exceeds 1.7 mi/mi^2	Albion: 1 Black Pine: 0 Cassia: 21 Raft River: 0 Sublett: 0	Albion: 1 Black Pine: 0 Cassia: 9 Raft River: 0 Sublett: 0	Albion: 1 Black Pine: 0 Cassia: 11 Raft River: 0 Sublett: 0	Albion: 1 Black Pine: 0 Cassia: 10 Raft River: 0 Sublett: 0
Miles of system trails receiving maintenance	Albion: 7 Black Pine: 4 Cassia: 107 Raft River: 9 Sublett: 20	Albion: 11 Black Pine: 4 Cassia: 166 Raft River: 14 Sublett: 25	Albion: 11 Black Pine: 4 Cassia: 203 Raft River: 14 Sublett: 25	Albion: 7 Black Pine: 4 Cassia: 159 Raft River: 14 Sublett: 25
Miles of system routes closed to motorized use	Albion: 0 Black Pine: 0 Cassia: 0 Raft River: 0 Sublett: 0	Albion: 0 Black Pine: 0 Cassia: 1.46 Raft River:0 Sublett:0	Albion:0 Black Pine:0 Cassia:0.63 Raft River:0 Sublett:0	Albion:1.64 Black Pine:0 Cassia:4.99 Raft River:0 Sublett:0
Percent of riparian conservation areas open to motorized use and dispersed camping	Albion:38 Black Pine: 55 Cassia:59 Raft River: 53 Sublett: 86	Albion: 29 Black Pine: 27 Cassia: 28 Raft River: 22 Sublett: 37	Albion: 36 Black Pine: 27 Cassia: 28 Raft River: 23 Sublett: 37	Albion: 28 Black Pine: 27 Cassia: 27 Raft River: 22 Sublett: 37

Wildlife

Table 2-20. Fairfield RD—Wildlife.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Acres open to cross-country motorized travel within wildlife habitat	217,789	0[a]	0[a]	0[a]
Average open-road [b] density within wildlife habitat (mi/mi^2)	0.54	0.42	0.42	0.37
Average open[b] motorized trail density within wildlife habitat (mi/mi^2)	1.2	0.5	0.69	0.5

a. Note there will be some acres open to off-road travel within 300 ft of designated roads for the purposes of dispersed camping only

b. Open-road/trail density refers to the density of roads/trails (mi of road/m^2 of habitat) that are open throughout the May 1–December 1 time period (roads/trails closed during the hunting season are not part of this density).

Table 2-21. Ketchum RD—Wildlife.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Acres open to cross-country motorized travel within wildlife habitat	76,822	0	0	0
Average road density within wildlife habitat (mi/mi^2)[b]	0.54	0.32	0.4	0.27
Average motorized trail density within wildlife habitat (mi/mi^2)[b]	1.4	0.84	0.84	0.78

a. Note there will be some acres open to off-road travel within 300 ft of designated roads for the purposes of dispersed camping only

b. Open-road/trail density refers to the density of roads/trails (mi of road/m^2 of habitat) that are open throughout the May 1–December 1 time period (roads/trails closed during the hunting season are not part of this density).

Table 2-22. Minidoka RD—Wildlife.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Acres open to cross country motorized travel within wildlife habitat	579,388	0	0	0
Average road density within wildlife habitat (mi/mi^2)[b]	1.68	1.05	1.05	.99
Average motorized trail density within wildlife habitat (mi/mi^2)[b]	.47	.56	.60	.56

a. Note there will be some acres open to off-road travel within 300 ft of designated roads for the purposes of dispersed camping only

b. Open-road/trail density refers to the density of roads/trails (mi of road/m^2 of habitat) that are open throughout the May 1–December 1 time period (roads/trails closed during the hunting season are not part of this density).

Heritage

Table 2-23. Heritage for the Fairfield, Ketchum, and Minidoka RDs.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Potential effects to heritage resources	High potential to have direct adverse affect to heritage resources	Higher likelihood that potential affects could be mitigated	Higher likelihood that potential affects could be mitigated	Higher likelihood that potential affects could be mitigated

Economics

Table 2-24. Fairfield, Ketchum, and Minidoka RD—Economics.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Road and trail Maintenance	No Change	Minor decrease in miles (mi) of road requiring maintenance; will NOT be noticeable.	Minor decrease in mi of road requiring maintenance; will NOT be noticeable.	Minor decrease in mi of road requiring maintenance; will NOT be noticeable.
Updating and maintaining route markers and signs	No Change	Purchasing and installing route markers and signs on both roads and trails should receive more funding and emphasis for the next 3–5 years. After that funding needs will decrease, but sign maintenance will require steady funding for long term.	Purchasing and installing route markers/signs on both roads and trails should receive more funding and emphasis for the next 3–5 years. After that funding needs will decrease, but sign maintenance will require steady funding for long term.	Purchasing and installing route markers/signs on both roads and trails should receive more funding and emphasis for the next 3–5 years. After that funding needs will decrease, but sign maintenance will require steady funding the long term.
Routes removed from system to be monitored for erosion and considered for decommissioning if erosion becomes a problem	No Change	Future decommissioning needed to prevent resource damage may need to be funded by allocation other than road maintenance	Future decommissioning needed to prevent resource damage may need to be funded by allocation other than road maintenance	Future decommissioning needed to prevent resource damage may need to be funded by allocation other than road maintenance
Increased route use caused increased maintenance needs	No Change	Case-by-Case. Increased grading and possible need for spot surfacing.	Case-by-Case. Increased grading and possible need for spot surfacing.	Case-by-Case. Increased grading and possible need for spot surfacing.

CHAPTER 3—Affected Environment and Environmental Consequences

This chapter summarizes the physical, biological, social, and economic environments of the project area and the effects of implementing each alternative on that environment. This chapter also presents the scientific and analytical basis for the comparison of alternatives presented in Chapter 2. The resource areas analyzed are presented in the following order:

- Recreation
- Vegetation
- Soils/Hydrology
- Fisheries/Aquatic Resources
- Wildlife
- Heritage
- Economics.

Each discussion includes an introduction to the resource concern, an explanation on how the effects were measured, and options for modifying effects (if any). The direct and indirect effects for Alternative 1 (no action) are presented followed by direct and indirect effects for the action alternatives (2–4). Following the discussions of effects by issue, the cumulative effects of all actions are summarized and contrasted among alternatives.

This EA hereby incorporates, by reference, the recreation, vegetation, soils/hydrology, fisheries/aquatic resources, wildlife, heritage, and economics specialists' reports in the SNF Route Designation EA Project Record (40 CFR §1502.21, 2007)[1]. These reports contain the detailed data, methodologies, analyses, conclusions, maps, references, and technical documentation that the specialists relied upon to reach the conclusions in this EA.

Maps of each alternative by RD and by division (where applicable), are provided in Appendix A.

Assumptions

The following assumptions were incorporated into the analysis:

Cross-Country Travel

1. Cross-country motorized travel will not occur except in designated areas.
2. Motorized cross-country travel is acceptable within the provisions of a valid permit to gather firewood or other forest products in designated areas.

[1] The Route Designation EA Project Record is located at SNF Supervisor's Office in Twin Falls, Idaho.

System and Non-System Routes

- All system and non-system routes currently exist on the ground.
- Motorized use will be restricted to designated system routes only.
- Once designated, system routes will only receive the use for which they were designated (i.e., vehicles 50 in. or less in width, motorcycle, bike, horse, and foot traffic).
- Designated trails and roads will be maintained to USFS standards.
- Remaining non-system routes (not on the travel map) should legally only receive non-motorized use (hiking, biking, horseback riding).
- Existing non-system routes not identified or included in a specific alternative as newly designated routes will continue to be available for non-motorized use. The level of occurrence of new routes under this assumption is expected to be low to non-existent. Conditions that promote productive soils in these locations are expected to recover over the long term (20–50 years).
- Non-system routes converted to system trails or roads will be improved where needed to handle intended uses.
- The number of non-system routes that receive infrequent non-motorized use will decrease over time as vegetation closes in the travel route.
- Remaining non-system routes will be reviewed by the SNF to determine the appropriate actions necessary to prevent resource damage.
- Any system road or trail that has drainage features in place and received routine maintenance in the past that is converted to a non-system route will be reviewed by the SNF within three years of the decision to determine what long-term stabilization measures are required to prevent erosion to streams and route failures.

Dispersed Recreation

- Dispersed motorized camping will only occur within 300 ft of system roads and 100 ft of systems trails.
- Dispersed recreation services (i.e., camping sites and parking areas) near designated system routes will be periodically reviewed by the SNF for potential resource impacts. If unacceptable resource impacts are found, appropriate administrative actions will be taken to mitigate or remove problem areas.

Travel Plan Map Effectiveness

- The effects analysis recognizes that public compliance and enforcement by the USFS is necessary to create the benefits anticipated for the action alternatives. It is reasonable to assume that switching to a formal, designated-use only system that is simpler to understand and more consistent with adjoining lands should be inherently more enforceable, as physical closures should make more obvious which routes are open versus which routes are closed at any given time.

- Closure of non-system roads and trails does not assure direct and indirect impacts of routes will be immediately eliminated. Realistically, some level of unauthorized motorized use of non-system routes will likely continue until an effective physical closure has taken place.

Travel Plan Map Implementation

- The updated travel plan map (to be known as the MVUM) as a USFS policy would take effect concurrent with the Decision Notice. However, it is recognized that the actual on-the-ground plan will take several years to fully implement. Thus, in reality, the impacts and benefits from the proposed actions will also be spread out over several years.

Adaptive Management

- The effects analysis assumes that the USFS will continue to monitor, assess, prioritize, mitigate and/or rehabilitate routes that create undesirable impacts to hydrologic function and aquatic resources.

Non-System Routes

- Miles of non-system routes were estimated based on aerial photos, inventories provided by users, and existing USFS inventories. A non-system route is defined as a road or trail that is not included in an official USFS transportation atlas.

System Roads and Trails

- Miles of system roads and trails were calculated based on spatial coverages obtained from the USFS geographical information system (GIS) themes library. A system road or trail is defined as a road or trail wholly or partly within or adjacent to, and serving, the NFS that the USFS determines is necessary for the protection, administration, and utilization of the NFS and the use and development of its resources.

Recreation

There were approximately 1,188,600 recreation visits to the SNF in 2005 according to the National Visitor Use Monitoring (NVUM) report published in 2006 (USDA 2006a). The most popular activities pursued on the SNF include the following:

- Viewing natural features (48.9% of all visitors participated in this activity)
- Hiking/walking (38.9%)
- Viewing wildlife (36.7%)
- Downhill skiing (36.7%)
- Relaxing (33%).

Other activities of interest that were considered for this analysis include the following:

- Driving for pleasure (21%)
- OHV use (2.8%)

- Motorized trail activity (3.4%)
- Hunting (6.3%)
- Fishing (10.9%)
- Backpacking (2%)
- Horseback riding (1.6%)
- Bicycling (6.3%)
- Other non-motorized (5.2%).

The NVUM survey does not break down use for specific areas within the SNF itself. These use rates are provided as an overview of SNF use.

Recreation managers have two primary conceptual tools for describing and managing recreation on the NFS lands. They are the Recreation Opportunity Spectrum (ROS) and the Recreation Niche.

Recreation Opportunity Spectrum. The ROS is a formal classification system in which factors affecting recreation opportunities, such as access, naturalness, presence of other people, and management controls, are used to describe recreation settings, as well as to organize them along a continuum, or spectrum, from "paved to the primitive." Each ROS class is described in terms of specific combinations of activities, facilities, and experience opportunities. ROS classes are primarily affected by an area's size, its distance from a road(s), and likelihood of users encountering other users. The seven ROS classes, from the most primitive to the most developed are the following:

- Primitive
- Semi-primitive non-motorized
- Semi-primitive motorized
- Roaded natural
- Roaded modified
- Rural
- Urban.

The ROS provides a framework for describing the types of outdoor recreation and experiences that the public can expect at any given location on the SNF. The ROS also provides a context and a means to describe and measure the effects to recreation from other projects and activities. The SNF Forest Plan (USDA 2003a) prescribes a desired ROS class for every acre of the SNF. Maintaining the existing mix of ROS acres on the SNF is an objective of the Forest Plan (REOB02, pg. III–62) and of this analysis. Changing the "adopted ROS" mix prescribed by the Forest Plan would require an amendment to the Forest Plan.

Recreation Niche. The Recreation Niche is a description, or characterization, of the distinct role the USFS has in providing outdoor recreation opportunities. The Niche allows managers to focus management efforts on what is unique and valuable about the SNF. The Niche is affected by public expectations (demand) and the ecological land base. Alternatives in this document will be assessed as to whether or not they are compatible with the niche settings that have been assigned to the different areas on the SNF.

The Niche statement for the SNF is the following:

> *"Sharp Scenery—The Sawtooth National Forest is a place of awe-inspiring beauty. Jagged peaks and rolling pastoral valleys are connected by forested terrain. This contrast in landscapes, coupled with the contrast in seasons, creates winter wonders and summer scene-sations. Trails weave through the Forest providing opportunities for people to connect with the land and find solitude. For generations these picturesque settings have enhanced the quality of life for visitors and communities".* (USDA 2006b)

Scenery, winter recreation, trails, and water-based recreation provide the focus for recreation on the SNF. Five broad niche settings are used to describe this focus:

- Backcountry travel
- Remote peaks and lakes
- Pastoral west
- River corridors
- Community connection.

Forest Plan Direction and Compliance

In addition to ROS and Recreation Niche, the Forest Plan also provides direction at both the SNF-wide and management area (MA) levels for recreation use management across the SNF. The Forest Plan (USDA 2003a) describes desired conditions for recreation including providing for a "variety of environmentally responsible access": "People visiting the National Forest find opportunities for a wide spectrum of recreation experiences" and "Dispersed… uses are located and conducted in an environmentally responsible manner…." (Forest Plan p. III-61)

A desired condition for recreation is: "Various methods are used to manage recreation uses and facilities to mitigate degrading effects from recreation to other resources. Diverse landscapes offer a variety of settings for a wide range of activities, including primitive settings where there are opportunities for solitude, risk, and challenge, to more modified settings where there are opportunities for social interaction, comfort, and less risk."

The Forest Plan (USDA 2003a) also includes the following goals relative to travel planning:

- Manage, operate, and maintain a year-round recreation program that offers a broad range of developed and dispersed recreation opportunities and experiences in a range of settings as reflected by the ROS (REGO01).

- Plan and manage the recreation program and recreation resources to meet established standards (e.g., Meaningful Measures) to provide for health and cleanliness, safety and security, facility conditions, responsiveness to customers, environmental setting, and permit administration (REGO02).
- Address current and emerging recreation conflicts, while maintaining recreation opportunities when possible (REGO03).
- Manage recreation uses and facilities to mitigate degrading effects from recreation to other resources (REGO04).
- Manage motorized and non-motorized travel and travel-related facilities to
- Provide for public safety
- Meet resource objectives and access needs
- Mitigate road and trail damage
- Minimize maintenance costs and user conflicts (REGO05).

Recreation Issue

There is a concern that under the proposed action, removal of cross-country motorized travel, as well as loss of some non-system travel routes, may adversely affect the motorized recreation experience.

Indicators

To measure the effects of the Recreation Issue, two indicators have been developed. The following indicators (or measures) are used to describe the current condition and the effects of the alternatives upon the current condition:

- Miles of road and trail available for motorized and non-motorized recreation opportunities
- Forest Plan compliance.

Recreation Elements and Effects Common to All Action Alternatives

The following effects are common to all action alternatives:

- Dispersed motorized camping is retained in a 300-ft corridor on each side of a designated road and a 100-ft corridor on each side of a designated motorized trail in all three alternatives. (Exception: formally designated dispersed sites throughout the Ketchum RD.)
- Cross-country motorized use will continue to be authorized, on a case-by-case basis, for activities that are exempt from the Final Rule for Travel Planning such as for limited administrative use, emergency and law enforcement response, national defense purposes, and uses specifically authorized under a written authorization (e.g., firewood cutting permit, grazing permit, and special use authorization).
- Non-motorized uses will continue across the entire project area.

- Under Alternatives 2–4, the current level of environmental effects from motorized recreation use would be expected to decrease resulting from the elimination of use on non-system routes that remain undesignated and from initiating regular maintenance on newly designated routes.

- The area available for motorized dispersed camping will be reduced. In direct acres this reduction is large, but in fact most existing dispersed camping occurs within the motorized camping corridors. It is not possible to predict the exact impact of the dispersed camping limits, but there will be some displacement of campers from areas they have traditionally used.

- An indirect effect is a decrease in user conflicts between motorized and non-motorized users if non-motorized users begin to perceive that the area available to them to pursue recreation free from the sights and sounds of other users has increased. As such, displacement of those users onto other non-motorized recreation areas throughout the SNF, or on adjacent lands, should decrease. The action alternatives will displace motorized users currently traveling on the not designated, non-system routes and those traveling cross-country. This displacement may increase use of the motorized trails already in the system and those newly designated to the system, although the additional trails selected for addition to the system tend to already be the more popular non-system trails, which in the end should minimize overall displacement.

- Conflicts between motor vehicle use and existing or proposed non-motorized recreational uses of NFS lands and neighboring federal lands will be minimal or will decrease. The action alternatives increase the amount of maintained motorized system trails available for ATV and motorbike users without decreasing the amount of land being managed to provide for non-motorized recreation uses on the SNF. It will be possible for non-motorized users to plan cross-country activities away from designated motorized routes and have a high degree of certainty that they will not encounter motorized users. The sounds of motor use may still be apparent to non-motorized users recreating in designated roaded natural, roaded modified, and semi-primitive motorized areas.

- Conflicts among different classes of motor vehicle users are reduced, and user safety will be enhanced in all of the action alternatives through clear designation of the existing and newly-designated system trails. Conflicts decrease when users know where they can legally travel. Each system trail will be designated by the type of allowed use as follows:

    - Non-motorized for hikers, stock, and mountain bikers

    - Motorized, single track for two-wheel motorcyclists

    - Motorized, under 50 in. (wide) for ATVs and smaller motor vehicles

    - Motorized, over 50 in. (wide), or jeep trails.

- The alternatives have minimal effects (sound, emissions, safety) on populated areas. The route designation areas are not adjacent to any communities. The only exception is the neighborhoods and ranches in the Greenhorn and Deer Creek areas adjacent to the Ketchum RD, but no changes are being proposed that will cause any additional effects to these areas. There are several small summer home tracts on the Minidoka and Fairfield RDs, but again, no changes are being proposed in this route designation project that would increase sound, emissions, or safety concerns.

- Seasonal closures of roads/trails to help achieve wildlife conservation goals occur annually. On the Ketchum RD, closures will occur from August 30 to December 1 each year in Area F. On the

Fairfield RD the majority of the seasonal closures will occur from September 30 to December 1 of each year. On the Minidoka RD, seasonal closures occur from October 1–31 of each year.

- The desired ROS class acreages are maintained under all alternatives on all RDs/divisions within the route designation area

- All alternatives are compatible with the SNF Recreation Niche goals. However, under Alternative 1, the current situation is marginally compatible with the Recreation Niche settings for the planning area. Marginal, because the recreation activities that are occurring are appropriate for the settings, but are having a variety of impacts on soil, water, and wildlife that are not optimal.

Effects Analysis Assumptions

- Use levels will continue to increase across the SNF at a rate comparable to the last few years

- Viewing natural features, hiking/walking, viewing wildlife, downhill skiing, relaxing, and driving for pleasure will continue to be the most popular activities on the SNF and will grow at low to moderate rates

- Activities with lower overall participation rates, but which are still quite popular, such as dirt biking, hunting, fishing, backpacking, horseback riding, and bicycling will also remain at about current levels

- ATV use, which has been growing more rapidly over the last decade or more, will increase from current levels

- Gasoline prices do not appreciably affect people's ability or willingness to travel to the SNF for recreation.

Non-System Routes

Non-system routes are tracks (roads or trails) that are used by both motorized and non-motorized users, but are not maintained for travel by the USFS. Some of these routes were user-created, and some were developed by the USFS for access to timber sales, stock ponds, etc., but never made part of the transportation system. Some non-system routes receive as much or more use than system trails and roads, while other routes receive only occasional use. Non-system routes are not illegal routes, as current travel restrictions do not limit where people can travel in the project area. The miles of non-system routes described in the following sections are estimates based on aerial photos, inventories provided by users, and existing USFS inventories. These figures are considered a conservative estimate of the routes that currently, physically exist.

Affected Environment

Fairfield RD

Within the RD, for the route designation project, all 203,913 acres currently open to motorized cross-country travel are being analyzed. These acres are depicted on the current travel plan map as areas G and H and as seasonal closures throughout the RD. Overall, these acres cover most of the southern half of the RD, below the South Fork Boise River and the Big Smoky and Bluff creeks areas. This area lies within the Smoky and Soldier Mountain ranges.

The Fairfield RD is a very popular recreation destination for local, southwest and south-central Idaho citizens. The RD draws most of its visitors from the Magic and Treasure Valley areas, especially Twin Falls, Jerome, Gooding, Mountain Home and Boise. Popular attractions include 11 developed campgrounds, numerous dispersed recreation sites, and several natural hot springs. Popular activities include horseback riding, hiking, motorcycle and OHV riding, mountain biking, hunting, fishing and camping. The RD is also a popular winter destination offering snowmobiling, back-country skiing, Nordic skiing, snow shoeing, and heli-skiing. The Soldier Mountain Ski Area is located on the south end of the RD and offers a lower key alpine skiing and snowboarding alternative to the nearby Sun Valley ski area. IDFG MUs 43 and 44 are popular hunting areas and portions of the Centennial Trail lie within the RD. The South Fork Boise River is eligible for designation as a “recreational” river under the Wild and Scenic Rivers Act (16 U.S.C. 28 §§1271–1287, 2002).

The Fairfield RD is especially well known for its backcountry motorized single-track riding opportunities. Motorized trail opportunities throughout the RD are considered some of the best in Idaho and attract users from across the western U.S.

Existing Environment

Miles of Roads and Trails

Within the route designation area on the RD, there are 161 mi of roads, maintained for full-sized vehicles, and 204 mi of trails, including 195 mi of motorized single-track trails and 9 mi of ATV trails. Non-system routes are conservatively estimated to be 310 mi. Opportunities exist to reconstruct or relocate trails to increase public safety and reduce erosion, decrease impacts to fish and wildlife habitat, and to enhance visual quality.

Recreation Opportunity Spectrum

The ROS mix on the Fairfield RD within the project area includes 41,862 roaded modified acres; 38,386 roaded natural acres; 137,336 semi-primitive motorized acres; and 48 semi-primitive non-motorized acres.

Recreation Niche

Within the project area in the Fairfield RD, two Recreation Niche settings are managed:

- Backcountry travel is the niche setting that encompasses most of the southern half of the RD and includes approximately 97% of the project area. This setting provides vast areas to experience scenery and the natural world via both motorized and non-motorized methods. Snowmobiling, motorbike riding, OHV use, hiking, skiing and camping associated with trails are all encouraged. Facilities are developed for protection of resources and staging to the backcountry.

- Community connection is the niche setting for two smaller segments comprising approximately 3% of the project area. One segment is located along road corridors 093 and 094 leading to and including the Soldier Mountain Ski area and Five Points campground, and the other segment resides along the South Fork Boise River on the Ketchum–Featherville road (227) from the western boundary of the SNF as far as and including Baumgartner campground. This setting provides areas of concentrated use along main road corridors that are popular for groups to gather for special events, day use and developed and dispersed camping. Development of the area supports trail access for destination day and overnight use.

Forest Plan MA Direction

According to the Forest Plan (USDA 2003a), the route designation area falls within MA 07—Little Smoky Creek (pg. III-186), MA 08—Middle South Fork Boise River (pg. III-196), MA 09—Lime Creek (pg. III-208), and MA 10—Soldier Creek/Willow Creek (pg. III-218).

Relevant, MA-specific direction includes the following:

- Reduce soil erosion and sedimentation associated with off-road vehicles on the Lick Creek Trail, Basalt Creek area, Five Points Creek, Grindstone Creek, Elk Ridge area, Worswick Hot Springs area, and Ditto Flat area (Objective 0731 pg.III-194).

- Evaluate and incorporate methods to help prevent weed establishment and spread from recreation and trail use in the Lick–Five Points, Worswick Creek, and Grindstone Creek subwatersheds (Objective 0733 pg.III-194).

- Reduce soil erosion and sedimentation associated with off-road vehicles in the Kelly, Skeleton, Beaver, Boardman, Deadwood, Virginia Gulch, Willow, Big Water, Little Water, Jumbo, Conant Gulch, Van Gulch, Stevens Gulch, Camp Gulch, Gardner Gulch, Haypress, Shake, Miller, Salt, Bowns, and Edna Creek drainages (Objective 0840 pg. III-205).

- Evaluate and incorporate methods to help prevent weed establishment and spread from recreation and trail use in the Abbot–Shake, Big Water–Virginia, and Houseman–Beaver subwatersheds (Objective 0842 pg. III-205).

- Evaluate and incorporate methods to help prevent weed establishment and spread from ATV/motorbike use in the South Fork Lime–Hearn, and Lower Lime Creek subwatersheds (Objective 0932 pg. III-216).

- Evaluate and incorporate methods to help prevent weed establishment and spread from recreation and trail use in the Phillips–Wardrop subwatershed (Objective 1031 pg. III-226).

Environmental Consequences

Alternative 1—Direct Effects

This alternative had the least impact to motorized recreation (Table 3-1). Recreation use within the analysis area would continue to occur as it does now, under the existing travel plan map. Cross-country motorized use on the approximately 203,913 acres currently open (G and H areas) will continue to occur. The number of user-created, non-system routes would be expected to increase beyond the current estimate of 310 mi, as a result of unrestricted cross-country use in the route designation area.

Table 3-1. Fairfield RD comparison of recreation effects by alternative.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Acres of National Forest System lands open for cross-country motorized travel	203,913	0	0	0
Miles of non-motorized system trails	0	12	1	12
Miles of single-track motorized system trails	195	146	169	143
Miles of ATV system trails, motorized trails under 50 in. (wide)	9	50	69	47
Miles of jeep trails, motorized trails over 50 in.	0	29	30	12
Miles of road open to the public	161	162	162	149
Approximate mi of non-system routes designated/not designated	0/0	48/262	77/233	30/280

The USFS would continue to maintain and manage 204 mi of system trails as open to motorized use. Motorized system trails include 195 mi of single track and 9 mi of ATV trails. System roads maintained by the USFS will continue to be 161 mi. Dispersed camping by motorized and non-motorized users will continue across the entire project area, with no restrictions other than topography and the prohibitions against causing resource damage as stated in 36 CFR 261.13, "It is prohibited to operate any vehicle off National Forest System, State or County roads: (h) in a manner which damages or unreasonably disturbs the land, wildlife, or vegetative resources."

None of the estimated 310 mi of non-system routes that exist in the project area will be added to the SNF transportation system and, as such, none of the routes will receive maintenance.

Indirect Effects

The continued unmanaged nature of the recreation use that is now occurring on areas open to cross-country motorized travel will continue under Alternative 1. If use levels continue to increase, the current level of environmental effects from recreation use would also be expected to increase. User conflicts, between motorized and non-motorized users, may also increase if non-motorized users begin to feel that the area available to them to pursue recreation free from the sights and sounds of other users is diminished. This may cause displacement of those users to other non-motorized recreation areas on the SNF or on adjacent lands. This has some potential for increasing use in those areas, with the associated impacts that come with increasing use.

Forest Plan Compliance

Alternative 1 does not actively help to achieve Forest Plan objectives. Under Alternative 1, soil erosion and the spread of noxious weeds associated with trail use is expected to stay at current levels.

Alternative 2—Direct and Indirect Effects

This alternative is the second most impactive of the three action alternatives upon motorized recreationists. The effect of this alternative on cross-country motorized opportunities and opportunities on non-system routes will be negative. All cross-country travel is eliminated and only 15% of the non-system routes will be designated. However, there will be an increased amount of motorized system trails available. Cross-country motorized use on the approximately 203,913 acres currently open will be eliminated. Of the estimated 310 mi of non-system routes that exist in the project area, 48 mi will be added to the SNF transportation system. Alternative 2 provides for designation of 1 mi of non-system road while closing 15 mi of existing system roads and trails. Under Alternative 2, a total of 237 mi of system trails will be maintained and managed by the USFS, this is 33 more miles than is currently managed. Two hundred twenty-five (225) miles would be open to motorized use, an increase of 21 mi, and 12 mi will be open for non-motorized uses only, an increase of 12 mi. Motorized system trails include 146 mi of single track, 50 mi of ATV, and 29 mi of jeep trails. System roads maintained by the USFS will be 162 mi, an increase of 1 mi from the current condition. Seasonal closures will be in place on 39 mi of roads and trails to help achieve wildlife conservation goals.

Forest Plan Compliance

Alternatives 2–4 comply with the SNF Forest Plan direction and helps achieve Forest Plan Recreation Objectives 0731, and 0840, which call for reducing soil erosion caused by OHVs in parts of the route designation area, and Forest Plan Objectives 0733, 0842, 0932, and 1031, which call for reducing the spread of weeds associated with motorized use by reducing the number of routes available for motorized use and putting more trails into the system where they will receive regular maintenance and monitoring.

Alternative 3—Direct and Indirect Effects

This alternative is the least impactive of the three action alternatives on motorized recreationists. The effects of this alternative on cross-country motorized opportunities and opportunities on non-system routes will be negative. All cross-country travel is eliminated and only 25% of the non-system routes will be designated. However, there will be an increased amount of motorized system trails available. Cross-country motorized use on the approximately 203,913 acres currently open will be eliminated. Of the estimated 310 mi of non-system routes that exist in the project area, 77 mi will be added to the SNF transportation system. The alternative will also add 1 mi of non-system road and remove 3 mi of existing system roads and trails from the system. Under this alternative, a total of 269 mi of system trails will be maintained and managed by the USFS, which is 65 mi more than is currently managed. Two hundred sixty-eight (268) miles would be open to motorized use, an increase of 64 mi, and 1 mi will be open for non-motorized uses only, an increase of 1 mi. Motorized system trails include 169 mi of single track, 69 mi of ATV, and 30 mi of jeep trails. System roads maintained by the USFS will be 162 mi, an increase of 1 mi. Seasonal closures will be in place on 76 mi of roads and trails to help achieve wildlife conservation goals.

Alternative 4—Direct and Indirect Effects

This alternative is the most impactive of the three action alternatives on motorized recreationists. The effect of this alternative on cross-country motorized opportunities and opportunities on non-system routes will be negative. All cross-country travel is eliminated and only 10% of the non-system routes will be designated. However, there will be an increased amount of motorized system trails available. Cross-country motorized use on the approximately 203,913 acres currently open will be eliminated. Of the estimated 310 mi of non-system routes that exist in the project area, 30 mi will be added to the SNF transportation system. The alternative will also remove 36 mi of existing system trails and roads from the system. If this alternative is implemented, a total of 214 mi of system trails will be maintained and managed by the USFS; this is 10 mi more than is currently managed, with 202 mi open to motorized use, a decrease of 2 mi, and 12 mi open for non-motorized uses only, an increase of 13 mi. Motorized system trails include 143 mi of single track, 47 mi of ATV, and 12 mi of jeep trails. System roads maintained by the USFS will be 149 mi, a decrease of 12 mi. Seasonal closures will be in place on 149 mi of roads and trails to help achieve wildlife conservation goals.

Cumulative Effects—Motorized Routes on Fairfield RD

Cumulative effects under Alternative 1 will be the result of the continued unmanaged recreation situation within the project area. Because cross-country travel is allowed, an increase in user-created routes by motorized recreationists is expected. These additional user-created routes combined with the designated route system will have a negative impact on non-motorized users who find the presence of motorized users to negatively impact their desired experience. Non-motorized users will be less likely to use the lands in the project area and will be displaced to other parts of the SNF where motorized use is not authorized or common.

Alternative 2 identifies 9 mi of trails in the “future planning” category, and Alternatives 3 and 4 both identify 15 mi of trails in the future planning category. These additional miles of motorized trails are needed to improve the current trail system, but they are not being considered with this EA because they do not currently exist. They would not be built unless they are approved for construction through a separate, site-specific NEPA analysis. If Alternative 2–4 is selected as the Decision, either 9 or 15 mi of motorized trails could be subsequently added to the Fairfield RD transportation system. This would improve the desired experience for motorized users.

Affected Environment

Ketchum RD

The Ketchum RD is 328,352 acres in size. The RD lies entirely within Blaine County and contains NFS lands south of the SNRA, east of Ketchum to the crest of the Pioneer and southern Boulder Mountains, and west to the crest of the Smoky Mountains.

The 76,822 acres of the RD that are currently open to cross-country travel by motorized vehicles are included in this analysis. The project area lies within the southwestern foothills of the Pioneer Mountains (generally referred to as the Cove Creek area) and the Smoky Mountains south of Warm Springs Creek. These areas are shown on the current travel plan map as G areas. Elevations in the Cove Creek area range from 6,400 ft to just over 9,500 ft while in the Smoky Mountain area, elevations range from just over 5,600 to 9,000 ft just south of Dollarhide Summit.

The Ketchum RD has 5 developed campgrounds, 3 picnic areas, 9 developed trailheads, and numerous dispersed recreation sites. Many recreation users come from the Magic and Treasure Valley areas, including Twin Falls, Jerome, Gooding, and Boise. Recreation uses in the area include horseback riding, hiking, motorcycle and OHV riding, mountain biking, hunting, fishing and camping. In addition to spring, summer, and fall visitors, the RD has substantial winter visitation. Winter recreation activities include snowmobiling, alpine skiing and snowboarding, back country skiing, cross-country skiing, snowshoeing, and heli-skiing. Bald Mountain Ski Area is located immediately west of Ketchum and is operated by Sun Valley Company. IDFG MUs 48 and 49 are popular hunting areas within the RD. The Ketchum RD is known for backcountry riding opportunities and maintains a managed system of roads and trails. In addition to backcountry riding, there are areas where the focus for recreation is to facilitate access and protect resources. These areas are important to local communities including Carey, Bellevue, Hailey, Ketchum, and Sun Valley.

Existing Environment

Miles of Roads and Trails

There are 34 mi of roads that are maintained for full-sized vehicles, 8 mi of trails maintained for non-motorized use, 83 mi of motorized single-track trails, and 4 mi of jeep Trails. There at least 82 mi of non-system routes in the project area for the Ketchum RD.

Recreation Opportunity Spectrum

The ROS mix on the Ketchum RD within the planning areas consists of 17,211 roaded modified acres; 9,869 roaded natural acres; and 49,698 semi-primitive motorized acres.

Recreation Niche

On the Ketchum RD, within the project area, two niche settings are managed:

- Backcountry travel is the niche setting for approximately 70% of the project area. This area is located within the southwest corner of the RD and centered around the Greenhorn and Lodgepole Gulch area, including upper Deer Creek and the South Fork of Warm Springs Creek. This setting provides vast areas to experience scenery and the natural world via both motorized and non-motorized methods. Snowmobiling, motorbike riding, OHV use, hiking, skiing and camping associated with trails are all encouraged. Facilities are developed for protection of resources and staging to the backcountry.

- Community connection is the niche setting for the rest of the Ketchum RD project area (approximately 30%). This setting occurs along road corridor 097, the Deer Creek road leading to and including Wolftone, Bridge and Deer Creek developed recreation sites and along road 124, Cove Creek road. This setting provides areas of concentrated use along main road corridors that are popular for groups to gather for special events, day use, and developed and dispersed camping. Development of the area supports trail access for destination day and overnight use.

Forest Plan MA Direction

The route designation area falls entirely within Forest Plan MA 04–Big Wood River.

Relevant, MA-specific direction includes:

- Reduce soil erosion and sedimentation associated with off-road vehicles in the Deer Creek and Cove Creek drainages (Objective 0464).

Environmental Consequences

Alternative 1—Direct and Indirect Effects

This alternative is the least impactive on motorized recreation (Table 3-2). Recreation use within the route designation area would continue to occur as it does now under the existing travel plan map. Cross-country motorized use on the approximately 76,820 acres currently open (G areas) will continue to occur. The number of user-created, non-system routes would be expected to increase above the current conservative estimate of 82 mi, as a result of unrestricted cross-country use in the project area.

Table 3-2. Ketchum RD comparison of recreation effects by alternative.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Acres of National Forest System lands open for cross-country motorized travel.	74982	0	0	0
Miles of non-motorized system trails	8	8	7	8
Miles of single-track motorized system trails	83	87	90	86
Miles of ATV system trails, motorized trails under 50 in. (wide)	0	14	11	8
Miles of jeep trails, motorized trails over 50 in.	4	4	10	0
Miles of road open to the public.	34	34	36	33
Approximate mi of non-system routes designated/not designated	0/0	14/68	30/52	10/72

Ninety-five (95) miles of system trails will continue to be maintained and managed by the USFS, 87 mi of which are open to motorized use and 8 mi are open for non-motorized uses only. Motorized system trails include 83 mi of single track. System roads maintained by the USFS will continue to be 34 mi. Except along Deer Creek road 097 and North Fork Deer Creek road 103 where dispersed camping is currently restricted to designated sites, dispersed camping by motorized and non-motorized users will continue across the rest of the project area with no restrictions other than topography and the prohibitions against causing resource damage as stated in 36 CFR 261.13 (previously referenced, see Fairfield RD, Alternative 1, Direct and Indirect Effects). None of the estimated 82 mi of non-system routes that exist in the project area will be added to the SNF transportation system or maintained.

The continued unmanaged nature of the recreation use that is now occurring on areas open to cross-country motorized travel will continue under Alternative 1. If use levels continue to increase, the current level of environmental effects from recreation use would also be expected to increase. User conflicts, between motorized and non-motorized users, may also increase if non-motorized users begin to feel that the area available to them to pursue recreation free from the sights and sounds of other users is diminished. This may cause displacement of those users into other non-motorized recreation areas on the SNF or on adjacent lands. This displacement has some potential for increasing use in those areas, with the associated impacts that come with increasing use.

Forest Plan Compliance

Alternative 1 does not actively help to achieve Forest Plan objectives. Soil erosion and the sedimentation associated with trail use are expected to stay at current levels.

Alternative 2—Direct and Indirect Effects

This alternative is the second most impactive of the three action alternatives on motorized recreationists. The effect of this alternative on cross-country motorized opportunities and opportunities on non-system routes will be negative. All cross-country travel is eliminated and only 17% of the non-system routes will be designated. However, there will be an increased amount of motorized system trails available. Cross-country motorized use on the approximately 74,982 acres currently open will be eliminated. Of the estimated 82 mi of non-system routes that exist in the planning area, 14 mi will be added to the SNF transportation system. The alternative will remove 1 mi of existing system road. If this alternative is implemented, a total of 113 mi of system trails will be maintained and managed by the USFS; this represents 18 mi more than is currently managed. One hundred five (105) miles would be open to motorized use, an increase of 18 mi, and 8 mi will continue to be open for non-motorized uses only. Motorized system trails include 87 mi of single track, 14 mi of ATV, and 4 mi of jeep trails. System roads maintained by the USFS will continue to be 34 mi. Dispersed camping by motorized users will be authorized within 300 ft on either side of 25 mi of system roads and within 100 ft either side of motorized system trails. The other 9 mi of system roads are located in the Deer Creek drainage where dispersed recreation is restricted to designated dispersed sites.

Forest Plan Compliance

Alternatives 2–4 comply with Recreation Objective 0464 by reducing the number of routes available for motorized use and putting more trails into the system where they will receive regular maintenance and patrols.

Alternative 3—Direct and Indirect Effects

This alternative is the least impactive of the three action alternatives on motorized recreationists. The effect of this alternative on cross-country motorized opportunities and opportunities on non-system routes will be negative. All cross-country travel is eliminated and only 36% of the non-system routes will be designated. There will be an increased amount of motorized system trails available, however. Cross-country motorized use on the approximately 74,982 acres currently open will be eliminated. No additional user-created, non-system routes would be created. Of the estimated 82 mi of non-system routes that exist in the planning area, 32 mi will be added to the SNF transportation system. If this alternative is implemented, a total of 118 mi of system trails will be maintained and managed by the USFS; this represents 23 mi more than is currently managed. One hundred eleven (111) miles would be open to motorized use, an increase of 23 mi, and 7 mi will be open for non-motorized uses only, a decrease of 1 mi. Motorized system trails include 90 mi of single track, 11 mi of ATV, and 10 mi of jeep trails. System roads maintained by the USFS will be 36 mi, an increase of 2 mi. Dispersed camping by motorized users will be authorized within 300 ft on either side of 27 mi of system roads and within 100 ft either side of motorized system trails. The other 9 mi of system road are in the Deer Creek drainage where dispersed recreation is restricted to designated dispersed sites. Other motorized uses off of system roads or trails will only be authorized in writing by the USFS.

Alternative 4—Direct and Indirect Effects

This alternative is the second most impactive of the three action alternatives on motorized recreationists. The effect of this alternative on cross-country motorized opportunities and opportunities on non-system routes will be negative. All cross-country travel is eliminated and only 12% of the non-system routes will be designated. However, there will be an increased amount of motorized system trails available. Cross-country motorized use on the approximately 74,982 acres currently open would be eliminated. No additional user-created, non-system routes would be created. Of the estimated 82 mi of non-system routes that exist in the planning area, 10 mi will be added to the SNF transportation system. The alternative will also remove 2 mi of existing system road and trail miles from the system. If this alternative is implemented, a total of 102 mi of system trails will be maintained and managed by the USFS; this is 7 mi more than is currently managed. Ninety-four (94) miles would be open to motorized use, an increase of 7 mi, and 8 mi will continue to be open for non-motorized uses only. Motorized system trails include 86 mi of single track and 8 mi of ATV trails. System roads maintained by the USFS will be 33 mi, a decrease of 1 mi. Dispersed camping by motorized users will be authorized within 300 ft on either side of 24 mi of system roads and within 100 ft on either side of motorized system trails. The other 9 mi of system road are located in the Deer Creek drainage where dispersed recreation is restricted to designated dispersed sites. Other motorized uses off of system roads or trails will only be authorized in writing by the USFS.

Cumulative Effects—Motorized Routes on Ketchum RD

Cumulative effects under Alternative 1 will be the result of the continued unmanaged recreation situation within the project area. Because cross-country travel is allowed, additional user-created routes are expected to be established by motorized recreationists. These additional user-created routes combined with the designated route system will have a negative impact on non-motorized users who find the presence of motorized users to negatively impact their desired experience. Non-motorized users will be less likely to use the lands in the project area and will be displaced to other parts of the SNF where motorized use is not authorized or common.

Affected Environment

Minidoka RD—Albion Division

The Minidoka RD is comprised of five separate tracts, known as “divisions” that are located in south-central Idaho and northwestern Utah. The Albion, Black Pine, Cassia, and Sublett divisions are spread between Twin Falls, Cassia, Power, and Oneida counties, Idaho. The Raft River division is located across the Idaho border in Box Elder County, Utah. These divisions are high-elevation islands of alpine parkland, forest, and sagebrush-steppe surrounded by the dry plains of the Basin and Range. The divisions include the Black Pine and Albion Mountain ranges. In total, the RD encompasses 604,000 acres of public land.

There are 579,388 acres of the RD that are currently open to cross-country travel by motorized vehicles included in this analysis. These areas, which comprise 96% of the Minidoka RD, are reflected in the current travel plan map as areas K, L, and Q.

The Albion Division of the Minidoka RD lies 20 mi southeast of Burley, Idaho. Elevations range from 4500 to 10,000 ft. Access to the area is gained from either Highways 77 or 27. The City of Rocks National Reserve lies on the southern-most end of the range. Vegetation is dominated by lodgepole, Douglas-fir, aspen and sage–grass communities. There are numerous small streams and five lakes on this division.

Most recreation use in the division is from the residents of local communities. The scenic mountain settings support mountain biking, skiing, hiking, climbing and lakeside camping. The remote peaks and lakes of the Cache Peak area provide spectacular scenery, solitude, discovery, challenge and exploration in a primarily non-motorized setting. The lookout on Mt. Harrison (elev. 9265 ft), and its associated botanical interest area, are popular attractions for both scenery viewing and para-/hang-glider launching. The Albion Division has seven developed recreation sites and numerous dispersed camping sites over the entire division. Recreation uses range from non-motorized trails in the Independence Lakes area to highly developed facilities in Howell Canyon. Hunting, fishing, hiking, OHV riding, pleasure driving, and developed camping are popular activities. The area is located within IDFG MU 55.

Existing Environment

Miles of Roads and Trails

There are 50 mi of roads, 20 mi of motorized trails, 11 mi of non-motorized trails, and at least 43 mi of non-system routes on the Albion Division. The entire division is currently open to cross-country travel, except the areas around Independence lakes, Mount Harrison, Lake Cleveland, and Pomerelle ski area. SNF access is limited by private land ownership along the SNF boundary.

Recreation Opportunity Spectrum

The ROS mix on the Albion Division consists of 27,786 roaded modified acres; 14,370 roaded natural acres, and 34,744 semi-primitive motorized acres.

Recreation Niche

On the Albion Division there are two managed niche settings.

- Community connection is the niche setting for the northern portion of the Albion Division, from approximately the Cold Springs Creek road (no. 548), north. This setting, which covers approximately 55% of the division, includes Arrowhead Springs, Connor Ridge, the area surrounding Mt. Harrison and Lake Cleveland, and FR 549 leading to Howell Canyon and Pomerelle ski area. This setting provides areas of concentrated use along main road corridors (Howell Canyon) that are popular for groups to gather for special events, day use, and developed and dispersed camping. Development of the area supports trail access and destination day and overnight use.

- Remote peaks and lakes is the niche setting for the remaining 45% of the division, which includes the southern portion of the Albion Division, south of the Cold Springs Creek road. This setting contains no roads, except the primitive Thunder Mountain road, and includes the area surrounding the Independence Lakes and Cache Peak area. The goal of this setting is to help people experience spectacular scenery, solitude, discovery, challenge, and exploration. Development occurs only along primary roads and supports dispersed use including hiking, skiing, and mountain biking.

Forest Plan Direction

The route designation area falls within Forest Plan MAs 15–Albion Mountains, 16–Howell Creek, and 17–Independence Lakes.

There is no relevant, MA-specific direction in the Forest Plan for these three MAs.

Environmental Consequences

Alternative 1—Albion Division

Direct and Indirect Effects

This alternative has the least effect on motorized recreation users (Table 3-3). Recreation use within the project area would continue to occur as it does now, under the existing travel plan map (USDA 2002). Cross-country motorized use on the approximately 65,340 acres currently open (K, L, and Q areas) will continue to occur. The number of user-created, non-system routes would be expected to increase beyond the current estimate of 43 mi as a result of unrestricted cross-country use in the project area.

Table 3-3. Minidoka RD, Albion Division, comparison of recreation effects by alternative.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Acres of National Forest System lands open for cross-country motorized travel.	65,340	0	0	0
Miles of non-motorized system trails	11	7	7	7
Miles of single-track motorized system trails	6	11	11	11
Miles of ATV system trails, motorized trails under 50 in. (wide)	14	14	14	10
Miles of jeep trails, motorized trails over 50 in.	0	2	2	2
Miles of road open to the public.	50	50	50	50
Approximate miles of non-system routes designated/not designated	43/0	4/39	4/39	3/40

Thirty-one (31) miles of system trails will continue to be maintained and managed by the SNF. Of the 31 mi, 20 mi are open to motorized use and 11 are open for non-motorized uses only. Motorized system trails include 6 mi of single track and 14 mi of ATV trails. System roads maintained by the USFS will continue to be 50 mi. Dispersed camping by motorized and non-motorized users will continue across the entire project area, with no restrictions other than topography and the prohibitions against causing resource damage as stated in 36 CFR 261.13 (previously quoted). None of the estimated 43 mi of non-system routes that exist in the project area will be added to the SNF transportation system or maintained.

The continued unmanaged nature of the recreation use that is now occurring on areas open to cross-country motorized travel will continue under Alternative 1. If use levels continue to increase, the current level of environmental effects from recreation use would also be expected to increase. User conflicts between motorized and non-motorized users may also increase if non-motorized users begin to feel that the area available to them to pursue recreation free from the sights and sounds of other users is diminished. This may cause displacement of those users into other non-motorized recreation areas on the SNF or on adjacent lands. This displacement has some potential for increasing use in those areas, with the associated impacts that come with increasing use.

Forest Plan Compliance

All 4 alternatives are in compliance with the Forest Plan.

Alternative 2—Albion Division

Direct and Indirect Effects

This alternative is, along with Alternative 3, the least impactive of the three action alternatives on motorized recreationists. The effect of this alternative on cross-country motorized opportunities and opportunities on non-system routes will be negative. All cross-country travel is eliminated and only 9% of the non-system routes will be designated. However, there will be an increased amount of motorized system trails available. Cross-country motorized use on the approximately 65,340 acres currently open will be eliminated. Of the estimated 43 mi of non-system routes that exist in the planning area, 4 mi will be added to the SNF transportation system. A total of 34 mi of system trails will be maintained and managed by the USFS. This is 3 mi more than is currently managed. Twenty-seven (27) miles would be open to motorized use, an increase of 7 mi, and 7 mi will be open for non-motorized uses only, a decrease of 4 mi. Motorized system trails include 11 mi of single track, 14 mi of ATV, and 2 mi of jeep trails. System roads maintained by the USFS will continue to be 50 mi.

Alternative 3—Albion Division

Direct and Indirect Effects

This alternative is, along with Alternative 2, the least impactive of the three action alternatives on motorized recreationists. The effect of this alternative on cross-country motorized opportunities and opportunities on non-system routes will be negative. All cross-country travel is eliminated and only 9% of the non-system routes will be designated. There will be an increased amount of motorized system trails available, however. Cross-country motorized use on the approximately 65,340 acres currently open will be eliminated. No additional user-created, non-system routes would be created. Of the estimated 43 mi of non-system routes that exist in the planning area, 4 mi will be added to the SNF transportation system. If this alternative is implemented, a total of 34 mi of system trails will be maintained and managed by the USFS. This is 3 mi more than is currently managed. Twenty-seven (27) miles would be open to motorized use, an increase of 7 mi, and 7 mi will be open for non-motorized uses only, a decrease of 4 mi. Motorized system trails include 11 mi of single track, 14 mi of ATV, and 2 mi of jeep trails. System roads maintained by the USFS will continue to be 50 mi.

Alternative 4—Albion Division

Direct and Indirect Effects

This alternative is the most impactive of the three action alternatives on motorized recreationists. The effect of this alternative on cross-country motorized opportunities and opportunities on non-system routes will be negative. All cross-country travel is eliminated and only 7% of the non-system routes will be designated. However, there will be an increased amount of motorized system trails available. Cross-country motorized use on the approximately 65,240 acres currently open will be eliminated. Of the estimated 43 mi of non-system routes that exist in the planning area, 3 will be added to the SNF transportation system. If this alternative is implemented, a total of 30 mi of system trails will be maintained and managed by the USFS, this is 1 mi less than is currently managed. Twenty-three (23) miles would be open to motorized use, an increase of 3 mi, and 7 mi will be open for non-motorized uses only, a decrease of 4 mi. Motorized system trails include 11 mi of single track, 10 mi of ATV, and 2 mi of jeep trails. System roads maintained by the USFS will continue to be 50 mi.

Cumulative Effects—Motorized Routes, Minidoka RD, Albion Division

Cumulative effects under Alternative 1 will be the result of the continued unmanaged recreation situation within the route designation area. Because cross-country travel is allowed, additional user-created routes are expected to be established by motorized recreationists. These additional user-created routes combined with the designated route system will have a negative impact on non-motorized users who find the presence of motorized users to negatively impact their desired experience. Non-motorized users will be less likely to use the lands in the project area and may be displaced to other parts of the SNF where motorized use is not authorized or common.

Alternatives 2 and 3 each identify 4 mi of trails for the future planning category. These additional miles of motorized trails are needed to improve the current trail system, but they are not being considered with this EA because they do not currently exist and/or they cross private land upon which the USFS does not currently own a right-of-way. These trails will not be built unless they are approved for construction through a separate, site-specific NEPA process and rights-of-ways, where necessary, have been purchased. Under an action alternative Decision, the USFS anticipates additional miles of motorized trails will be added to the SNF transportation system in the future. Should this occur, it would have a positive impact on the desired condition for motorized users.

Minidoka RD—Black Pine Division

The Black Pine Division of the Minidoka RD lies approximately 45 mi southeast of Burley, Idaho. The main access is either from Highway 77 or Interstate 84. Topography ranges from juniper-covered slopes to very steep hills with mixed cover of Douglas-fir, aspen, and sagebrush. There is very little available water in this area.

The Black Pine Division has no developed campgrounds but does have dispersed camping in Pole Canyon, Kelsaw Canyon, and near Sixmile Reservoir. Primary recreation throughout the division includes horseback riding, OHV use, and hunting in the fall and winter. Solitude is obtainable on this division. The area is located in IDFG MU 57. While the mule deer hunt attracts hunters from out-of-state, recreational users are generally local area residents.

Existing Environment

Miles of Roads and Trails

There are 101 mi of maintained roads and 4 mi of motorized system OHV trails. There are at least 41 mi of non-system routes on the Black Pine Division.

Recreation Opportunity Spectrum

The ROS mix on the Black Pine Division consists of 53,760 roaded modified acres; 3,072 roaded natural acres; and 19,968 semi-primitive motorized acres.

Recreation Niche

On the Black Pine Division, there is one managed niche setting:

- Backcountry travel is the niche setting for the entire Black Pine Division and route designation area. This setting retains undeveloped areas away from main travel corridors, providing opportunities for OHV riding, viewing scenery and winter recreation. The setting provides vast areas to experience scenery and the natural world via both motorized and non-motorized methods. Snowmobiling, motorbike riding and OHV riding, hiking, skiing, and camping associated with trails are all encouraged. Facilities are developed for protection of resources and staging to the backcountry.

Forest Plan Direction

The route designation area falls within Forest Plan MA 19–Black Pine.

There is no relevant, MA-specific recreation direction in the Forest Plan for this MA.

Environmental Consequences

Alternative 1—Black Pine Division

Direct and Indirect Effects

This alternative has the least impact on motorized recreationists (Table 3-4). Recreation use within the analysis area would continue to occur as it does now, under the existing travel plan map. Cross-country motorized use on the approximately 73,883 acres currently open (K, L, and Q areas) will continue to occur. The number of user-created, non-system routes would be expected to increase beyond the current estimate of 41 mi, as a result of unrestricted cross-country use in the project area.

Table 3-4. Minidoka RD, Black Pine Division, comparison of recreation effects by alternative.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Acres of National Forest System lands open for cross-country motorized travel.	73,883	0	0	0
Miles of non-motorized system trails	0	0	0	0
Miles of single-track motorized system trails	4	4	4	4
Miles of ATV system trails, motorized trails under 50 in. (wide)	0	2	2	0
Miles of jeep trails, motorized trails over 50 in.	0	0	0	0
Miles of road open to the public	101	101	101	101
Approximate miles of non-system routes designated/not designated	41/0	2/39	2/39	0/41

Four (4) miles of system trails will continue to be maintained and managed by the USFS; 4 mi of which are open to single-track motorized use. System roads maintained by the USFS will continue to be 101 mi. Dispersed camping by motorized and non-motorized users will continue across the entire project area, with no restrictions other than topography and the prohibitions against causing resource damage as presented in 36 CFR 261.13. None of the estimated 41 mi of non-system routes that exist in the project area would be added to the SNF transportation system or maintained.

The continued unmanaged nature of the recreation use that is now occurring on areas open to cross-country motorized travel will continue under Alternative 1. If use levels continue to increase, the current level of environmental effects from recreation use would also be expected to increase. User conflicts between motorized and non-motorized users may also increase if non-motorized users begin to feel that the area available to them to pursue recreation free from the sights and sounds of other users is diminished. This may cause displacement of those users into other non-motorized recreation areas on the SNF or on adjacent lands. This has some potential for increasing use in those areas, with the associated impacts that come with increasing use.

Forest Plan Compliance

All 4 alternatives are compliant with Forest Plan recreation direction for this MA.

Alternative 2—Black Pine Division

Direct and Indirect Effects

This alternative is, along with Alternative 3, the least impactive of the three action alternatives on motorized recreationists. The effect of this alternative on cross-country motorized opportunities and opportunities on non-system routes will be negative. All cross-country travel is eliminated and only 5% of the non-system routes will be designated. However, there will be an increased amount of motorized system trails available. Cross-country motorized use on the approximately 73,883 acres currently open will be eliminated. Of the estimated 41 mi of non-system routes that exist in the project area, 2 mi will be added to the SNF transportation system. A total of 6 mi of system trails will be maintained and managed by the USFS, which is 2 mi more than is currently managed. Four (4) miles would be open to single-track motorized use and 2 mi would be open to ATVs, an increase of 2 mi. System roads maintained by the USFS will continue to be 101 mi.

Alternative 3—Black Pine Division

Direct and Indirect Effects

The direct and indirect effects for Alternative 3 are exactly the same as the effects presented in Alternative 2, above.

Alternative 4—Black Pine Division

Direct and Indirect Effects

This alternative is the most impactive of the three action alternatives on motorized recreationists. The effect of this alternative on cross-country motorized opportunities and opportunities on non-system routes will be negative. All cross-country travel is eliminated and 0% of the non-system routes will be designated. However, there will be an increased amount of motorized system trails available. Cross-country motorized use on the approximately 73,883 acres currently open will be eliminated. None of the estimated 41 mi of non-system routes that exist in the planning area would be added to the SNF transportation system. A total of 4 mi of system trails will be maintained and managed by the USFS for single-track motorized use. System roads maintained by the USFS will continue to be 101 mi.

Cumulative Effects—Motorized Routes, Minidoka RD, Black Pine Division

Cumulative effects under Alternative 1 will be the result of the continued unmanaged recreation situation within the project area. Because cross-country travel is allowed, additional user-created routes are expected to be established by motorized recreationists. These additional user-created routes combined with the designated route system will have a negative impact on non-motorized users who find the presence of motorized users to negatively impact their desired experience. Non-motorized users will be less likely to use the lands in the project area and may be displaced to other parts of the SNF where motorized use is not authorized or common.

Minidoka RD—Cassia Division

The Cassia Division lies about 20 mi south of Hansen, Idaho. Elevations range from 4,000 to 8,000 ft. The main access is from the Rock Creek road on the north, the Oakley area on the east, and the Rogerson area on the west. Topography and vegetation varies from lowland grass and sage communities to lodgepole and aspen stands amid rounded slopes and numerous rimrock formations. There are four streams of substantial flows and many smaller streams throughout the area.

The Cassia Division is used primarily by local residents and is especially popular with visitors from Twin Falls, Idaho. Use is especially heavy on summer weekends. Recreation uses range from highly developed campgrounds in Rock Creek and upper Goose Creek to horseback riding, OHV riding, hunting, and dispersed camping. The scenic mountain setting supports mountain biking, skiing, hiking and camping. Magic Mountain ski area is located in upper Rock Creek. The Cassia Division has 12 developed campgrounds, including the newly renovated Porcupine Springs campground, and a large number of dispersed camping sites. The Diamond Field Jack area is a jump-off point for a variety of motorized recreation activities. The area is located within IDFG MU 54.

Existing Environment

Miles of Roads and Trails

There are 634 mi of system roads and 88 mi of system motorized trails. There are 3 mi of system non-motorized trails. There are at least 443 mi of non-system routes on the Cassia Division. The entire division is currently open to cross-country travel, except the areas along the Rock Creek corridor from the SNF boundary to the Porcupine Springs area, the area around Bostetter, Father and Sons Recreation sites, and the area around Franks Canyon.

Recreation Opportunity Spectrum

The ROS mix on the Cassia Division consists of 126,000 roaded modified acres; 51,000 roaded natural acres; and 135,000 semi-primitive motorized acres.

Recreation Niche

On the Cassia Division there are two managed niche settings:

- Backcountry travel is the niche-setting for approximately 95% of this division and route designation area. This setting retains undeveloped areas away from main travel corridors, providing opportunities for OHV riding, viewing scenery, and winter recreation. It provides vast areas to experience scenery and the natural world via both motorized and non-motorized methods. Snowmobiling, motorbike riding, OHV riding, hiking, skiing, and camping associated with trails are all encouraged. Facilities are developed for protection of resources and staging to the backcountry.

- Community connection is the niche setting for the remaining 5% of the division and includes the Rock Creek area. This setting includes the majority of the developed and dispersed recreation sites on the division. This setting provides areas of concentrated use along main road corridors (Rock Creek Canyon) that are popular for groups to gather for special events, day use, and developed and dispersed camping. Development is provided for trail access and for destination day and overnight use.

Forest Plan Direction

The route designation area falls within Forest Plan MAs 11–Rock Creek, 12–Cottonwood Creek, 13–Trapper Creek/Goose Creek, and 14–Shoshone Creek.

Relevant, MA-specific direction includes:

- Develop more ATV opportunities and curtail inappropriate ATV use of single-track trails to provide motorized recreation opportunities while reducing ATV impacts on other resources (Objectives 1129, 1227, 1333, and 1414).

- Evaluate and incorporate methods to prevent weed establishment and spread from recreation and trail use in the Cold Springs and Medley-Dry subwatersheds (Objective 1131).

- Reduce soil erosion and vegetation loss associated with off-road vehicles in the northern half of the MA (Trapper/Goose) (Objective 1331).

Environmental Consequences

Alternative 1—Cassia Division

Direct and Indirect Effects

This alternative has the least effect on motorized recreationists (Table 3-5). Recreation use within the project area would continue to occur as it does now, under the existing travel plan map. Cross-country motorized use on the approximately 290,633 acres currently open (K, L, and Q areas) will continue to occur. The number of user-created, non-system routes would be expected to increase beyond the current estimate of 443 mi, as a result of unrestricted cross-country use in the project area.

Table 3-5. Minidoka RD, Cassia Division, comparison of recreation effects by alternative.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Acres of National Forest System lands open for cross-country motorized travel.	290,633	2,455	2,455	2,455
Miles of non-motorized system trails	3	8	7	15
Miles of single-track motorized system trails	0	83	92	73
Miles of ATV system trails, motorized trails under 50 in. (wide)	88	65	86	59
Miles of jeep trails, motorized trails over 50 in.	0	2	4	4
Miles of road open to the public	634	620	620	617
Approximate miles of non-system routes designated/not designated	443/0	54/389	81/362	46/397

Ninety-one (91) miles of system trails will continue to be maintained and managed by the USFS; 88 mi of which are open to ATV use and 3 mi are open for non-motorized uses only. System roads maintained by the USFS will continue to be 634 mi. Dispersed camping by motorized and non-motorized users will continue across the entire route designation area, with no restrictions other than topography and the prohibitions against causing resource damage as stated in 36 CFR 261.13. None of the estimated 443 mi of non-system routes that exist in the planning area would be added to the SNF transportation system or maintained.

The continued unmanaged nature of recreation use that is now occurring on areas open to cross-country motorized travel will continue under Alternative 1. If use levels continue to increase, the current level of environmental effects from recreation use would also be expected to increase. User conflicts between motorized and non-motorized users may also increase if non-motorized users begin to feel that the area available to them to pursue recreation free from the sights and sounds of other users is diminished. This may cause displacement of those users into other non-motorized recreation areas on the SNF or on adjacent lands. This displacement has some potential for increasing use in those areas, with the attendant effects that come with increasing use.

Forest Plan Compliance

Alternative 1 does not actively help to achieve the Forest Plan objectives. Under Alternative 1, soil erosion and the spread of noxious weeds associated with trail use is expected to stay at current levels. No new ATV opportunities are provided and no mitigation of ATV impacts is achieved.

Alternative 2—Cassia Division

Direct and Indirect Effects

This alternative is the second most impactive of the three action alternatives on motorized recreationists. The effect of this alternative on cross-country motorized opportunities and opportunities on non-system routes will be negative. All cross-country travel is eliminated and only 12% of the non-system routes will be designated. However, there will be an increased amount of motorized system trails available. Cross-country motorized use on the approximately 290,633 acres currently open will be eliminated. No additional user-created, non-system routes would be created.

Of the estimated 443 mi of non-system routes that exist in the planning area, 54 will be added to the SNF transportation system. The alternative will also remove approximately 1 mi of existing system road/trail. A total of 158 mi of system trails will be maintained and managed by the USFS. This is 67 mi more than is currently managed. One hundred fifty (150) miles would be open to motorized use, an increase of 59 mi, and 8 mi will be open for non-motorized uses only, an increase of 5 mi. Motorized system trails include 83 mi of single track, 65 mi of ATV, and 2 mi of jeep trails. System roads maintained by the USFS will be 620 mi, a decrease of 14 mi.

Forest Plan Compliance

Alternatives 2–4 comply with the Forest Plan direction and fulfill Recreation Objectives 1129, 1227, 1333, and 1414, which call for developing more OHV trail opportunities and curtailing inappropriate OHV use that is causing impacts on other resources. The alternatives also help achieve Recreation Objectives 1127 and 1331 that call for reducing soil erosion caused by OHVs as well as Objectives 1131 and 2018 which call for reducing the spread of weeds associated with trail use, by reducing the number of routes available for motorized use and putting more trails into the transportation system where they will receive regular maintenance and patrols.

Alternative 3—Cassia Division

Direct and Indirect Effects

This alternative is the least impactive of the three action alternatives on motorized recreationists. The effect of this alternative on cross-country motorized opportunities and opportunities on non-system routes will be negative. All cross-country travel is eliminated and only 18% of the non-system routes will be designated. However, there will be an increased amount of motorized system trails available. Cross-country motorized use on the approximately 290,633 acres currently open will be eliminated. No additional user-created, non-system routes would be created.

Of the estimated 443 mi of non-system routes that exist in the project area, 81 mi will be added to the SNF transportation system. The alternative will also remove less than 1 mi existing system road/trail. If this alternative is implemented, a total of 189 mi of system trails will be maintained and managed by the USFS. This is 98 mi more than is currently managed. One hundred eighty-two (182) miles would be open to motorized use, an increase of 91 mi, and 7 mi will be open for non-motorized uses only, an increase of 4 mi. Motorized system trails include 92 mi of single track, 86 mi of ATV, and 4 mi of jeep trails. System roads maintained by the USFS will be 620 mi, a decrease of 14 mi.

Alternative 4—Cassia Division

Direct and Indirect Effects

This alternative is the most impactive of the three action alternatives on motorized recreationists. The effect of this alternative on cross-country motorized opportunities and opportunities on non-system routes will be negative. All cross-country travel is eliminated and only 10% of the non-system routes will be designated. There will be an increased amount of motorized system trails available, however. Cross-country motorized use on the approximately 290,633 acres currently open will be eliminated. No additional user-created, non-system routes would be created.

Of the estimated 443 mi of non-system routes that exist in the planning area, 46 mi will be added to the SNF transportation system. The alternative will also remove 5 mi of system road and trails. If this alternative is implemented, a total of 151 mi of system trails will be maintained and managed by the USFS; this is 60 mi more than is currently managed. One hundred thirty-six (136) miles would be open to motorized use, an increase of 45 mi, and 15 mi will be open for non-motorized uses only, an increase of 12 mi. Motorized system trails include 73 mi of single track, 59 mi of ATV, and 4 mi of jeep trails. System roads maintained by the USFS will be 617 mi, a decrease of 17 mi.

Cumulative Effects—Motorized Routes, Minidoka RD, Cassia Division

Cumulative effects under Alternative 1 will be the result of the continued unmanaged recreation situation within the project area. Because cross-country travel is allowed, additional user-created routes are expected to be established by motorized recreationists. These additional user-created routes combined with the designated route system will have a negative impact on non-motorized users who find the presence of motorized users to negatively impact their desired experience. Non-motorized users will be less likely to use the lands in the project area and may be displaced to other parts of the SNF where motorized use is not authorized or common.

Alternative 2 identifies 14 mi, Alternative 3 identifies 18 mi, and Alternative 4 identifies less than 1 mi of trails in the future planning category. These additional miles of motorized trails are needed to improve the current trail system, but they are not being considered with this EA because they do not currently exist and/or they cross private land upon which the USFS does not currently own a right-of-way. These trails will not be built unless they are cleared for construction through a separate, site-specific NEPA process and rights-of-ways, where necessary, have been purchased. Under an action alternative Decision, additional miles of motorized trails would be added to the Minidoka RD transportation system in the future. If these trails are added to the system, this will have a positive effect on the desired condition for motorized users.

Under all alternatives, the Minidoka RD intends to begin another travel planning effort in the near future, the purpose of which is to eliminate redundant and unneeded system ‘spur’ roads from the transportation system. All existing system spur roads of 1.5 mi in length or less would be reviewed, with the goal of minimizing those that are not needed for future resource management or access to dispersed recreation sites. When this effort occurs, it is anticipated that the existing road system available to the public will be reduced. This should have a neutral effect on motorized users as spurs do not provide a quality experience because of their short length or redundancy in contrast to more preferred routes.

Minidoka RD—Raft River Division

The Raft River Division of the Minidoka RD lies in Utah, and parallels the Idaho and Utah border. Elevations range from 4,000 to 10,000 ft. The topography ranges from open meadows to rugged cliffs, to steep and deep canyons. The main access is from State Highway 77 to the communities of Clear Creek, Stanrod, and Yost. Vegetation is dominated by sage–grass slopes as well as stands of Douglas-fir and aspen at higher elevations. The lower elevations consist of pinyon–juniper stands.

Recreation use is generally low in the Raft River Division. Many of the users travel from Tremonton and Ogden, Utah, as well as from the Wasatch Front. Activities include OHV riding, hunting, and viewing scenery. The area is known as an important deer hunting area for both archery and rifle hunters and is located within Utah Division of Wildlife Resources Big Game MU 1. Raft River has one developed campground (Clear Creek) as well as dispersed camping sites near Clear, Onemile, and Johnson creeks. Forest Plan direction is to comply with Box Elder County Ordinance 222, which designates travel routes as closed unless designated open.

Miles of Roads and Trails

There are 98 mi of maintained roads, 9 mi of system motorized trails, and at least 142 mi of non-system routes on the Raft River Division.

Recreation Opportunity Spectrum

The ROS mix on the Raft River Division consists of 47,022 roaded modified acres; 4,610 roaded natural acres; and 40,568 semi-primitive motorized acres.

Recreation Niche

On the Raft River Division, there is one managed niche setting:

- Backcountry travel is the niche setting for the entire Raft River Division and project area. This setting retains undeveloped areas away from main travel corridors, providing opportunities for OHV riding, viewing scenery, and winter recreation. This setting provides vast areas to experience scenery and the natural world via both motorized and non-motorized methods. Snowmobiling, motorbike riding and OHV riding, hiking, skiing, and camping associated with trails are all encouraged. Facilities are developed for protection of resources and staging to the backcountry.

Forest Plan Direction

The route designation area falls within Forest Plan MA 18–Raft River.

There is no relevant, MA-specific recreation direction for this MA.

Environmental Consequences

Alternative 1—Raft River Division

Direct and Indirect Effects

This alternative has no effect on motorized recreation (Table 3-6). Recreation use within the route designation area would continue to occur as it does now, under the existing travel plan map. Cross-country motorized use on approximately 71,895 acres of the division was eliminated by a 1999 Special Order to comply with Box Elder County ordinances, but because of jurisdictional uncertainties the Order has not been effectively implemented. Under Alternative 1, the number of user-created, non-system routes would be expected to increase beyond the current estimate of 142 mi, as a result of unrestricted cross-country use in the project area.

Table 3-6. Minidoka RD, Raft River Division, comparison of recreation effects by alternative.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Acres of National Forest System lands open for cross-country motorized travel.	71,895	0	0	0
Miles of non-motorized system trails	0	0	0	0
Miles of single-track motorized system trails	9	12	12	12
Miles of ATV system trails, motorized trails under 50 in. (wide)	0	0	0	0
Miles of jeep trails, motorized trails over 50 in.	0	2	2	2
Miles of road open to the public	98	98	98	98
Approximate miles of non-system routes designated/not designated	142/0	3/139	3/139	3/139

Nine (9) miles of system trails will continue to be maintained and managed by the USFS; all of which are open to motorized single-track use. System roads maintained by the USFS will continue to be 98 mi. Dispersed camping by motorized and non-motorized users will continue across the entire route designation area, with no restrictions other than topography and the prohibitions against causing resource damage as stated in 36 CFR 261.13. None of the estimated 142 mi of non-system routes that exist in the project area will be added to the SNF transportation system or receive maintenance.

The continued unmanaged nature of the recreation use that is now occurring on areas open to cross-country motorized travel will continue under Alternative 1. If use levels continue to increase, the current level of environmental effects from recreation use would also be expected to increase. User conflicts between motorized and non-motorized users may also increase if non-motorized users begin to feel that the area available to them to pursue recreation free from the sights and sounds of other users is diminished. This may cause displacement of those users into other non-motorized recreation areas on the SNF or on adjacent lands. This displacement has some potential for increasing use in those areas, with the associated impacts that come with increasing use.

Forest Plan Compliance

All four alternatives are compliant with the recreation direction for this MA.

Alternatives 2, 3, and 4—Raft River Division

Direct and Indirect Effects

The effects of implementing Alternatives 2 and 4 are identical. Their effect on cross-country motorized opportunities and opportunities on non-system routes will be negative. All cross-country travel is eliminated and only 2% of the non-system routes will be designated. However, there will be an increased amount of motorized system trails available. Cross-country motorized use on the approximately 71,895 acres would be eliminated.

Of the estimated 142 mi of non-system routes that exist in the planning area, 3 mi will be added to the SNF transportation system. The alternative will also remove 5 mi of existing system roads/trails. A total of 14 mi of system trails will be maintained and managed by the USFS, which is 5 mi more than is currently managed. Fourteen (14) mi would be open to motorized use, an increase of 5 mi. Motorized system trails include 12 mi of single track and 2 mi of jeep trails. System roads maintained by the USFS will be 98 mi.

Cumulative Effects—Motorized Routes, Minidoka RD, Raft River Division

Cumulative effects under Alternative 1 will be the result of the continued unmanaged recreation situation within the project area. Because cross-country travel is allowed, additional user-created routes are expected to be established by motorized recreationists. These additional user-created routes combined with the designated route system will have a negative impact on non-motorized users who find the presence of motorized users to negatively impact their desired experience. Non-motorized users will be less likely to use the lands in the project area and may be displaced to other parts of the SNF where motorized use is not authorized or common.

Minidoka RD—Sublett Division

The Sublett Division of the Minidoka RD lies about 35 mi east of Burley, Idaho. It encompasses the range of mountains east of Interstate 84 between Burley and the Idaho–Utah border. Elevations range from 4,000 to 7,400 ft. Topography varies from open meadow canyon bottoms, to rounded ridges, to sharp peaks, and steep timbered slopes. The unit has very few live streams. Vegetation is dominated by grass–sage slopes as well as Douglas-fir and aspen stands.

The Sublett Division draws most of its summer use from local communities. Its trails are popular with OHV riders, but are also used by hikers and equestrians. Its roads are popular for scenery viewing and pleasure driving. With the exception of hunting season solitude is easily attained here. The division is located in IDFG MU 56. The division has two developed campgrounds and numerous dispersed recreation sites for camping. Fishing is very popular on the South Fork Sublett Creek and Lakefork Creek, which both drain into Sublett Reservoir (just off the SNF).

Existing Environment

Miles of Roads and Trails

There are 114 mi of roads maintained for full-sized vehicles, 12 mi of trails for OHVs, and at least 65 mi of non-system routes on the Sublett Division. The entire division is currently open to cross-country travel.

Recreation Opportunity Spectrum

The ROS mix on the Sublett Division consists of 41,472 roaded modified acres; 22,692 roaded natural acres; and 14,085 semi-primitive motorized acres.

Recreation Niche

On the Sublett Division, there is one managed niche setting:

- Backcountry travel is the niche setting for the entire Sublett Division and project area. This setting retains undeveloped areas away from main travel corridors, providing opportunities for OHV riding, viewing scenery, and winter recreation. This setting provides vast areas to experience scenery and the natural world via both motorized and non-motorized methods. Snowmobiling, motorbike and OHV riding, hiking, skiing, and camping associated with trails are all encouraged. Facilities are developed for protection of resources and staging to the backcountry.

Forest Plan Direction

The route designation area falls within Forest Plan MA 20–Sublett.

Relevant, MA-specific, direction for this MA includes the following:

- Evaluate and incorporate methods to prevent weed establishment and spread from off road ATV/motorbike use in the Upper South Fork Rock Creek subwatershed (Objective 2018).

Environmental Consequences

Alternative 1—Sublett Division

Direct and Indirect Effects

This alternative has no effect on motorized recreation that currently occurs on the division (Table 3-7). Recreation use within the project area would continue to occur as it does now, under the existing travel plan map. Cross-country motorized use on the approximately 77,637 acres currently open (K, L, and Q areas) will continue to occur. The number of user-created, non-system routes would be expected to increase beyond the current estimate of 65 mi, as a result of unrestricted cross-country use in the project area.

Twelve (12) mi of system trails will continue to be maintained and managed by the USFS; all of which are open to OHV use. System roads maintained by the USFS will continue to be 114 mi. Dispersed camping by motorized and non-motorized users will continue across the entire project area, with no restrictions other than topography and the prohibitions against causing resource damage as stated in 36 CFR 261.13. None of the estimated 65 mi of non-system routes that exist in the project area would be added to the SNF transportation system or receive maintenance.

Table 3-7. Minidoka RD, Sublett Division, comparison of recreation effects by alternative.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Acres of National Forest System lands open for cross-country motorized travel.	77,637	0	0	0
Miles of non-motorized system trails	0	0	0	0
Miles of single-track motorized system trails	0	3	3	3
Miles of ATV system trails, motorized trails under 50 in. (wide)	12	14	14	14
Miles of jeep trails, motorized trails over 50 in.	0	1	1	1
Miles of road open to the public	114	114	114	114
Approximate miles of non-system routes designated/not designated	65 /0	6/59	6/59	6/59

The continued unmanaged nature of the recreation use that is now occurring on areas open to cross-country motorized travel will continue under Alternative 1. If use levels continue to increase, the current level of environmental effects from recreation use would also be expected to increase. User conflicts between motorized and non-motorized users may also increase if non-motorized users begin to feel that the area available to them to pursue recreation free from the sights and sounds of other users is diminished. This may cause displacement of those users into other non-motorized recreation areas on the SNF or on adjacent lands. This displacement has some potential for increasing use in those areas, with the associated impacts that come with increasing use.

Forest Plan Compliance

Alternative 1 does not actively help to achieve Forest Plan objectives. Under Alternative 1 the spread of noxious weeds associated with trail use is expected to stay at current levels.

Alternatives 2–4 Sublett Division

Direct and Indirect Effects

All three of the action alternatives have identical effects on motorized recreation. The effects are negative in that cross-country motorized use on the approximately 77,637 acres currently open will be eliminated.

Of the estimated 65 mi of non-system routes that exist in the planning area, 6 mi will be added to the SNF transportation system. A total of 17 mi of system trails will be maintained and managed by the USFS, which is 5 mi more than is currently managed. Eighteen (18) miles would be open to motorized use including 3 mi of single track, 14 mi of ATV, and 1 mi of jeep trails. System roads maintained by the USFS will continue to be 114 mi.

Forest Plan Compliance

Alternatives 2–4 comply with Forest Plan direction. They fulfill Recreation Objective 2018, which calls for reducing the spread of weeds associated with trail use by reducing the number of routes available for motorized use and putting more trails into the system where they will receive regular maintenance and monitoring.

Cumulative Effects—Motorized Routes, Minidoka RD, Sublett Division

Cumulative effects under Alternative 1 will be the result of the continued unmanaged recreation situation within the project area. Because cross-country travel is allowed, additional user-created routes are expected to be established by motorized recreationists. These additional user-created routes combined with the designated route system will have a negative impact on non-motorized users who find the presence of motorized users to negatively impact their desired experience. Non-motorized users will be less likely to use the lands in the project area and may be displaced to other parts of the SNF where motorized use is not authorized or common.

Alternative 2 identifies less than 1 mi of trail in the “future planning” category. This additional mile of motorized trail is needed to improve the current trail system, but is not being considered with this EA because it does not currently exist and/or it crosses private land upon which the USFS does not currently own a right-of-way. It would not be built unless it is approved for construction through a separate, site-specific NEPA analysis and rights-of-ways, where necessary, have been purchased. Under an Alternative 2 Decision, it is anticipated that this additional mile of motorized trail would be added to the SNF transportation system in the future, which would improve the desired experience for motorized users.

Vegetation

Introduction

Vegetation is an integral part of ecosystem composition, function, and structure. Countless biophysical processes depend upon or are connected to vegetative conditions. Wildlife habitat, aquatic conditions, fisheries, recreation, economics, and soil productivity are all interdependent with vegetation. Vegetative conditions affect biodiversity, plant, animal, and fish viability, and ecosystem processes and functions.

Issue and Indicators

Noxious Weeds Issue

Noxious weeds and non-native plants pose serious threats to biodiversity, the integrity and health of native plant communities, and wildlife habitat.

Motorized and non-motorized travel routes are often invasion corridors for the spread of noxious weeds and other invasive species. Changing to designated corridors, may result in an increase of higher concentrations of non-native plants along corridors given greater disturbance and opportunity for weed introduction. Eliminating cross-country travel may reduce the potential for new infestations away from main travel routes but may also reduce the potential for detection of infestations away from main travel routes.

Indicators

- Infested acres accessible by motorized travel based upon route location and designation.
- Estimated total acres at risk of introduction/spread of noxious weed invasion based upon susceptibility.

Direct and Indirect Effects Methodology

The direct effects of travel routes on potential noxious weed spread were determined using the existing GIS weed inventory (USDA 2005) and overlaying these data with acres open to motorized use by alternative. For Alternative 1, all acres within the route designation area would remain open to cross-country travel and, therefore, all acres have the potential to be directly affected. Where travel is restricted to designated routes and areas under Alternatives 2, 3, and 4, acres deemed potentially susceptible under these alternatives were determined by adding the total acres of areas designated as open for cross-country travel to the total acres potentially susceptible along designated routes. Miles of designated routes by alternative were buffered by 300 ft on either side for roads and 100 ft on either side for trails to calculate acres potentially susceptible to noxious weed spread. As described in Chapter 2, the 300 and 100-ft buffers are based on the distance from designated roads and trails, respectively, open to motorized access for dispersed camping.

Indirect effects for each alternative were estimated using the acres currently open to cross-country travel for Alternative 1 and the buffers associated with miles of roads and trails, as well as any designated as open to cross-country travel areas, by alternative described above for Alternatives 2, 3, and 4. The data was then intersected with the weed susceptibility model created by the Southwest Idaho Ecogroup for the Forest Plan revision completed in 2003 (Southwest Idaho Ecogroup 2003). The weed susceptibility model was built using vegetation coverage data (Redmond et. al, 1998, for Idaho; Utah State, 1998, for Utah), aspect, elevation, soil type, landtype, and surface layer texture. This model was produced for noxious weed species in general and also for specific noxious weeds including spotted knapweed, diffuse knapweed, rush skeleton weed, and leafy spurge. This model predicts the estimated acres of susceptibility to noxious weed invasions and was used to examine the risk of introduction and invasion within susceptible acres by alternative.

Affected Environment

Invasive species have been identified by the Chief of the USFS as one of the four threats to the National Forests and Grasslands within the U.S. Noxious weeds and exotic plants are rapidly spreading locally, regionally, and nationally. Over $13 billion is spent by the U.S. each year to prevent the spread and introduction of noxious weeds. The total economic damage and associated control cost exceeds $115 billon per year (USDA 2007a).

Invasive plants, including noxious and exotic weeds, pose the most immediate and disruptive threat to ecosystem function throughout NSF lands (USDA 2003a). Noxious weeds are plant species designated by law that have detrimental effects to agriculture, commerce, and public health. Spotted knapweed, diffuse knapweed, yellow starthistle, leafy spurge, and dyer’s woad are designated noxious weeds that pose the greatest threat to plant and animal biodiversity and associated habitat within the route designation area (USDA 2003a). These species also can have negative effects on recreational experiences, wildlife and livestock habitat and forage, landscape and soil productivity, fire cycles, nitrogen cycling, riparian and hydrologic function, and water quality. Exotic annual grasses, i.e., cheatgrass, also pose major threats to native vegetation communities and biodiversity.

Noxious weeds and non-native plants have many vectors for dispersal including humans, wildlife, wind, water, and vehicles (Gelbard and Belnap 2003). Roads, trails, and rivers serve as disturbance corridors for the introduction and spread of noxious weeds and invasive plants into natural areas. Roads have been well-documented as introduction and/or invasion sites for noxious weeds and non-native plant species (Tyser and Worley 1992; Wilson et al. 1992; Lonsdale and Lane 1994). This is particularly true in the arid climates of the Intermountain West (USDI 1999; Gelbard and Belnap 2003).

Motorized vehicles have been documented as vectors of noxious weeds in both designated routes and in open cross-country areas (Tyser and Worley 1992; Lonsdale and Lane 1994; Gelbard and Belnap 2003). Vehicle undercarriages can trap and transport weed seed (Sheley and Petroff 1999). The number of weeds carried by vehicles varies substantially and may be associated with vehicle type, route traveled, and season of travel. Some research indicates that four-wheel drive vehicles carry significantly more weed seed than do two-wheel drive vehicles (Lonsdale and Lane 1994). Little other research exists to differentiate between risk of spread and type of motorized vehicle (i.e., ATV vs. motorcycle).

In addition to vehicle type, route type may have some influence on risk of introduction and susceptibility to spread. One recent study (Gelbard and Belnap 2003) found that paved roads have more weeds than do gravel or two-track roads in southern Utah. This is likely explained by the level of disturbance associated with road construction and paving in comparison with pioneered routes. Similar results have been documented in Glacier National Park (Tyser and Worley 1992).

Despite the vector for introduction, a non-native plant's ability to establish and spread once introduced depends upon several factors including physiological characteristics, local soil conditions, sunlight, moisture, and natural control agents (Parendes and Jones 2000). Most noxious weeds are able to rapidly establish and expand due to physiological advantages over native plants, the ability to establish in various vegetative successional stages and communities, prolific seed production, lack of natural control agents, and other competitive advantages. Spotted knapweed and dyer's woad have both been documented to produce chemicals from their roots that inhibit growth of surrounding plant species (Baise et al. 2003).

The relative ability for new noxious weed populations to be detected and treated by the USFS is high along established roads and trails. The ability of RD personnel to detect and treat infestations away from main travel routes decreases the farther away from main travel corridors the infestations occur.

Forest Plan Direction

The SNF Forest Plan (USDA 2003a) provides goals, objectives, standards, and guidelines that relate to noxious weeds within the route designation analysis area. The following management direction applies to the route designation process:

- Prevent new infestations of undesirable non-native plants or noxious weed species, with emphasis on areas of high susceptibility where those species have a strong probability for establishment and spread (NPGO02).

- Work to reduce the risk of establishing new noxious weed populations by minimizing weed seed transport and reducing favorable establishment conditions on disturbed sites (NPGO05).

- Emphasize prevention of noxious weed establishment through education and cooperation with recreation user groups such as ATV, motorcycle, and stock user groups (NPOB06).

- Projects that may contribute to the spread or establishment of noxious weeds shall include measures to reduce the potential for spread and establishment of noxious weed infestations (NPST10).

- Noxious weeds and undesirable non-native plants should be eradicated. Where it is not practical to eradicate existing infestations, infestations should be managed to prevent seed production and spread (NPGU01).

Fairfield RD

The SNF completed an inventory of invasive weeds in 2005. As a result of that inventory, more than 580 acres of invasive weeds were mapped on the Fairfield RD. Of those acres, only 19 acres fall within the route designation area. The Fairfield RD has recorded and treated spotted knapweed, rush skeleton weed, leafy spurge, diffuse knapweed, and Canada thistle (USDA 2003b). Though not tracked as a noxious weed on the Idaho or Utah State noxious weed lists, cheatgrass is found scattered throughout the RD. The majority of documented infestations of noxious and invasive weed populations on the Fairfield RD are adjacent to travel routes. It is likely that undetected populations of noxious weeds exist on lands not directly adjacent to main travel routes. It is not known at present how large these infestations are or how large they could become. Table 3-8 displays the number of recorded infested acres by species on the Fairfield RD and within the route designation area.

The main weed of concern on the Fairfield RD within the route designation area is leafy spurge, which occurs along the South Fork Boise River and into adjacent tributaries. The largest infestation of leafy spurge on the Fairfield RD is documented immediately adjacent to the project area boundary near Kelley Creek Flats. This large infestation will continue to serve as a significant seed source for introduction into the project area despite the alternative selected. Large infestations of rush skeleton weed have been documented on the Mountain Home RD of the Boise National Forest (NF) which is adjacent to the Fairfield RD. At present, small, isolated populations of rush skeleton weed have been located on the Fairfield RD. The large populations on the Boise NF will continue to serve a seed source for introduction into the project area despite the alternative selected.

Table 3-8. Acres of weed infestation within the Fairfield RD route designation area.

Species Common Name (Scientific Name)	Acres of infestation on the Fairfield RD	Acres of infestation within the route designation area
Leafy Spurge (*Euphorbia esula*)	551	19
Other noxious weeds[a]	33	–
TOTAL ACRES*	584	19
a. Other noxious weeds could include Spotted Knapweed, Diffuse Knapweed, Canada thistle, and Rush skeleton weed.		

There are currently 60,651 acres within the Fairfield RD route designation area that are susceptible to one or more species of noxious weed species invasion (USDA 2003b). The relative ability for new noxious weed populations to be detected and treated by the USFS is high along established roads and trails. The ability of SNF personnel to detect and treat infestations away from main travel routes decreases the farther away from main travel corridors the infestations occur.

Ketchum RD

The SNF has mapped more than 1,400 acres of invasive weeds on the Ketchum RD (USDA 2005). Only a small portion of the Ketchum RD is contained within the route designation area, and of the 1,400 acres of mapped invasive weeds, only 89 acres fall within the route designation area. Table 3-9 displays the number of documented infested acres by species on the Ketchum RD and also provides the number of acres of infestation by species within the route designation area.

Table 3-9. Acres of infestation on the Ketchum RD by species.

Species Common name (Scientific Name)	Acres of infestation on the Ketchum RD	Acres of infestation within the route designation area
Diffuse Knapweed (*Centaurea diffusa*)	38	36
Spotted Knapweed (*Centaurea maculosa*)	832	53
Canada Thistle (*Cirsium arvense*)	2	<1
Dalmatian toadflax (*Linaria genistifolia ssp. dalmatica*)	547	<1
Yellow toadflax (*Linaria vulgaris*)	<1	-
Scotch Thistle (*Onopordum acanthium*)	<1	-
Other noxious weeds[a]	58	-
TOTAL ACRES	1476	89
a. Other noxious weeds which could include additional acres Canada Thistle, Yellow Toadflax, or Scotch Thistle.		

The main noxious weeds of concern within the route designation area are spotted and diffuse knapweeds (USDA 2003b). Although not reflected in the 2005 inventory, the Ketchum RD has recorded large infestations of Canada thistle along riparian corridors. Additionally, black henbane has been recorded in Greenhorn Gulch on private lands. Cheatgrass is found scattered throughout the RD. The majority of infestations on the Ketchum RD are located along travel routes (motorized and non-motorized); however, small scattered populations of invasive species are known to occur throughout the RD. Other invasive plant species have been introduced into the area along Highway 75. Dyer's woad, a highly invasive species, has been documented at the Friedman Memorial Airport located in Hailey, Idaho and along Highway 75 that parallels the Friedman Memorial Airport. It is likely that undetected populations of noxious weeds exist on lands not directly adjacent to main travel routes. It is not known at present how large these infestations are or how large they could become.

There are currently 17,511 acres within the route designation area that are susceptible to one or more species of noxious weed species invasion on the Ketchum RD (USDA 2005). The relative ability for new noxious weed populations to be detected and treated by the USFS is high along established roads and trails. The ability of the SNF personnel to detect and treat infestations away from main travel routes decreases the farther away from main travel corridors the infestations occur.

Minidoka RD

The SNF has mapped more than 2,400 acres of invasive weeds on the Minidoka RD (USDA 2005). The majority of the Minidoka RD is contained within the route designation area. Table 3-10 displays the number of documented infested acres by species on the Minidoka RD and also provides the number of acres of infestation within the route designation area by division.

Although not included in the 2005 inventory, the Minidoka RD has recorded and treated Dyer's woad, Russian knapweed, black henbane, and Medusa head (USDA 2003b). Additionally, cheatgrass is found scattered throughout the RD. The majority of documented inventories of noxious and invasive weed populations on the Minidoka RD are adjacent to travel routes (motorized and non-motorized). It is likely that undetected populations of noxious weeds exist on lands not directly adjacent to main travel routes. It is not known at present how large these infestations are or how large they could become.

The main weed or weeds of concern vary by division on the Minidoka RD and can vary by MA within the divisions. As such, current infestations and other weed species of concern are summarized by division.

Albion Division. The main weeds of concern are musk thistle and spotted knapweed. An extensive population of musk thistle (>700 acres) is located along the Howell Canyon road, which is not included within the route designation area. However, this large infestation serves as a seed source for the surrounding areas. Spotted knapweed is also known to occur in the same general area (approximately 20 acres) and could serve as a seed source for surrounding areas as well. Canada thistle, diffuse knapweed, leafy spurge, and tansy ragwort have also been documented in isolated small, populations throughout the division. The SNF weed inventory (USDA 2005) documents that the majority of infestations occur along major travel routes, corridors, and high-use areas. Ongoing weed management efforts have documented and treated a large proportion of the acres reported.

Black Pine Division. The main weed of concern is hounds tongue. The Sawtooth weed inventory (USDA 2005) documents that the majority of these infestations occur along all of the major travel routes and corridors for this division. Dyer's woad, white top, spotted knapweed, black henbane, and musk thistle have also been found in areas surrounding USFS lands. These species pose a major threat of invasion (USDA 2003b). Canada thistle has been documented in several drainages but has not been added to the SNF inventory. Ongoing weed management efforts have documented and treated a large proportion of the acres reported.

Table 3-10. Infestation on the Minidoka RD by species and within the route designation area by division.

Species Common name (Scientific name)	Total Acres of infestation on the Minidoka RD	Acres of infestation within Route Designation Area				
		Albion Division	Black Pine Division	Cassia Division	Raft River Division	Sublett Division
Whitetop (*Caradaria draba*)	25	-	-	5	-	17
Musk Thistle (*Carduus nutans*)	723	-[a]	-	23	-	-
Diffuse Knapweed (*Centaurea diffusa*)	15	-[b]	-	10	-	-
Spotted Knapweed (*Centaurea maculosa*)	194	-	-	-	-	173
Canada Thistle (*Cirsium arvense*)	84	-	-	3	81	-
Hounds tongue (*Cynoglossum officinale*)	1038	-	354	-	140	554
Leafy spurge (*Euphorbia esula*)	145	-	-	146		-
Scotch Thistle (*Onopordum acanthium*)	131	-	-	131	-	<1
Other noxious weeds[a,b,c]	137	-	<1	-		136
TOTAL ACRES	2492	0	355	318	221	871

a. 700 acres of Musk Thistle occur adjacent to the route designation area boundary.

b. 21 acres of Diffuse Knapweed occur adjacent to the route designation area boundary.

c. Other noxious weeds could include additional acres of species listed above and/or could include species such as Rush Skeleton weed, Black henbane, Tansy ragwort, or Dyer's woad.

Cassia Division. This division comprises four MAs (USDA 2003a). The main weed of concern within the Rock Creek MA is scotch thistle along major travel ways. Russian knapweed, diffuse knapweed, and whitetop also occur along main travel routes invasion (USDA 2003b; USDA 2005). Within the Cottonwood Creek MA, the main weeds of concern are whitetop and musk thistle. Black henbane and diffuse knapweed have also been reported as weed species of concern (USDA 2003a; USDA 2005). The Shoshone Creek MA has a number of noxious weeds and exotic plants including diffuse knapweed and musk thistle, which have been introduced primarily along main travel corridors and areas of high activity (USDA 2003a; USDA 2005). Lastly, the main weeds of concern in the Trapper Creek/Goose Creek MA are leafy spurge, diffuse knapweed, and musk thistle. Black henbane, whitetop, and Canada thistle have also been documented in this MA. The majority of the documented infestations occur along main travel corridors and in areas of high activity. Cheatgrass has been documented on this division and (USDA 2003b; USDA 2005) is of concern in areas that have recently burned.

Raft River Division. The main weeds of concerns are Canada thistle and hounds tongue. The SNF weed inventory (USDA 2005) documents that the majority of these infestations occur along major travel routes and corridors. In addition to the main weeds of concern, isolated populations of black henbane, medusa head, musk thistle, and dyer's woad have been reported on the division and in surrounding areas. Ongoing weed management efforts have documented and treated a large proportion of the acres reported.

Sublett Division. The main weeds of concern are whitetop, spotted knapweed, and hounds tongue (USDA 2003a). Canada thistle is found in many drainages. Small scattered populations of diffuse knapweed, scotch thistle and musk thistle have been found in small, scattered populations throughout the division. Ongoing weed management efforts have documented and treated a large proportion of the acres reported. The SNF weed inventory documents that the majority of infestations occur along major travel routes and corridors (USDA 2005).

There are currently 184,412 acres within the route designation area that are susceptible to one or more species of noxious weed species invasion on the Minidoka RD (USDA 2003a). The acres susceptible to invasion by noxious weeds do not vary by alternative.

Environmental Consequences

Direct Effects Common to All Alternatives

Motorized and non-motorized travel within known noxious weed populations can be directly correlated with an increase in weed density and distribution through the spread of weeds and vegetative material. Invasive weed seeds can become trapped in undercarriages of vehicles, wheel wells, or bumpers and transported over long distances along transportation routes. Declines in the presence of exotic species with distance from roads have been documented in several studies on public lands (Tyser and Worley 1992; Gelbard and Belnap 2003).

Non-native plant establishment can directly alter the amount of annual and perennial vegetation present, the percent of soil ground cover, the quality of terrestrial wildlife cover, and the composition of rare plant habitat.

Given the paucity of noxious weed data for the SNF, it is likely that undetected populations of noxious weeds exist along lesser traveled routes and in remote areas. If undetected infestations occur along routes or within allowable buffers, these populations could serve as seed sources for further spread.

Indirect Effects Common to All Alternatives

Indirect effects include the risk of introducing invasive species into areas that are highly susceptible to weed infestation. Non-native plant establishment can indirectly alter the vegetative species' composition of an area, individual plant vigor, soil surface erosion rates, shrub canopy closure patterns and distribution, the soil productivity of a site, the level of sediment affecting water quality, water runoff volume or rate, the quality of threatened and endangered species habitat, fire regimes, aquatic and terrestrial habitat condition, and big game winter range (USDA 2003b, Trombulak and Frissell 2000, Gelbard and Belnap 2003).

It is important to note under the action alternatives, those non-system routes and previously utilized areas that are not carried forward for designation under one of the action alternatives may have had introductions of one or more noxious weed species as a result of the currently allowable cross-country travel. Previously undetected noxious weed populations that are not found along routes not designated under one of the action alternatives may remain unchecked and could expand over the long-term. As such, undetected infestations may increase in density, spread over time, and could impact soil productivity; wildlife habitat; threatened, endangered, proposed, candidate, or sensitive (TEPCS) species habitat; vegetation composition; sediment levels; and water quality.

Each action alternative proposes to convert a portion of the user-created, non-system routes into system trails. A system route designation means these routes will receive tread, drainage, and trailway maintenance they require to maintain tread and hillslope integrity. As part of this maintenance and inspection, the opportunity to detect new weed infestations arises and follow-up treatment will occur according to the RD's weed treatment efforts.

Alternative 1—Fairfield RD

Direct Effects

Under Alternative 1, all acres within the route designation area are open to motorized cross-country use; therefore, all 19 acres of leafy spurge infestation would continue to be legally accessible by motorized users. This alternative provides the greatest opportunity for direct effects within known leafy spurge populations and associated habitats.

In light of the allowable acres open to travel, the likelihood of travel through undetected/unrecorded infestations is the greatest under this alternative. As such, Alternative 1 poses the greatest risk of possible interaction with infestations and the widest acreage for spread. The level of detection and treatment away from main travel corridors under Alternative 1 is much less given the magnitude of area open to travel, invasive species introduction, and spread.

Given the level of risk for further spread of noxious weeds, it is unlikely that Alternative 1 will meet or trend towards Forest Plan goals NPGO02 or NPGO05, or be consistent with Forest Plan standards and guidelines NPST10 and NPGU01.

Indirect Effects

Table 3-11 summarizes the acres at risk of introduction/invasion of noxious weeds based upon the susceptibility model by species on the Fairfield RD. As displayed in the table, Alternative 1 has the greatest risk of introduction of noxious weeds (in general and by specific species) into highly susceptible areas given that motorized cross-country travel is authorized. Motorized use through the open cross-country area under this alternative is anticipated to increase as recreation demand increases. Those areas with high non-system route densities have a higher probability of impacts to streams, riparian areas, and interactions with noxious weed infestations. On the Fairfield RD, South Fork Lime Hearn, Upper Little Smoky, and Basalt creeks have the highest non-system route densities. As activities increase in areas with compacted soils, altered vegetation, and high levels of disturbance, the likelihood of weed introduction and spread increases. Dispersed camping associated with motorized recreation and cross-county travel is not restricted by Alternative 1. Disturbance associated with dispersed camping would occur over a much greater area under Alternative 1 and introductions and infestations could occur on a much wider number of acres and locations.

Table 3-11. Acres at risk to introduction of noxious weeds by alternative, Fairfield RD.

Acres at risk to introductionby species[a]	Alternative 1 (acres)	Alternative 2 (acres)	Alternative 3 (acres)	Alternative 4 (acres)
Noxious weeds (general)	60,651	5,367	5,453	5,272
Leafy Spurge	25,758	2,575	2,607	2,570
Rush Skeleton Weed	38,070	3,087	3,128	3,084
Diffuse Knapweed	4,700	474	474	474
Spotted Knapweed	56,096	4,673	4,750	4,579
Yellow Star Thistle	821	56	56	55
a. Noxious weed susceptibility model (USDA 2003b).				

Alternative 1—Ketchum RD

Direct Effects

Alternative 1 allows for cross-country travel through all 36 acres of diffuse knapweed and all 53 acres of spotted knapweed infestations within the route designation area. Alternative 1 also provides the greatest risk for travel through undetected/unrecorded infestations given the allowable acres open to cross-country travel. This alternative poses the greatest risk of possible interaction with infestations and, thus, the highest potential for spread.

Given the magnitude of area open to cross-country travel, the overall ability to detect and treat noxious weed infestations is considerably lower under Alternative 1 than any other alternative. Under Alternative 1, it is unlikely that Forest Plan direction will be met given the number of acres open to cross-country travel, the potential for spread of noxious weeds away from main travel corridors, and the increased potential for new infestations to go undetected and untreated.

Indirect Effects

Alternative 1 has the greatest risk for introduction of noxious weeds (in general and by specific species) into highly susceptible areas given that cross-country travel is authorized. As displayed in Table 3-12, 17,511 acres within the route designation area would be at risk of introduction or spread of noxious weeds as a result of cross-country travel and unregulated motorized access for dispersed camping. Motorized use through the open cross-country area under this alternative is anticipated to increase as recreation demand increases. Greenhorn and Cove creeks have high non-system route densities and as such have a higher probability of interactions with noxious weed infestations. As activities increase in areas with compacted soils, altered vegetation, and high levels of disturbance, the likelihood of weed introduction and spread increases. Dispersed camping associated with motorized recreation and cross-county travel is not restricted by Alternative 1. Disturbance associated with dispersed camping would occur over a much greater area under Alternative 1 and introductions and infestations could occur on a much wider number of acres and locations.

Table 3-12. Acres at risk to introduction of noxious weeds by alternative, Ketchum RD.

Acres at risk to introduction by species[a]	Alternative 1 (acres)	Alternative 2 (acres)	Alternative 3 (acres)	Alternative 4 (acres)
Noxious weeds (general)	17,511	1,983	2,063	1,859
Leafy Spurge	2,061	648	648	602
Diffuse Knapweed	11,734	1,124	1,195	1,024
Spotted Knapweed	10,453	1,552	1,584	1,457
a. Noxious weed susceptibility model (USDA 2003b).				

Alternative 1—Minidoka RD—Albion Division

Direct Effects

As displayed in Table 3-10 no recorded noxious weed infestations have been detected within the route designation area on the Albion Division, although large infestations of musk thistle (> 700 acres) and spotted knapweed (approximately 20 acres) occur along the Howell Canyon road. These infestations can serve as seed sources for introduction into areas that are highly susceptible to invasion. There have not been any documented infestations within the route designation area; thus, there are no detectible differences for direct effects among alternatives relative to noxious weeds. Forest Plan direction related to non-native plants will be met under all alternatives in the Albion Division.

Indirect Effects

According to the noxious weed susceptibility model (USDA 2003b), there are currently 12,674 acres on the Albion Division within the route designation area that are susceptible to one or more species of noxious weed species invasion on the Minidoka RD. Although there are no documented populations of noxious weeds within the route designation area, several large populations of musk thistle and spotted knapweed occur just outside the route designation area. These populations pose a risk for seed sources, introduction, and possible spread into the route designation area if access through these populations occurs prior to entering the route designation area. Given the continued authorization of cross-country travel, Alternative 1 poses the greatest risk of introduction of noxious weeds (in general and by specific species) into highly susceptible areas (Table 3-13).

Table 3-13. Acres at risk of introduction/invasion of noxious weeds by species on the Albion Division, Minidoka RD.

Acres at risk to introduction by species[a]	Alternative 1 (acres)	Alternative 2 (acres)	Alternative 3 (acres)	Alternative 4 (acres)
Noxious weeds (general)	12,674	861	861	834
Leafy Spurge	319	89	89	89
Diffuse Knapweed	1,531	1	1	<1
Spotted Knapweed	12,402	830	830	803
Yellow Star Thistle	50	0	0	0

a. Noxious weed susceptibility model (USDA 2003b).

Alternative 1—Minidoka RD—Black Pine Division

Direct Effects

As previously described, hounds tongue is the primary noxious weed of concern on the Black Pine Division. Under Alternative 1, all populations of hounds tongue will remain accessible through the continued authorization of cross-country travel (Table 3-10). Alternative 1 provides the greatest opportunity for direct effects within known infestations and associated habitats and provides the greatest risk for access through undetected/unrecorded populations.

Given the potential for spread of noxious weed infestations as a result of cross-country travel, it is unlikely that Forest Plan direction relative to non-native plants would be met under Alternative 1.

Indirect Effects

There are currently 17,012 acres on the Black Pine Division within the route designation area that are susceptible to one or more species of noxious weed species invasion according to the noxious weed susceptibility model (USDA 2003b). Given that all 17,012 acres would remain open to cross-country travel under Alternative 1, this alternative poses the greatest risk of introduction of noxious weeds (in general and by specific species) into highly susceptible areas.

Alternative 1—Minidoka RD—Cassia Division

Direct Effects

Under Alternative 1, all 318 acres of known noxious weed infestation would remain open to cross-county travel, as would any undetected/unrecorded infestations (Table 3-14). Risk for further spread of whitetop, diffuse knapweed, musk thistle, Canada thistle, spotted knapweed, leafy spurge, and scotch thistle would be the highest, particularly into areas off main travel routes, under this alternative. Given the allowable acres open to travel, Alternative 1 provides the most opportunity for motorized travel through existing and undetected/unrecorded noxious weed infestation and thereby poses the greatest risk for spread.

With the potential for spread of noxious weed infestations as a result of cross-country travel, it is unlikely that Forest Plan direction relative to non-native plants would be met under Alternative 1.

Table 3-14. Acres at risk of introduction/invasion of noxious weeds by species on the Black Pine Division, Minidoka RD.

Acres at risk to introduction by species[a]	Alternative 1 (acres)	Alternative 2 (acres)	Alternative 3 (acres)	Alternative 4 (acres)
Noxious weeds (general)	17,012	1,633	1,633	1,633
Leafy Spurge	1,912	372	372	372
Diffuse Knapweed	1,449	223	223	223
Spotted Knapweed	14,577	1,173	1,173	1,173
Yellow Star Thistle	948	246	246	246
a. Noxious weed susceptibility model (USDA 2003b).				

Indirect Effects

There are currently 83,974 acres on the Cassia Division within the route designation area that are susceptible to one or more species of noxious weed invasion on the Minidoka RD (USDA 2003b). Alternative 1 has the greatest risk of introduction of noxious weeds (in general and by specific species) into highly susceptible areas given that cross-country travel is authorized (Table 3-15).

Alternative 1—Minidoka RD—Raft River Division

Direct Effects

The continuation of cross-country travel under Alternative 1 results in all documented populations of Canada thistle and hounds tongue within this division to continue to be legally accessible to motorized travel (Table 3-10). Given the allowable acres open to travel, Alternative 1 provides the most opportunity for motorized travel through existing and undetected/unrecorded noxious weed infestation and, thereby, poses the greatest risk for spread.

Table 3-15. Acres at risk of introduction/invasion of noxious weeds by species on the Cassia Division, Minidoka RD.

Acres at risk to introduction by species[a]	Alternative 1 (acres)	Alternative 2 (acres)	Alternative 3 (acres)	Alternative 4 (acres)
Noxious weeds (general)	83,974	12,252	12,468	12,162
Leafy Spurge	3,262	631	648	632
Diffuse Knapweed	4,503	481	486	478
Spotted Knapweed	78,943	11,636	11,844	11,548
Yellow Star Thistle	2,013	262	262	262
a. Noxious weed susceptibility model (USDA 2003b).				

With the potential for spread of noxious weed infestations as a result of cross-country travel, it is unlikely that Forest Plan direction relative to non-native plants would be met under Alternative 1.

Indirect Effects

There are currently 31,762 acres on the Raft River Division within the route designation area that are susceptible to one or more species of noxious weed species invasion (USDA 2003b). Under Alternative 1, all 31,762 acres would remain open to cross-country travel and therefore would pose the greatest risk of introduction of noxious weeds (in general and by specific species) into highly susceptible areas (Table 3-16).

Table 3-16. Acres at risk of introduction/invasion of noxious weeds by species on the Raft River Division, Minidoka RD.

Acres at risk to introduction by species[a]	Alternative 1 (acres)	Alternative 2 (acres)	Alternative 3 (acres)	Alternative 4 (acres)
Noxious weeds (general)	31,762	3,021	3,021	3,021
Leafy Spurge	1457	161	161	161
Diffuse Knapweed	30,896	2,805	2,805	2,805
Spotted Knapweed	2,246	440	440	440
Yellow Star Thistle	1,903	246	246	246
a. Noxious weed susceptibility model (USDA 2003b).				

Alternative 1—Minidoka RD—Sublett Division

Direct Effects

The continuation of cross-country travel under Alternative 1 results in all documented populations of spotted knapweed, hounds tongue, and scotch thistle within this division to continue to be legally accessible to motorized travel (Table 3-10) Given the allowable acres open to travel, Alternative 1 provides the most opportunity for motorized travel through existing and undetected/unrecorded noxious weed infestation and thereby poses the greatest risk for spread.

Given the potential for spread of noxious weed infestations as a result of cross-country travel, it is unlikely that Forest Plan direction relative to non-native plants would be met under Alternative 1.

Indirect Effects

There are currently 38,991 acres on the Sublett Division within the route designation area that are susceptible to one or more species of noxious weed species invasion (USDA 2003b). All 38,991 acres would remain susceptible to noxious weed invasion under Alternative 1 as all acres currently open to cross-country travel would remain open.

Alternative 1 has the greatest risk of introduction of noxious weeds (in general and by specific species) into highly susceptible areas given that cross-country travel is authorized (Table 3-17).

Table 3-17. Acres at risk of introduction/invasion of noxious weeds by species on the Sublett Division, Minidoka RD.

Acres at risk to introduction by species[a]	Alternative 1 (acres)	Alternative 2 (acres)	Alternative 3 (acres)	Alternative 4 (acres)
Noxious weeds (general)	38,991	3,488	3,488	3,488
Leafy Spurge	690	429	429	429
Diffuse Knapweed	187	16	16	16
Spotted Knapweed	38,444	3,286	3,286	3,286
a. Noxious weed susceptibility model (USDA 2003b).				

Alternatives 2, 3, and 4—Fairfield RD

Direct Effects

Under Alternatives 2, 3, and 4, only a very minor portion (0.33 acres) of existing leafy spurge infestations would be legally accessible via motorized travel. All three alternatives include designation of the West Beaver Creek trail. Although this trail does not physically cross through a leafy spurge infestation, the 100-ft buffer allowed for motorized access for dispersed camping along this trail does cross into one leafy spurge population. No other routes designated under any of the action alternatives cross through known noxious weed infestations. Given that all three alternatives designate the same routes that intersect with known infestations, there is no detectable differentiation among the action alternatives in regard to direct effects to known weed infestations.

Under Alternatives 2, 3, and 4, the likelihood of travel through undetected infestations is markedly less than Alternative 1 given that travel will be confined to designated routes and buffers only. However, the likelihood of detection along designated routes will be higher than in those lands not open to cross-country travel. Those populations that intersect with routes designated under Alternatives 2, 3, or 4 may experience more direct disturbance and increased weed seed introduction but may benefit from detection and treatment as part of the cycle of maintenance. All action alternatives move towards meeting Forest Plan management direction.

Indirect Effects

Alternatives 2, 3, and 4 have a markedly reduced number of acres at risk due to the elimination of cross-country travel and the reduction in legally accessible routes (Table 3-11). All action alternatives would prohibit cross-country travel, and motor vehicle use would be restricted to designated system roads and trails and confined to buffered areas along designated road and trail routes for motorized access for dispersed camping. Under Alternatives 2, 3, and 4, the level of use along designated routes will increase and the level of disturbance will likely be concentrated along these routes and associated buffers. The risk of introduction of new noxious weed seeds along designated routes will increase as compared with Alternative 1 on these same routes.

Of the action alternatives, Alternative 3 poses the greatest risk of introduction and spread of spotted knapweed, leafy spurge, and rush skeleton weed on the Fairfield RD. Alternative 3 proposes routes within susceptible habitat in Salt/Bowns, West Fork Grindstone, Red Rock, and East Fork Beaver creeks (approximately 5 mi). Alternative 4 has the least risk of overall introduction of noxious weeds in highly susceptible areas given that this alternative proposes the least number of open travel routes and converts the fewest miles of non-system routes to system trails. Under Alternative 4, routes in susceptible habitat in Salt/Bowns, Red Rock, and East Fork Beaver creeks are not proposed for designation and the system road in West Fork Grindstone Creek would be removed. Alternative 2 is similar to Alternative 4 in that routes in susceptible habitat in Salt/Bowns, Red Rock, and East Fork Beaver creeks are not proposed for designation. However, Alternative 2 would retain the route in West Fork Grindstone Creek as a system road, allowing use and increasing the risk of introduction of noxious weeds within susceptible habitat. There is little or no variation among Alternatives 2, 3, and 4 for risk of introduction of yellow star thistle and diffuse knapweed (Table 3-11).

Alternatives 2, 3, and 4—Ketchum RD

Direct Effects

Under Alternatives 2, 3, and 4, the majority of diffuse knapweed (31 acres) and spotted knapweed (52 acres) infestations would continue to be legally accessible and susceptible to the direct effects of motorized travel. There is only a slight difference (approximately 1 acre) between Alternative 1 and Alternatives 2, 3, and 4 for direct effects to known weed infestations of spotted knapweed. This difference is explained by the buffer applied in the action alternatives. The majority of the infestation falls within the buffer associated with legal access from roads. Access under all alternatives to current infestations would be along major travel routes.

Under Alternatives 2, 3, and 4, the likelihood of travel through undetected infestations is markedly less than Alternative 1 given that travel will be confined to designated routes and buffers only.

The likelihood of detection along designated routes is higher than in lands not open to cross-country travel. Populations that intersect with routes designated under Alternatives 2, 3, or 4 may experience more direct disturbance and increased weed seed introduction but may benefit from detection and treatment as part of the cycle of maintenance. Because of the reduced number of acres open to travel and the increased potential for detection and treatment of new infestations, Alternatives 2, 3, and 4 all meet or move towards meeting Forest Plan management direction.

Indirect Effects

Alternatives 2, 3, and 4 have a substantially reduced number of acres at risk to introduction of noxious weed infestations (Table 3-12). This reduction in risk can be directly correlated to the elimination of cross-country travel. Motor vehicle use would be restricted to designated system roads and trails and opportunities for motorized access for dispersed camping are confined to buffered areas. With the elimination of cross-country travel under Alternatives 2, 3, and 4, the level of use along designated routes is expected to increase. The level of disturbance will likely be concentrated along these routes and associated buffers. The risk of introduction of new noxious weed seeds along designated routes will increase as use along designated routes increases.

Alternative 4 has the lowest risk of overall introduction of noxious weeds (Table 3-12) in highly susceptible areas given that this alternative proposes the least number of open travel routes and converts the fewest miles of non-system routes to system trails. Under Alternative 4, major routes (approximately 7 mi) within susceptible habitat in Big Witch Creek, Finley Gulch, Baugh Creek, and Lime Kiln Gulch would not be designated. Additionally, removal of a system road in Lime Kiln Gulch would occur. Of the action alternatives, Alternative 3 poses the greatest risk of introduction and spread of spotted knapweed and diffuse knapweed on the Ketchum RD. Under Alternative 3, a major route in Big Witch Creek, Finley Gulch, Baugh Creek, and Cabin Creek (approximately 7 mi) would be designated within susceptible habitat. Alternative 2 would not designate routes in Big Witch Creek or Finley Gulch but would propose trails open to motorcyclists, equestrians, bicyclists, and hikers within susceptible habitat in Cabin and Baugh creeks (approximately 2.5 mi). There is little or no variation between Alternatives 2 and 3 for risk of introduction of leafy spurge (Table 3-12). Alternative 4 has the least risk of introduction for all three noxious weed species.

Alternatives 2, 3, and 4—Minidoka RD—Albion Division

Direct Effects

There is no column for the Albion Division displayed in Table 3-10, as no recorded noxious weed infestations have been detected within the route designation area, although large infestations of musk thistle (> 700 acres) and spotted knapweed (approximately 20 acres) occur along Howell Canyon road. These infestations can serve as seed sources for introduction into areas that are highly susceptible to invasion. Because there are no documented infestations within the route designation area, there are no detectible differences for direct effects among alternatives relative to noxious weeds. Forest Plan direction related to non-native plants will be met under all alternatives in the Albion Division.

Indirect Effects

Alternatives 2, 3, and 4 have a considerably reduced number of acres at risk to introduction (Table 3-13). Alternative 4 has the least risk of introduction/invasion from noxious weeds in general and spotted knapweed. Under Alternative 4, 1.6 mi of trail in Marsh Creek would be closed and an additional 2.4 mi of jeep trail in Smith Creek would not be included in the designated system. As such, the risk of introduction and spread would be less in this alternative. Risk of introduction/invasion from leafy spurge and diffuse knapweed appear to be similar to that of Alternatives 2 and 3. There is no detectable difference between Alternatives 2 and 3 in terms of risk of introduction/invasion of noxious weeds. The trails in the Marsh and Smith creeks areas would have the same designation under Alternatives 2 and 3.

Under Alternatives 2, 3, and 4, the level of use along designated routes is expected to increase and the level of disturbance will likely be concentrated along these routes and associated buffers. The risk of introduction of new noxious weed seeds along designated routes will increase as compared with Alternative 1 on these same routes.

Alternatives 2, 3, and 4—Minidoka RD—Black Pine Division

Direct Effects

The elimination of cross-country travel under Alternatives 2, 3, and 4 would result in a smaller proportion of the known hounds tongue infestation (239 acres) being directly affected by travel as displayed in Table 3-18. Those populations that intersect with routes designated under Alternatives 2, 3, or 4 may experience more direct disturbance and increased weed seed introduction but may benefit from detection and treatment as part of the cycle of maintenance.

Because significantly fewer acres are legally accessible to motorized travel, the potential for access through existing undetected/unrecorded populations is substantially reduced. Given that all three alternatives designate the same routes that intersect with known infestations, there is no detectable difference among the action alternatives for direct effects to known weed infestations.

Because of the reduced number of acres open to travel and the increased potential for detection and treatment of new infestations, Alternatives 2, 3, and 4 all meet or move towards meeting Forest Plan management direction.

Indirect Effects

Alternatives 2, 3, and 4 have a markedly reduced number of acres at risk to weed introduction (Table 3-14). There is no detectable difference among the action alternatives in terms of risk of introduction/invasion of noxious weeds, as current infestations have been recorded along major travel routes that remain open under all alternatives.

Under Alternatives 2, 3, and 4, the level of use along designated routes is expected to increase and the level of disturbance will likely be concentrated along these routes and associated buffers. The risk of introduction of new noxious weed seeds along designated routes will increase as compared with Alternative 1 on these same routes.

Table 3-18. Comparison of known noxious weed infestations–acres accessible to direct effects, by alternative, by division.

Species	Black Pine Division		Sublett Division		Raft River Division		Cassia Division	
	Alt. 1 (acres)	Alt.2, 3, & 4 (acres)	Alt. 1 (acres)	Alt.2, 3, & 4 (acres)	Alt. 1 (acres)	Alt.2, 3, & 4 (acres)	Alt. 1 (acres)	Alt.2, 3, & 4 (acres)
Whitetop (*Caradaria draba*)	-	-	17	17	-	-	5	1
Diffuse Knapweed (*Centaurea diffusa*)	-	-	-	-	-	-	23	13
Musk Thistle (*Carduus nutans*)	-	-	-	-	-	-	10	6
Spotted Knapweed (*Centaurea maculosa*)	-	-	173	25	-	-	-	-
Canada Thistle (*Cirsium arvense*)	-	-	-	-	81	36	3	0
Houndstongue (*Cynoglossum officinale*)	354	239	544	539	140	122	-	-
Leafy spurge (*Euphorbia esula*)	-	-	-	-	-	-	146	16
Scotch Thistle (*Onopordum acanthium*)	-	-	<1	0	-	-	131	38
Other noxious weeds	<1	<1	136	136	-	-	-	-
TOTAL	355	239	871	717	221	158	318	74
Table information from Sawtooth National Forest Weed inventory data (USDA 2005).								

Alternatives 2, 3, and 4—Minidoka RD—Cassia Division

Direct Effects

Alternatives 2, 3, and 4 have a substantially smaller proportion of the known noxious weed infestations that would be directly affected by motorized travel. As displayed in Table 3-18, only 74 acres of know infestations would be legally accessible under the proposed route designations. Those populations that intersect with routes designated under Alternatives 2, 3, or 4 may experience more direct disturbance and increased weed seed introduction but may benefit from detection and treatment as part of the cycle of maintenance.

Because significantly fewer acres are legally accessible to motorized travel, the potential for access through existing, undetected/unrecorded populations is substantially reduced. Given that all three alternatives designate the same routes that intersect with known infestations, there is no detectable difference among the action alternatives for direct effects to known weed infestations.

Because of the reduced number of acres open to travel and the increased potential for detection and treatment of new infestations, Alternatives 2, 3, and 4 all meet or move towards meeting Forest Plan management direction.

Indirect Effects

Alternatives 2, 3, and 4 have a markedly reduced number of acres at risk to introduction (Table 3-15). The Division is closed to cross-country travel under the action alternatives; thereby, resulting in a reduced risk of introduction/invasion from noxious weeds in general and spotted knapweed, leafy spurge, and diffuse knapweed, specifically. Risk of introduction/invasion from yellow star thistle is the same for each alternative. Of the action alternatives, Alternative 3 poses the greatest risk for introduction/invasion from noxious weeds in general because of the increased number of routes proposed for designation. Specifically, Alternative 3 proposes routes within susceptible habitat in Electric Springs Creek, Donahue Creek, Arnolds Gulch, Landford Flat Creek, and Diamond Creek that are not proposed in Alternatives 2 or 4. Alternative 2 has fewer routes proposed in susceptible habitat than Alternative 3 but still has more than in Alternative 4. The largest difference between Alternative 4 and the other action alternatives is that Alternative 4 does not propose a trail open to motorcyclists, equestrians, bicyclists, and hikers along Goose Creek within habitat susceptible to noxious weeds.

Under Alternatives 2, 3, and 4, the level of use along designated routes is expected to increase and the level of disturbance will likely be concentrated along these routes and associated buffers. The risk of introduction of new noxious weed seeds along designated routes will increase as compared with Alternative 1 on these same routes.

Alternatives 2, 3, and 4—Minidoka RD—Raft River Division

Direct Effects

Elimination of cross-country travel under all three action alternatives substantially reduces the potential for spread of Canada thistle and hounds tongue. Significantly fewer acres are legally accessible to motorized travel; thereby, substantially reducing the potential for access through existing, undetected/unrecorded populations. Under Alternatives 2, 3, and 4 (Table 3-18), a substantially smaller proportion of the known Canada thistle infestations (35 acres) and a slightly smaller proportion of the hounds tongue infestations (122 acres) would be directly affected by motorized travel. Those populations that do intersect with routes designated under Alternatives 2, 3, or 4 may experience more direct disturbance and increased weed seed introduction but may benefit from detection and treatment as part of the cycle of maintenance. Elimination of cross-country travel under all three alternatives reduces access to large populations of Canada thistle and hounds tongue, which are located along routes that would not be designated under any of the three action alternatives.

Because of the reduced number of acres open to travel and the increased potential for detection and treatment of new infestations, Alternatives 2, 3, and 4 all meet or move towards meeting Forest Plan management direction.

Indirect Effects

Alternatives 2, 3, and 4 have a considerably reduced number of acres at risk to introduction (Table 3-16). There is no detectable difference among the action alternatives in terms of risk of introduction/invasion of noxious weeds as current infestations have been recorded along major travel routes that will remain open under all alternatives.

Under Alternatives 2, 3, and 4, the level of use along designated routes is expected to increase and the level of disturbance will likely be concentrated along these routes and associated buffers. The risk of introduction of new noxious weed seeds along designated routes will increase as compared with Alternative 1 on these same routes.

Alternatives 2, 3, and 4—Minidoka RD—Sublett Division

Direct Effects

Elimination of cross-country travel under all three action alternatives substantially reduces the potential for spread of spotted knapweed and slightly reduces the potential for hounds tongue, and scotch thistle. Significantly fewer acres are legally accessible to motorized travel; thereby, substantially reducing the potential for access through existing, undetected/unrecorded populations. Given that the majority of noxious weed infestations have been recorded along major travel routes, all of which remain open as displayed in Table 3-18 Alternatives 2, 3, and 4, there is little or no detectable difference among these alternatives relative to direct effects to known infestations of white top. Those populations that do intersect with routes designated under Alternatives 2, 3, or 4 may experience more direct disturbance and increased weed seed introduction but may benefit from detection and treatment as part of the cycle of maintenance.

Because of the reduced number of acres open to travel and the increased potential for detection and treatment of new infestations, Alternatives 2, 3, and 4 all meet or move towards meeting Forest Plan management direction.

Indirect Effects

Alternatives 2, 3, and 4 have a considerably reduced number of acres at risk to introduction (Table 3-17) with the proposed routes under each alternative. There is no detectable difference among the action alternatives in terms of risk of introduction/invasion of noxious weeds as current infestations have been recorded along major travel routes that will remain open under all alternatives.

Under Alternatives 2, 3, and 4, the level of use along designated routes is expected to increase and the level of disturbance will likely be concentrated along these routes and associated buffers. The risk of introduction of new noxious weed seeds along designated routes will increase as compared with Alternative 1 on these same routes.

Cumulative Effects

See cumulative effects for all alternatives.

Overall Indirect Effects

Alternative 1 has the greatest risk of introduction of noxious weeds (in general and by specific species) into highly susceptible areas given that cross-country travel is authorized (Tables 3-13 to 3-17). Motorized use through the open cross-country area under this alternative is anticipated to increase as recreation increases. Dispersed camping associated with motorized recreation and cross-county travel is not restricted by Alternative 1. Disturbance associated with dispersed camping would occur over a much greater area under Alternative 1 and introductions and infestations could occur on a much wider number of acres and locations.

The action alternatives (2, 3, and 4) have a markedly reduced number of acres at risk to introduction (Tables 3-13 to 3-17) with the proposal routes under each alternative. All action alternatives would prohibit cross-country travel except in designated open-use areas. Motor vehicle use would also be restricted to designated system roads and trails and opportunities for dispersed camping and cross-country travels are confined to buffered areas. Under Alternatives 2, 3, and 4, the level of use along designated routes will increase and the level of disturbance will likely be concentrated along these routes and associated buffers. The risk of introduction of new noxious weed seeds along designated routes will increase as compared with Alternative 1 on these same routes.

Alternative 4 has the least risk of overall introduction of noxious weeds in highly susceptible areas given that this alternative proposes the least number of open travel routes and converts the fewest miles of non-system routes to system trails. Alternative 2 and 3 are very similar in terms of risk of overall introduction in highly susceptible areas. Of the action alternatives, Alternative 3 poses the greatest risk of introduction and spread of noxious weeds on the Minidoka RD.

Cumulative Effects—Vegetation

Cumulative effects are defined as "the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions, regardless of what agency or persons undertake them" (40 CFR 1500 et seq. 2004).

The following equation is used to determine cumulative effects:

Effects of past, present & future activities	+	The effects of proposed project activities (Route designation and elimination of cross-country travel)	=	Cumulative Impacts

The primary effect to vegetation is from the spread of noxious weeds and non-native plants, which pose serious threats to biodiversity and the integrity and health of native plant communities.

An assumption to consider is that the current weed treatment programs on each RD will continue to occur. As new infestations are detected, they will be treated. The SNF treats 3,400 acres of weeds annually, out of the over 15,000 acres inventoried. The acres treated could increase if more funding becomes available.

Past and Present Activities

Livestock grazing is authorized on all three RDs. Livestock can serve as vectors for non-native plant seeds spreading them into remote areas (Belsky and Gelbard 2000). However, livestock grazing has not been identified as a significant contributor to broad-scale spread of noxious weeds. System routes would continue to receive maintenance in accordance with required maintenance levels and schedules. Disturbance associated with route maintenance could contribute to the spread of noxious weed species (Trombulak and Frissell 2000, Gelbard and Belnap 2003). Motorized vehicles may also increase the incidence of non-native plant introduction and establishment. Such vehicles may encounter infestations in remote areas or along trails or roads and may serve as vectors to new remote locations. Additionally, these vehicles could introduce new highly invasive species from other sources such as private land or other federally- and/or state-managed public lands. Many special-use permitted activities can increase the likelihood of introduction of noxious weeds into areas especially when large machinery or vehicles are required. Noxious weeds could be introduced into areas planned for restoration or for timber harvest as a result of heavy machinery or restoration activities. Minerals activities can contribute to the introduction and spread of noxious weeds. Large equipment associated with minerals management can serve as vectors for noxious weed introduction. Noxious weeds may have been introduced as a result of fire suppression activities and associated fire effects.

Reasonably Foreseeable Actions

On the Minidoka RD, 82.55 mi of spur and redundant roads have been identified for review and possible closure. The precise condition of each route is not known. Invasive species inventories have not been completed for the majority of these areas. During the review of these spur roads, noxious weed infestations will be recorded. Forest Plan standards will be implemented as part of any decided closure process to limit the introduction and spread of invasive species. The Minidoka RD is also proposing an additional 18.34 mi of ATV trail under Alternative 2; 22.43 mi under Alternative 3; and 0.75 mi under Alternative 4 under a separate, future NEPA analysis.

The Fairfield RD is proposing to consider an additional 8.77 mi of ATV trail under a separate, future NEPA analysis. Approximately 5 mi of this total resides on the Fairfield RD, while the rest resides on adjacent private lands and BLM-managed public land.

For the purposes of the cumulative effects analysis for this EA, the addition of these designated ATV routes would be considered a foreseeable future action, increasing the mileage of motorized trails. This increase has potential to also increase the spread of noxious weeds and non-native plants, but it would not be measurable.

Cumulative Effects Summary

Alternative 1 has the greatest potential for adverse cumulative impacts than any other alternative because it does not restrict motorized recreation on non-system routes or cross-county travel. Dispersed camping associated with motorized recreation and cross-county travel would not be restricted. User-created routes would continue to serve as corridors for introduction and spread of noxious weeds. Increased activities in areas with compacted soils, altered vegetation, and high levels of disturbance, have a higher likelihood of weed introduction and increased spread of weeds. As a result, areas with high infestation rates that experience heavy disturbance (i.e., wildfire, dispersed recreation) that can not be completely mitigated are less likely to improve over time under this alternative. Under Alternative 1, it is more difficult to meet NPGU01 than the action alternatives given the magnitude of acres open to travel and potential for spread. Livestock grazing will continue to occur in the future, continuing the potential for spread. The timber harvest actions also have potential to introduce noxious weeds.

Alternatives 2, 3, and 4 would not allow cross-country travel except in designated open-use areas. Motor vehicle use would also be restricted to designated system roads and trails. The level of use along designated routes will increase under Alternatives 2, 3, and 4, and the level of disturbance will likely be concentrated along these routes and associated buffers. Thus, the risk of introduction of new noxious weed seeds along designated routes will be higher than in Alternative 1 along these same routes. The level of detection and treatment is greater along designated routes as compared to Alternative 1. The overall benefit for all of the action alternatives would be an increased level of detection, treatment, and reduction of spread. The action alternatives would move the RD route designation areas closer to Forest Plan management direction than would Alternative 1.

Threatened, Endangered, Proposed, Candidate, or Sensitive Plant Species

Issues and Indicators

Issue

The proposed action (road and trail designation) may affect the health, vigor, and diversity of native plants, riparian vegetation, as well as TEPCS plant species. The SNF is home to many endemic species. There is a concern that routes designated within known populations or potential habitat may pose greater threats, including the introduction of noxious weeds, to these sensitive areas given increased use on such routes.

Indicator

The estimated total acres of TEPCS plant species occupied and potential habitats within open-use areas and designated routes.

Introduction

The ESA of 1973 (16 U.S.C. 35 §§1531 et seq. 1988) requires all federal departments and agencies to conserve threatened and endangered species and the habitats on which they depend and to consult with the USFWS on all actions authorized, funded, or carried out by the agency to ensure that the action will not likely jeopardize the continued existence of any threatened and endangered species or adversely modify critical habitat (USDA 1995a).

Sensitive species require special management efforts and conservation needs under USFS Handbook guidelines (USFS Handbook 2609.25, USDA 1988) and USFS Manual directives (USFS Manual 2670, USDA 1988), and these species are examined separately from the federally-listed species. The National Forest Management Act (16 U.S.C. 36 §§1600 et seq. 1988) and USFS policy require that NFS lands be managed to maintain populations of all existing native animal and plant species at or above minimum viable population levels. A viable population is the maintenance of enough individuals throughout their range to perpetuate the existence of the species in natural, self-sustaining populations.

The USFS requires an evaluation of effects on federal, candidate, and USFS sensitive species and habitat (Manual 2672.4, USDA 1995). This evaluation is necessary to ensure that USFS actions do not contribute to loss of viability of any native or desired non-native plant or animal species or cause any species to move toward federal listing. Determinations of effects on TEPCS species are based upon the species occurrence and affected habitats.

The SNF provides habitat for one threatened and two candidate plant species. There are no plants currently listed as endangered within the SNF. Additionally, the SNF provides habitat for 12 currently designated sensitive plant species and 21 proposed sensitive plant species on the Regional Forester's Sensitive Plant List (USDA 1995b).

Table 3-19 shows potentially impacted species for the route designation area. Additional information about these species can be found in the biological assessment ([BA] USDA 2003c) and the biological evaluation ([BE] USDA 2003d) associated with this EA.

Table 3-19. TEPCS plants that are potentially affected by the route designation project.

Scientific Name	Common Name	Status	Habitat Description	District
Spiranthes diluvialis	Ute Ladies'-tresses Orchid	Threatened	Riparian, aquatic	Fairfield, Ketchum, Minidoka
Castilleja christii	Christ Indian Paintbrush	Candidate	Subalpine grassland	Minidoka
Haplopappus insecticruris	Bugleg Goldenweed	Sensitive	Shrubland, grassland	Fairfield, Ketchum
Phacelia minutissima	Least Phacelia	Sensitive	Shrubland, meadow	Fairfield, Ketchum
Astragalus anserinus	Goose Creek Milkvetch	Sensitive	Woodland, open gap	Minidoka
Cymopterus davissii	Davis' wavewing	Sensitive	Subalpine grassland	Minidoka
Penstemon idahoensis	Idaho Penstemon	Sensitive	Woodland, open gap	Minidoka
USDA 2003a. Sawtooth National Forest Land and Resource Management Plan, Volume 2. Appendix C, Botanical Resources, pp. C 1–6.				

Direction Common to All Alternatives

Laws, Regulations, and Policies

Threatened, endangered, proposed, and candidate species have special management requirements for all USFS management activities. Conservation assessments, strategies, and agreements along with recovery plans currently established for theses plant species will be met and upheld to ensure viability and conservation of these species.

Forest Plan Direction

Forest Plan (USDA 2003a) standards applicable to plant diversity and TEPCS plant protection include the following:

- Management actions that have adverse effects on proposed or candidate species or their habitats, shall not be allowed if the effects of those actions would contribute to listing of the species as threatened or endangered under the ESA (TEST04).
- Management actions shall be designed to avoid or minimize adverse effects to listed species and their habitats (TEST06).
- Avoid management actions within occupied TEPCS plant species habitat that would adversely affect the long-term persistence of those species (TEST08).
- Management actions that may contribute to establishment or spread of non-native invasive weed species within occupied TEPCS plant habitat shall include measures to avoid weed establishment and spread (TEST10).
- Management actions that occur within occupied sensitive plant species habitat must incorporate measures to ensure habitat is maintained where it is within desired conditions, or restored where degraded (BTST01).
- Projects that may contribute to the spread or establishment of noxious weeds shall include measures to reduce the potential for spread and establishment of noxious weed infestations (NPST10).
- Integrated weed management shall be used to maintain or restore habitats for sensitive plants and other native species of concern where they are threatened by noxious weeds or non-native invasive plants (NPST11).

General Effects Common to All Alternatives

- Across the project area, dispersed camping associated with motorized recreation and cross-county travel is not restricted by Alternative 1, unless resource impacts are severe enough to require the USFS to take administrative actions to mitigate or close sites as has already occurred in the Deer Creek drainage of the Ketchum RD. Disturbance associated with dispersed camping would occur over a much greater area under Alternative 1 and introductions and infestations could occur on a much wider number of acres and locations.
- Under Alternative 1, recreational impacts and uses will likely remain the same or increase given current recreational use trends. Thus, recreational impacts including OHV use and trail use that results in riparian degradation, may be or may continue to be exacerbated under this alternative given that potential TEPCS habitat conditions may be already be degraded through recreational impacts, historic livestock use, and other management impacts.
- Under all action alternatives, the acres accessible for cross-county travel and dispersed camping from motorized recreation are removed.
- Under all action alternatives, the amount of TEPCS habitat moving toward Forest Plan vegetation management objectives is increased.

- Under all action alternatives there are beneficial effects for all TEPCS individuals, occupied and potential habitats.

- Three established resource natural areas (RNAs) occur within the route designation area: Trapper Creek, Pole Canyon, and Mount Harrison. Under all alternatives, no designated routes would intersect the RNAs. Under Alternative 1, RNAs are closed to motorized travel though no fences or barriers currently exist to prevent unauthorized travel. Under the action alternatives, enforcement of the designated routes could improve the unauthorized use that occurs under the current conditions. The action alternatives move towards implementation of the RNA Forest Plan guidelines (RNGU02—Potential degradation from motorized use should be considered when developing RNA Management Plans and Travel Management Planning).

Affected Environment—Ute ladies'-tresses Orchid (*Spiranthes diluvialis*)

In 1984, Ute ladies'-tresses orchid was named as a new species and was federally listed as threatened on January 17, 1992, under the ESA. *Spiranthes diluvialis* occurs in relatively low-elevation riparian, spring, and lakeside wetland meadows in the following general areas of the interior western United States: near the base of the eastern slope of the Rocky Mountains in southeast Wyoming and north-central and central Colorado; in the upper Colorado River Basin; along the Wasatch Front and westward in the eastern Great Basin; in north-central and western Utah; and extreme eastern Nevada. In 1994, the range was expanded north by discoveries in central Wyoming and western Montana, and in 1996, *S. diluvialis* was discovered in southeast Idaho along the Snake River. Fairly extensive surveys within the general Salmon River drainage by State, USFS, and BLM personnel have not resulted in any additional locations.

Ute's ladies-tresses orchid is endemic to moist soils in mesic or wet meadows near springs, lakes, and perennial streams. The elevation range of known habitat is 1,500 to 7,000 ft. Most of the occurrences are along riparian edges, gravel bars, old oxbows, and moist-to-wet meadows along perennial streams and rivers, although some localities are near freshwater lakes or springs. Ute ladies'-tresses orchid appears to be well adapted to disturbances caused by water movement through flood plains over time. It often grows on point bars and other recently created riparian habitat. The orchid appears to require permanent sub-irrigation, with the water table holding steady throughout the growing season and into late summer and early autumn. *S. diluvialis* occurs primarily in areas where the vegetation is relatively open and not very dense.

On the SNF, the Fairfield RD provides high potential habitat of Ute ladies'-tresses orchid within the route designation area boundary. Little potential habitat exists for Ute ladies'-tresses orchid within the route designation area boundary for the Ketchum and Minidoka RDs. No occupied habitat has been located on the SNF.

Populations throughout the range of this listed species appear to fluctuate dramatically from year to year, making it difficult to assess population status and distribution. This has held true during studies conducted on the Idaho population since its discovery. The genus *Spiranthes* also undergoes a dormant period that may last 7–10 years, apparently with no evidence of above-ground structures. Nothing is known about the dormancy-triggering mechanisms. To locate this species, potential habitat should be surveyed every year, for 7–10 years, before ground-disturbing activities take place. Reproduction is strictly sexual, with ground- and log-nesting bumblebees as the primary pollinators (Pierson and Tepedino 2000). Successful conservation of this orchid will require protecting suitable habitat and pollinator habitat in and around orchid populations.

Threats

S. diluvialis is found infrequently and in scattered locations. Threats include livestock grazing, exotic weed invasion, controlled flooding, dewatering of streams, loss of pollinators, unmanaged recreation within potential habitat, and development. Because it prefers open, early seral riparian areas, its management may be in direct conflict with rare fish habitat management that emphasizes undisturbed climax conditions. Riparian areas that are not properly functioning due to unmanaged recreation, unauthorized livestock use, and dispersed recreation may have been degraded to a point that potential habitat may be reduced.

Motorized and non-motorized travel within potential habitat for Ute ladies'-tresses orchid can be directly correlated with decreased native vegetation composition, soil compaction, and decreased plant vigor and indirectly correlated with an increase in weed density and distribution through the spread of weeds and vegetative material. Dispersed camping and associated disturbance can also contribute to direct effects.

Direct impacts from motorized travel and dispersed camping associated with motorized travel could include trampling, uprooting plants, loss of seed set, reduced seed production due to loss of pollinators, and disrupted seed bank. Indirect impacts from motorized travel and dispersed camping associated with motorized travel could include soil compaction, introduction of noxious weeds, changed upland vegetation, pollinator impacts (ground nesting bees could be killed or nests destroyed), alteration of vegetation community, acceleration of desertification, decreased gene flow, and decreased soil moisture (Arft 1995; Moseley 1999; Pierson and Tepedino 2000). Floodplain conditions could also be impacted by such activities and could include stream bank downcutting, change in bank stability, vegetation alteration, trampling, soil compaction, and changed flow velocity.

Current Management

The USFWS has prepared a draft recovery plan and developed actions designed to restore populations and remove threats. SNF personnel survey potential habitat every year where ground-disturbing activities are proposed and implement appropriate mitigation measures, including stockpiling and returning topsoil, and protecting high potential habitat. The IDFG Data Conservation Center (ICDC) is currently developing a predictive plant habitat model for the state of Idaho that will further refine focus areas for future surveys and management.

Fairfield RD

The highest likelihood of quality potential habitat for Ute ladies'-tresses orchid exists on the Fairfield RD, though currently no occupied habitat has been documented on the RD. The South Fork Boise River and associated tributaries provides the most likely areas for Ute ladies'-tresses orchid habitat and occurrence. Other areas of potential habitat within the route designation include Little Smoky, Basalt, Big Smoky, Liberal, and Lime creeks.

Large populations of leafy spurge have been documented in the South Fork Boise River drainage. This noxious weed poses threats to native vegetation composition and competes for habitat with early seral species such as Ute ladies'-tresses orchid. Other potential threats to possible habitat for the listed orchid species include motorized recreation, dispersed recreation, and disturbance associated with these types of activities. As activities increase in areas with compacted soils, altered vegetation, and high levels of disturbance, the likelihood of weed introduction and spread increases and the likelihood of Ute ladies'-tresses occupied habitat decreases.

Ketchum RD

The Ketchum RD provides little likelihood of quality potential habitat for Ute ladies'-tresses orchid within the route designation area. No occupied habitat has been documented on the RD. Only marginal potential habitat within the route designation area exists along Baugh, Greenhorn, and Deer creeks. Potential habitat for Ute ladies'-tresses orchid is found outside the route designation area on the Ketchum RD.

Large populations of spotted knapweed have been documented in the Deer Creek drainage. This noxious weed poses threats to native vegetation composition and competes for habitat with early seral species such as Ute ladies'-tresses orchid. Other potential threats to possible habitat for the listed orchid species include motorized recreation, dispersed recreation, and disturbance associated with these types of activities. As activities increase in areas with compacted soils, altered vegetation, and high levels of disturbance, the likelihood of weed introduction and spread increases and the likelihood of Ute ladies'-tresses occupied habitat decreases.

Minidoka RD

Of the three RDs, the Minidoka RD provides the least likelihood of quality potential habitat for Ute ladies'-tresses orchid within the route designation area. No occupied habitat has been documented on the RD. Only marginal potential habitat exists within the project area adjacent to Trapper, Goose, Trout, and Onemile creeks. Other areas of marginal potential habitat exist along Rock Creek, but this area is not within the route designation area and is not being further considered for this EA.

Noxious weed infestations found within riparian corridors and along travel routes pose threats to native vegetation composition and compete for habitat with early seral species such as Ute ladies'-tresses orchid. Populations of white top, musk thistle, leafy spurge and Canada thistle have been recorded on the Minidoka RD in areas that could be transported into potential habitat for Ute ladies'-tresses orchid. Other potential threats to possible habitat for the listed orchid species include motorized recreation, dispersed recreation, and disturbance associated with these types of activities. As activities increase in areas with compacted soils, altered vegetation, and high levels of disturbance, the likelihood of weed introduction and spread increases and the likelihood of Ute ladies'-tresses occupied habitat decreases.

Environmental Consequences—Ute ladies'-tresses orchid

Alternative 1—Direct and Indirect Effects

Under Alternative 1, the riparian areas that are not moving toward Forest Plan vegetation management objectives and that are in low seral stages would continue in their current trend. Large noxious weed infestations within the route designation area and adjacent to this area would continue to serve as seed sources for new infestations. Under Alternative 1, the density of spread and infestation could increase within riparian areas and potential habitat for Ute ladies'-tresses orchid given that a large number of acres would remain open for cross-country travel.

Fairfield RD

Under Alternative 1, approximately 13,251 acres of riparian habitat associated with motorized recreation and cross-county travel could be used for dispersed camping on the Fairfield RD. Forty-two percent (42%) of the subwatersheds on the Fairfield RD have more than one-half of their riparian acres accessible by system or non-system routes. Abbot–Shake, Big Water–Virginia, Lick–Five Points, Red Rock–Carrie, Upper Little Smoky Creek, Basalt Creek, and South Fork Lime–Hearn have the highest amount of accessible riparian areas.

Implementation of this alternative, may affect, but would not adversely affect, Ute ladies-tresses' orchid in the project area within the Fairfield RD.

Ketchum RD

Under Alternative 1, Approximately 4,342 acres of riparian habitat associated with motorized recreation and cross-county travel could be used for dispersed camping on the Ketchum RD. Fifty percent (50%) of the subwatersheds on the Ketchum RD have more than one-half of their riparian acres accessible by system or non-system routes. Wolftone–North Fork Deer, Warfield–West Fork Warm Springs, and Baugh Creek have the highest amount of accessible riparian areas.

In the project area within the Ketchum RD, although the amount of quality habitat for this threatened species is limited, implementation of this alternative, may affect, but would not adversely affect, Ute ladies'-tresses orchid potential habitat.

Minidoka RD

Under Alternative 1, Approximately 31,329 acres of riparian habitat associated with motorized recreation and cross-county travel could be used for dispersed camping on the Minidoka RD. Subwatersheds with extensive system and non-system routes have a higher potential for dispersed camping. Subwatersheds with the highest amount of accessible riparian areas occur in the Sublett Division (Raft River) and Cassia Division (Goose, Salmon Falls, and Rock creeks). No potential habitat for Ute ladies'-tress was identified in the Sublett Division and only a few key tributaries were identified within the Cassia and Raft River divisions.

Although the amount of quality habitat for this threatened species is limited on the project area within the Minidoka RD, implementation of this alternative, may affect, but would not adversely, affect Ute ladies'-tresses orchid potential habitat.

Alternatives 2, 3, and 4—Direct and Indirect Effects

Across the route designation area, under the action alternatives, the amount of riparian areas that are moving toward Forest Plan vegetation management objectives would be greatly increased. Large noxious weed infestations within and adjacent to the route designation area would continue to serve as seed sources for new infestations; however, the opportunity for motorized and non-motorized travel through infestations and potential spread of undesired species is greatly reduced. Under the action alternatives (2, 3, and 4), the density of spread and infestation would likely decrease within riparian areas. Conditions for potential habitat for Ute ladies'-tresses would receive less direct and indirect impacts. As such, soil conditions and native vegetation conditions would improve over time. Alternative 4 would improve potential habitat conditions the most. Alternatives 2 and 3 would improve potential habitat conditions in similar ways as many of the same routes are proposed in both alternatives and an overall improving trend would be experienced. Implementation of any of these alternatives, may affect, but would not adversely affect, Ute ladies-tresses' orchid.

Fairfield RD

The acres accessible for dispersed camping from motorized recreation and cross-county travel within riparian areas and potential Ute ladies'-tresses orchid would decrease under each action alternative. On the Fairfield RD, accessible acres in potential habitat are reduced to 8,953 acres in Alternative 2; 9,138 acres in Alternative 3; and 8,810 acres in Alternative 4 across the project area. Alternative 4 reduces accessible areas in RCAs most in Upper Willow Creek (Camas Creek), Lick–Five Points, Worswick–Grindstone, and Upper Little Smoky Creek (South Fork Boise River) by removal of system routes and not designating as many non-system routes for motorized use.

Designation of select non-system routes would have minor influence on motorized use and dispersed camping within subwatersheds, because the majority of proposed system routes on the Fairfield RD occur on ridgetops or steeper mid-slope areas. The few routes that are located in riparian areas occur in narrow, headwater valley bottoms where dispersed recreation is less conducive.

Ketchum RD

The acres accessible for dispersed camping from motorized recreation and cross-county travel within riparian areas and potential Ute ladies'-tresses orchid would decrease under each action alternative. On the Ketchum RD, accessible acres in potential habitat are reduced to 3,056 acres in Alternative 2, 3,196 in Alternative 3, and 2,919 acres in Alternative 4. Alternative 4 reduces accessible areas in RCAs most in Greenhorn and Cove creeks (Big Wood River) and Baugh Creek (Little Wood River) due to removal of system routes and not designating as many non-system routes for motorized use.

Designation of select non-system routes would have a minor influence on motorized use and dispersed camping within most subwatersheds, because the majority of proposed system routes on the Ketchum RD are on steeper mid-slope areas or narrow, headwater valley bottoms where dispersed recreation is less conducive. One exception is Cove Creek (Big Wood River subbasin) where Alternative 3 would designate 2.25 mi of non-system routes (open to vehicles 50 in. wide or less) along riparian areas in the Finley Gulch and Big Witch Creek drainages. Although these routes currently exist, motorized recreation and dispersed camping is allowed within approved buffers. This may cause trampling of riparian vegetation and soil compaction in sensitive areas. However, these areas have not been identified as potential habitat for Ute ladies'-tresses.

Minidoka RD

The acres accessible for cross-county travel and dispersed camping in association with motorized recreation decrease under each action alternative. On the Minidoka RD, accessible acres in potential habitat are reduced to 15,248 in Alternative 2, 15,188 in Alternative 3, and 14,937 in Alternative 4. Overall, establishment of new dispersed camp sites from motorized recreation would decrease with all action alternatives because cross-country travel will not be allowed and many non-system routes will not be designated for motorized use.

On the Cassia Division, all action alternatives propose the following routes that parallel riparian areas for extended distances: Swanty Creek, a tributary to Trout Creek (1.72 mi, proposed trail open to vehicles 50 in. wide or less); Pole Camp Creek, a tributary to North Fork Shoshone Creek (1.07 mi, open to vehicles 50 in. wide or less); Cold Spring Canyon, a tributary to Fall Creek (1.49 mi, proposed trail open to motorcycle, bike, horse, and foot traffic); and McMullen Creek (2.09 mi, proposed trail open to motorcycle, bike, horse, and foot traffic).

In addition to these routes, Alternative 2 would designate a non-system route (proposed trail open to motorcycle, bike, horse, and foot traffic) that parallels upper Goose Creek for 2.26 mi. Alternative 3 would designate a second non-system route that parallels the opposite side of the Upper Goose Creek for 2.0 mi. Alternative 3 also would designate 2.46 mi of non-system routes in the Cottonwood Creek drainage of the Salmon Falls Creek subbasin. Alternative 4 would designate 1.96 mi of non-system routes in Little Piney and Goose creeks. These route designations may result in riparian vegetation trampling and soil compaction in potential habitat areas. These areas have been identified as marginal potential habitat for Ute ladies'-tresses.

Cumulative Effects

Cumulative effects for all TEPCS plant species on the Fairfield, Ketchum, and Minidoka RDs are presented at the end of the vegetation analysis section.

Affected Environment—Bugleg goldenweed (*Haplopappus insecticruris*)

Bugleg goldenweed is an endemic species to in south-central Idaho. There are known populations on the Fairfield and Ketchum RDs and the SNRA. It is a perennial sunflower 8 to 24 in. tall. It flowers in July and August with several yellow daisy-like flowers per stem. Bugleg goldenweed is found on dry ground with sagebrush and vernally wet grasslands and meadows underlain by shallow basalt soils between 5,000–6,500 ft (Lee 1985).

Threats

Bugleg goldenweed is tolerant of shallow, but not deep, soil surface disturbance. Additionally, bugleg goldenweed is a poor competitor against noxious weeds, exotic plant species, and sod-forming grass species. Spotted knapweed infestations have been documented within known Bugleg goldenweed populations (USDA 2005).

Current threats on the Fairfield and Ketchum RDs include dispersed camping within populations, livestock congregation and associated soil compaction, invasion of some noxious weed and exotic plant species including cheatgrass and spotted knapweed, and soil compaction associated with motorized travel.

Motorized and non-motorized travel within potential habitat for bugleg goldenweed can be directly correlated with decreased native vegetation composition, soil compaction, and decreased plant vigor, and indirectly correlated with an increase in weed density and distribution through the spread of weeds and vegetative material. Dispersed camping and associated disturbance can also contribute to direct effects.

Direct impacts from motorized travel and dispersed camping associated with motorized travel could include trampling, uprooting plants, loss of seed set, reduced seed production due to loss of pollinators, and disrupted seed bank. Indirect impacts from motorized travel and dispersed camping associated with motorized travel could include soil compaction, introduction of noxious weeds, changed upland vegetation, pollinator impacts (ground nesting bees could be killed or nests destroyed), alteration of vegetation community, acceleration of desertification, decreased gene flow, and decreased soil moisture.

Current Management

Fairfield RD

On the Fairfield RD, many populations of bugleg goldenweed have been documented. An estimated 190 acres of this locally endemic sensitive species are found within the route designation area. Populations have been documented occurring along major travel routes including Solider Creek road, Free Gold trail, Wells Summit road, Little Smoky Creek road, and Liberal Creek road and adjacent trails.

Ketchum RD

On the Ketchum RD, a few, scattered populations of bugleg goldenweed have been documented. An estimated 14 acres of this species are found within the route designation area. Populations have been documented occurring along major travel routes in Greenhorn Gulch, Greenhorn Creek, and Mahoney Creek.

Environmental Consequences—Bugleg goldenweed

Alternative 1—Direct and Indirect Effects

Fairfield and Ketchum

Recreational impacts and uses will likely remain the same or increase given current recreational use trends. Under this alternative, the bugleg goldenweed populations that are not moving toward Forest Plan vegetation management and botanical resources management standards and guidelines would continue in their current trend. Under Alternative 1, the density of spread and infestation could increase within bugleg goldenweed habitat given that a large number of acres would remain open for cross-country travel. Implementation of this alternative may impact bugleg goldenweed individuals and habitat but would not trend towards listing under the ESA.

Under Alternative 1, all acres of occupied bugleg goldenweed habitat and associated populations (Fairfield, 190 acres; Ketchum, 14 acres) would be open to cross-country travel and could be used for dispersed camping associated with motorized access on both RDs. These activities are allowed under Alternative 1 unless resource impacts are severe enough to require the USFS to take administrative actions to mitigate or close sites. Bugleg goldenweed individuals could be directly impacted by trampling associated with motorized vehicles and disturbances associated with dispersed camping within populations. Such disturbances would occur over a much greater area under this alternative.

Indirect effects could include increased introductions and infestations of noxious weeds on a much wider number of acres and locations given the acres open under this alternative.

Alternatives 2, 3, and 4—Direct and Indirect Effects

Under the action alternatives, the amount of occupied bugleg goldenweed habitat found in the Ketchum and Fairfield RDs that is moving toward Forest Plan vegetation management and botanical resources objectives and standards would be greatly increased. Noxious weed infestations within and adjacent to the route designation area would continue to serve as seed sources for new infestations; however, the opportunity for motorized and non-motorized travel through infestations and potential spread of undesired species is greatly reduced. Under the action alternatives (2, 3, and 4), the density of spread and infestation would likely decrease within portions of the occupied bugleg goldenweed habitat. Conditions for occupied and potential habitats for bugleg goldenweed would receive less direct and indirect impacts. As such, soil conditions and native vegetation conditions would improve over time. Alternative 4 would improve potential habitat conditions the most given that the least amount of occupied habitat for this species would be affected. Alternatives 2 and 3 would improve potential habitat conditions in similar ways given that many of the same routes are proposed in both alternatives and an overall improving trend would be experienced. Implementation of any of these alternatives may impact bugleg goldenweed individuals or habitat but would not trend towards listing under the ESA.

Fairfield RD

The acres accessible for cross-county travel and dispersed camping related to motorized access within occupied bugleg goldenweed populations would decrease under each action alternative. Alternative 3 would allow for the greatest number of acres to remain open to cross-country travel and disturbance associated with motorized recreational camping within occupied habitat. Approximately 104 acres of occupied bugleg goldenweed habitat would remain open to motorized travel or dispersed camping by motorized access. Under this alternative, trails open to all vehicles within the largest known bugleg goldenweed population would remain open. Alternative 4 would allow for the least number of acres open to cross-country travel and disturbance within occupied habitat. This alternative would allow for 99 acres of occupied bugleg goldenweed habitat to be accessible. Alternative 2 falls within the middle range of the action alternatives. Under Alternative 2, approximately 103 acres would remain open to cross-country travel and dispersed camping associated with motorized recreation.

Ketchum RD

The acres accessible for cross-county travel and dispersed camping related to motorized access within occupied bugleg goldenweed populations are reduced under the action alternatives. Under Alternatives 2, 3, and 4, approximately 9.4 acres of occupied bugleg goldenweed habitat would remain open to motorized travel or dispersed camping by motorized access. There is no detectable difference among the action alternatives. This can best be explained by the fact that under all alternatives the Greenhorn Gulch road will remain open to motorized and non-motorized travel and a trail that bisects one bugleg goldenweed populations will be open to motorcycle, bike, horse, and foot traffic. The legally accessible buffer associated with motorized dispersed camping access would be 100 ft. This would explain the reduced number of acres that would be directly affected as compared with Alternative 1.

Cumulative Effects

Cumulative effects for all TEPCS plant species on the Fairfield, Ketchum, and Minidoka RDs are presented at the end of the vegetation analysis section.

Affected Environment—Least phacelia (*Phacelia minutissima*)

There is one historic occurrence of least phacelia on Soldier Mountain on the Fairfield RD. It is not found anywhere else on the SNF. It is a dwarf, erect annual. It is 0.75–4 in. in height with simple or sometimes branching stems. The leaves are entire, reverse lance-shaped (oblanceolate), and about 1 in. long and 0.5 in. wide on the lower part of the plant. The plant is hairy and glandular. The flower stalk uncoils like a fiddlehead and produces lavender/pale blue flowers in late June and July.

Least phacelia is a regional endemic species occurring in meadow–forb complexes associated with aspen stands between 5,000 and 8,000 ft elevation (Atwood 1995). From historic records, approximately 8 acres of this species are documented on the Fairfield RD. Little is known about this historic population. Currently, no known infestations of noxious weeds have been documented within the population. The extent of disturbance associated with ongoing activities such as livestock grazing, recreation, or dispersed camping is unknown at this time.

Motorized and non-motorized travel within occupied habitat for least phacelia can be directly correlated with decreased native vegetation composition, soil compaction and decreased plant vigor, and indirectly correlated with an increase in weed density and distribution through the spread of weeds and vegetative material. Dispersed camping and associated disturbance can also contribute to direct effects.

Direct impacts from motorized travel and dispersed camping associated with motorized travel could include trampling, uprooting plants, loss of seed set, reduced seed production due to loss of pollinators, and disrupted seed bank. Indirect impacts from motorized travel and dispersed camping associated with motorized travel could include soil compaction, introduction of noxious weeds, changed upland vegetation, pollinator impacts (ground nesting bees could be killed or nests destroyed), alteration of vegetation community, acceleration of desertification, decreased gene flow, and decreased soil moisture.

Environmental Consequences—Least Phacelia

Alternative 1—Direct and Indirect Effects

Under Alternative 1, approximately all 8 acres of occupied least phacelia habitat would be open to cross-country travel and could be used for dispersed camping associated with motorized access on the Fairfield RD. Least phacelia individuals could be directly impacted by trampling associated with motorized vehicles and disturbances associated with dispersed camping within populations. Such disturbances would occur over a much greater area under Alternative 1. Indirect effects could include increased introductions and infestations of noxious weeds on a much wider number of acres and locations given the acres open under Alternative 1.

Under this alternative, the least phacelia population or potential habitat areas that are not moving toward Forest Plan vegetation management and botanical resources management standards and guidelines would continue in their current trend. Under Alternative 1, the density of spread and infestation could increase within bugleg goldenweed habitat given that a large number of acres would remain open for cross-country travel. Implementation of this alternative may impact least phacelia individuals and habitat but would not trend towards listing under the ESA.

Alternatives 2, 3, and 4—Direct and Indirect Effects

The action alternatives would provide for the complete closure of cross-country travel and dispersed camping associated with motorized recreation within the least phacelia population. Under Alternatives 2, 3, and 4, there are not any acres of occupied least phacelia habitat open to motorized travel or dispersed camping by motorized access. There is no detectable difference among the action alternatives, because under all alternatives there are no routes proposed within the least phacelia population. Additionally, the buffers associated with routes proposed under each of the action alternatives do not intersect with the least phacelia population.

Under the action alternatives, the least phacelia population and associated habitat would be moving toward Forest Plan vegetation management and botanical resources objectives and standards. Few noxious weed infestations have been documented within this area. Although undetected populations could continue to serve as seed sources for new infestations, the opportunity for motorized and non-motorized travel through infestations and potential spread of undesired species is greatly reduced. Conditions for occupied and potential habitats for bugleg goldenweed would receive less direct and indirect impacts. As such, soil conditions and native vegetation conditions would improve over time. Implementation of any of the action alternatives would not impact least phacelia or its habitat.

Cumulative Effects

Cumulative effects for all TEPCS plant species on the Fairfield, Ketchum, and Minidoka RDs are presented at the end of the vegetation analysis section.

Affected Environment—Christ's Indian Paintbrush (*Castilleja christii*)

The only known population of Christ's Indian paintbrush (*Castilleja christii*) occurs on the Albion Division of the Minidoka RD. Christ's Indian paintbrush was listed as a candidate species on October 25, 1999 (50 CFR 17, 1999). This species is recognized by the USFS as a sensitive plant species and is on the Regional Forester's Sensitive Plant List for the Intermountain Region (USDA 1995).

Christ's Indian paintbrush is a yellow to yellow-orange flowered perennial forb, with erect stems occurring in a cluster. Christ's Indian paintbrush is endemic to subalpine meadow and sagebrush habitats in the upper elevations of the Albion Mountains, Cassia County, Idaho. The global distribution of *Castilleja christii* is apparently confined to a single population on the top of Mount Harrison. The population occupies approximately 200 acres, largely in one contiguous population although two small areas, disjunct from the main body of the population, occur to the north and west. An estimated 23% of the population is within the boundary of the Mount Harrison RNA, which is closed to cross-country travel. The remaining portion of the population is found within the Mount Harrison Botanical Special Interest Area (BSIA) established in 2003 (USDA 2003a).

Threats

Due to its restricted range and specific habitat requirements, Christ's Indian paintbrush is extremely vulnerable to human disturbance. A detailed account of all current threats can be found in the Candidate Conservation Agreement signed in 2006 by the USFS and the USFWS (USDI 2006). Threats that are relevant to the route designation EA include the following:

- **Road and Facility Construction**. The largest direct loss of Christ's Indian paintbrush habitat is attributed to road construction. Howell Canyon road underwent considerable improvement in the

1960s and many plants were likely lost in the construction effort. In 1997, Howell Canyon road was paved to the fire lookout at the summit. The contractor and USFS personnel closely monitored the paving project. In 1997, permanent plots were established to monitor the direct impacts of the paving on the individuals nearest the road. Thirteen individuals were lost during the paving process. Monitoring of these permanent plots in subsequent years (1998, 1999, 2001) indicate that the number of individuals in roadside plots are stable or increasing (Pierson 2002).

- **Road and Facility Reconstruction and Maintenance.** In 2001, major portions of the Howell Canyon road were removed and repaved. The entire Howell Canyon road was resurfaced. In accordance with the Conservation Agreement (USDI 1995), the SNF botanist was present during all construction activities to ensure no impacts occurred within occupied habitat. Flagging was used to delineate the areas of avoidance during the construction period. No individuals were impacted during the repaving and resurfacing (Pierson 2001).

- **Access and Road Us**e. The majority of the Christ's Indian paintbrush population is within the area closed to cross-country travel (R designation). At present, 16 acres of the population fall outside the area currently closed to cross-country travel but fall within the BSIA. A dirt access road branches off from Howell Canyon road near the summit and winds through occupied habitat to the hang-glider launch site. This dirt access road has one additional spur road that provides access to the electronic site on Peak 9033. In accordance with the Conservation Agreement for Christ's Indian paintbrush (USDI 1995), large rock barriers and signs have been placed along both roads to prevent access to the population and to minimize impacts to Christ's Indian paintbrush individuals.

- **Recreation Visitation and Trampling**. Paving of Howell Canyon road in 1997 has substantially increased the number of visitors accessing the summit of one of the highest peaks in southwestern Idaho and the lookout area. A small interpretive trail surrounds the fire lookout at the top of Mount Harrison. Human trampling impacts to subalpine vegetation near the lookout and the interpretive stations appear to have increased as of September 2001 (Pierson 2001), although no apparent increase in human trampling was observed in occupied habitat. There are no designated trailheads at the summit. The Skyline trail, which is west and approximately 800 ft below the summit, does provide for some limited hiking. Access to this trail is well below the summit of Mount Harrison and the Christ's Indian paintbrush population. The hikers and lookout visitors walking adjacent to the summit and lookout area could potentially impact individuals, the viability of the population, habitat quality, and contribute to soil compaction and erosion in occupied habitat.

- **OHV Impacts.** One dirt road branches off Howell Canyon road near the summit. The dirt road goes through occupied habitat to access the hang-glider launch site and the electronic site on Peak 9033. The USFS restricts vehicle traffic to established roads and trails throughout the majority of the population. Direct and indirect impacts from OHVs have been a primary concern for many years (Atwood 1988; Moseley 1993). Motorcycles on the hills along Howell Canyon road have been the cause of erosion gullies in occupied habitat. Channels made by pocket gophers in this area cause the off-road vehicles in these areas to sink deeper into the soil thus creating even larger eroded channels (Moseley 1993). Some of the OHV impacts are the result of late-lying snowdrifts blocking the road. By driving out across the relatively gentle slopes to get around the drifts, vehicles create large erosion channels and small gullies in occupied habitat. In accordance with the 1995 Conservation Agreement, rock barriers and signs were put in place to discourage driving off road. Additionally, rock barriers were installed to block access to other pioneered tracks and signs have been placed to discourage OHV use into adjacent meadows. Vehicles driving and parking off road in occupied habitat could potentially impact individuals, the viability of the population, habitat quality, and contribute to soil compaction and erosion in occupied habitat.

- **Unauthorized Livestock Grazing**. Livestock grazing was administratively excluded from the summit of Mount Harrison (USDI 1995). However, documented cases of unauthorized livestock use have occurred in the area. To eliminate livestock trespass from occurring, in 2000, permittees repaired existing fences, built new fence, and set up electric fence. Along the south and west boundaries, an estimated 1.5 mi of fence was rebuilt. Small sections of new fence were installed on the southwest and northwest boundaries of the allotment. On the south side of the lookout structure, about 1.25 mi of electric fence was built. Measures to prevent unauthorized livestock use and associated threats can been found in the signed Candidate Conservation Agreement (USDA and USDI 2006).

- **Non-native Plant Species**. Invasion of exotic species and disturbance species into *Castilleja christii* habitat poses a serious threat to the species viability. Mancuso (2001) noted six new graminoid species moving into the 20 permanent transects located on Mount Harrison. Two of these species, *Agropyron sp*. (wheatgrass cultivar) and *Bromus inermis* (smooth brome) are introduced species that may have been part of the seeding mix used for restoration following the road paving in 1997. Efforts to eradicate smooth brome and other introduced species began in 2002. A long-term commitment to noxious weed and introduced species treatment and eradication was made in the signed Candidate Conservation Agreement (USDA and USDI 2006).

  Spotted knapweed, rush skeleton weed, and musk thistle have been reported as occurring on the lower portions of the Howell Canyon road. In 2006, Tansy ragwort was located and eradicated on the hang-glider site directly adjacent to the Christ's Indian paintbrush population. Dyer's woad, an extremely aggressive and alleleopathic species, has been observed on the Raft River Division of the Minidoka RD. Indirect introduction of noxious weeds have occurred as a result of road use, permitted and unauthorized recreation, and grazing activities.

Environmental Consequences—Christ's Indian Paintbrush

Alternative 1—Direct and Indirect Effects

Under Alternative 1, approximately 16 acres of occupied Christ's Indian paintbrush habitat would be accessible to cross-county travel and could be used for dispersed camping associated with motorized access according to the current travel plan map. In 2003, the Mount Harrison BSIA was established and it included this 16-acre portion of the population. Under the regulations for BSIAs, recreation and associated activities are allowed as long as they do not conflict with the botanical values for which the area was established. No formalized management plan has been prepared for the Mount Harrison BSIA and no amendments to the current travel plan map were made. No administrative actions were taken to mitigate or close that portion of the *Castilleja christii* population to cross-country motorized travel. As such, this portion of the population was intended to be closed to cross-country travel but under the current conditions is legally open to travel.

Recreational impacts and uses will likely remain the same or increase given current recreational use trends. No fences or barriers are located within this portion of the Christ's Indian paintbrush population that alerts cross-country travelers that they are entering a travel closure area (R designation). Under Alternative 1, the opportunity for unauthorized travel within the R designation area is greater than in the action alternatives. Disturbance associated with dispersed camping would occur over a much greater area under Alternative 1 and introductions and infestations could occur on a much wider number of acres and locations. Thus, motorized recreational impacts may occur or may continue to be exacerbated under this alternative given that Christ's Indian paintbrush conditions may already be degraded through recreational impacts, unauthorized livestock use, and other management impacts.

Under Alternative 1, the portion of the Christ's Indian paintbrush population that remains open to cross-country travel would not be moving toward Forest Plan TEPCS or botanical resources objectives. Additionally, without mitigation or administrative closure of the 16-acre portion of *Castilleja christii* population, implementation of the Candidate Conservation Agreement and the anticipated BSIA management plan could not be fulfilled. Under Alternative 1, the density of spread and infestation could increase within the *Castilleja christii* population given that a large number of acres would remain open for cross-country travel. Although the amount of quality habitat for this candidate species is limited, implementation of this alternative, may affect, but would not adversely affect, Christ Indian Paintbrush individuals and habitat.

Alternatives 2, 3, and 4—Direct and Indirect Effects

The acres accessible for cross-county travel and dispersed camping in conjunction with motorized recreation are removed under the action alternatives. The 16 acres open to cross-country travel under Alternative 1 would not be open under any of the action alternatives. Additionally, legally accessible buffers for dispersed recreation associated with motorized travel would not intersect with the 16 acres of occupied habitat. As such, direct effects from motorized travel to this candidate species would be eliminated.

However, indirect effects could continue within occupied habitat. Noxious weed infestations within and adjacent to the route designation area would continue to serve as seed sources for new infestations; however, the opportunity for motorized travel through infestations and potential spread of undesired species is greatly reduced. Under the action alternatives (2, 3, and 4), the density of spread and infestation and the level of disturbance associated with motorized recreation would decrease within occupied and adjacent habitats. As such, soil conditions and native vegetation conditions would improve over time. Under the action alternatives, the amount of occupied habitat moving toward Forest Plan TEPCS management objectives would be greatly increased. Additionally, the action alternatives would allow for fulfillment of the Candidate Conservation Agreement (USDA and USDI 2006) and the anticipated management plan for the Mount Harrison BSIA. Implementation of any of these alternatives, may affect, but would not adversely affect, Christ Indian Paintbrush.

Affected Environment—Davis' wavewing (*Cymopterus davissii*)

Davis' wavewing is a low-growing perennial from a thick taproot, reaching approximately 7 in. in height. The stem is very short and sheathed by persistent, papery and fibrous leaf bases. Numerous leaves, either prostrate or somewhat erect, form a rosette or whorl around several, short, yellow flowered umbels. The leaves have a bluish green cast and are deeply divided into pinnate or bipinnate segments. The fruits are small and compressed on one face and have small wings.

Davis' wavewing occurs between 8,800–10,339 ft elevation in the following five habitat types: snowbed areas that are forb-dominated; graminoid communities with Idaho fescue and bearded wheatgrass; sagebrush and Idaho fescue communities; openings in sub-alpine fir and mountain gooseberry communities; and scree slopes, rock outcrops and ledges, and cirque headwalls (Moseley 1993). Current threats include non-native plant invasion (spotted knapweed, cheatgrass), indirect and direct impacts from grazing activities, and habitat destruction due to unregulated recreation.

Three populations are known to exist in the Albion Mountains on the Minidoka RD. The largest population is located on Independence Mountain and Cache Peak. The most northern population occurs on the Mount Harrison plateau and is sympatric with Christ's Indian Paintbrush. The third population occurs on Graham Peak. The majority of the populations occur within areas that are currently closed to cross-country travel. Approximately 122 acres of occupied habitat occurs within areas open to cross-country travel under the current travel plan map.

Environmental Consequences—Davis' wavewing

Alternative 1—Direct and Indirect Effects

Under Alternative 1, approximately 122 acres of occupied Davis' wavewing habitat and associated populations would be open to cross-country travel and could be used for dispersed camping associated with motorized access on the Minidoka RD. Davis' wavewing individuals could be directly impacted by trampling associated with motorized vehicles and disturbances associated with dispersed camping within populations. Such disturbances would occur over a much greater area under Alternative 1. Indirect effects could include increased introductions and infestations of noxious weeds on a much wider number of acres and locations given the acres open under Alternative 1.

Under this alternative, the Davis' wavewing populations that are not moving toward Forest Plan vegetation management and botanical resources management standards and guidelines would continue in their current trend. Under Alternative 1, the density of spread and infestation could increase within Davis' wavewing habitat given that a large number of acres would remain open for cross-country travel. Implementation of this alternative may impact Davis' wavewing individuals and habitat but would not trend towards listing under the ESA.

Alternatives 2, 3, and 4—Direct and Indirect Effects

The acres accessible for cross-county travel and dispersed camping related to motorized access within occupied Davis' wavewing populations are removed under the action alternatives. Under Alternatives 2, 3, and 4, there are not any acres of occupied Davis' wavewing open to motorized travel or dispersed camping with motorized access. There is no detectable difference among the action alternatives, because under all action alternatives, there are no routes proposed to be open to motorized travel, and the legally accessible buffers associated with motorized dispersed camping access do not intersect with occupied habitat.

Under the action alternatives, the amount of occupied Davis' wavewing habitat that is moving toward Forest Plan vegetation management and botanical resources objectives and standards would be greatly increased. Noxious weed infestations within and adjacent to the route designation area would continue to serve as seed sources for new infestations; however, the opportunity for motorized and non-motorized travel through infestations and potential spread of undesired species is greatly reduced. Under the action alternatives (2, 3, and 4), the density of spread and infestation would likely decrease within portions of the occupied Davis' wavewing habitat. Conditions for occupied and potential habitats for Davis' wavewing would receive less direct and indirect impacts. As such, soil conditions and native vegetation conditions would improve over time. Implementation of any of these alternatives would not impact Davis' wavewing individuals or habitat.

Cumulative Effects

Cumulative effects for all TEPCS plant species on the Fairfield, Ketchum, and Minidoka RDs are presented at the end of the vegetation analysis section.

Affected Environment—Idaho Penstemon (*Penstemon idahoensis*)

Idaho Penstemon is a showy blue to purple flowered perennial herb. Idaho Penstemon appears to be edaphically restricted to slopes of white to gray tuffaceous soils derived from the Salt Lake Formation. This species occurs on gentle to steep slopes and appears to be most common on south to southwest exposures ranging in elevation from 4,900–5,700 ft (Mancuso and Moseley 1991). Most commonly, Idaho Penstemon is associated with open Utah Juniper communities with sparse to no vegetation diversity surrounding populations.

Penstemon Idahoensis is ranked as "…imperiled throughout its range because of rarity or because of other factors making it vulnerable to extinction…" by the Nature Conservancy and ranked as "…critically imperiled in Idaho because of extreme rarity or because of some other factor in its biology making it especially vulnerable to extinction…" by the ICDC.

Five populations occur on the Cassia Division of the Minidoka RD and are all located within the route designation area. An estimated 18 acres of occupied habitat has been documented. One population has been documented along the Orangeburg Spring road. Current threats include non-native plant invasion (leafy spurge, halogeton, cheatgrass), indirect and direct impacts from grazing activities, and habitat destruction due to disturbance in the highly erosive slopes and fragile soils to which this species is endemic (Mancuso 2001).

Environmental Consequences—Idaho Penstemon

Alternative 1—Direct and Indirect Effects

Under Alternative 1, all 18 acres of occupied Idaho Penstemon habitat and associated populations would be open to cross-country travel and could be used for dispersed camping associated with motorized access on the Minidoka RD. Idaho Penstemon individuals could be directly impacted by trampling associated with motorized vehicles and disturbances associated with dispersed camping within populations. Such disturbances would occur over a much greater area under Alternative 1 than other alternatives. Indirect effects could include increased introductions and infestations of noxious weeds on a much wider number of acres and locations given the acres open under Alternative 1.

Under this alternative, the Idaho Penstemon populations that are not moving toward Forest Plan vegetation management and botanical resources management standards and guidelines would continue in their current trend. Under Alternative 1, the density of spread and infestation could increase within Idaho Penstemon habitat given that a large number of acres would remain open for cross-country travel. Implementation of this alternative may impact Idaho Penstemon individuals and habitat but would not trend towards listing under the ESA.

Alternatives 2, 3, and 4—Direct and Indirect Effects

The acres accessible for cross-county travel and dispersed camping related to motorized access within occupied Idaho Penstemon populations are greatly reduced under the action alternatives. Under Alternatives 2, 3, and 4, approximately 4.7 acres of occupied Idaho Penstemon habitat would remain open to motorized travel or dispersed camping by motorized access. Four of the five known populations would no longer be within the legally accessible travel area or dispersed camping associated with motorized access buffers. There is no detectable difference among the action alternatives. This can best be explained by the fact that under all alternatives, the Orangeburg Springs road (72290) and the FR 72271 will remain open to motorized travel. The legally accessible buffer associated with motorized dispersed camping access would be 300 ft. This would explain the reduced number of acres that would be directly affected as compared with Alternative 1.

Under the action alternatives, the amount of occupied Idaho Penstemon habitat that is moving toward Forest Plan vegetation management and botanical resources objectives and standards would be greatly increased. Noxious weed infestations within and adjacent to the route designation area would continue to serve as seed sources for new infestations; however, the opportunity for motorized and non-motorized travel through infestations and potential spread undesired species is greatly reduced. Under the action alternatives (2, 3, and 4), the density of spread and infestation would likely decrease within portions of the occupied Idaho Penstemon. Conditions for occupied and potential habitats for Idaho Penstemon would receive less direct and indirect impacts. As such, soil conditions and native vegetation conditions would improve over time. Implementation of any of these alternatives may impact Idaho Penstemon individuals or habitat but would not trend towards listing under the ESA.

Cumulative Effects

Cumulative effects for all TEPCS plant species on the Fairfield, Ketchum, and Minidoka RDs are presented at the end of the vegetation analysis section.

Affected Environment—Goose Creek Milkvetch (*Astragalus anserinus)*

Goose Creek Milkvetch is a low, mat-forming perennial with soft, bent-to-tangled pubescence that gives this small plant a grayish appearance. Like Idaho Penstemon, Goose Creek Milkvetch appears to be edaphically restricted to slopes of whitish to gray soils derived from tuffaceous sediments of the Salt Lake Formation. Populations of Goose Creek Milkvetch have been documented at elevations ranging from 4900–5480 ft and are more common on south facing slopes (Mancuso and Moseley 1991). Most populations of Goose Creek Milkvetch are found among open Utah Juniper communities, similar to those openings where Idaho Penstemon is located. These species sporadically occur together, although Goose Creek Milkvetch appears to prefer lower elevations and more open sites.

Goose Creek Milkvetch is ranked as "…imperiled throughout its range because of rarity or because of other factors making it vulnerable to extinction…" by the Nature Conservancy and ranked as "…critically imperiled in Idaho because of extreme rarity or because of some other factor in its biology making it especially vulnerable to extinction…" by the ICDC. Current threats include non-native plant invasion (leafy spurge, halogeton, cheatgrass), indirect and direct impacts from grazing activities, and habitat destruction due to disturbance in the highly erosive slopes and fragile soils to which this species is endemic (Mancuso 2001). In 2004, the USFWS was petitioned to emergency list Goose Creek Milkvetch as threatened under the ESA. On August 16, 2007, the U.S. Fish and Wildlife Service announced a 90-day finding on a petition to list *Astragalus anserinus* (Goose Creek milk-vetch) as threatened or endangered under the Endangered Species Act of 1973, as amended (50 CFR 17, 2007). The USFWS found that the petition presented substantial scientific or commercial information indicating that listing of Goose Creek Milkvetch may be warranted. The USFWS initiated a status review of the species and will issue a 12 month finding to determine if the listing of the species is warranted.

Seven populations are currently known from Idaho, all of which occur on BLM-managed public land. Eight populations are known to occur in Utah. An additional four populations are known from adjacent Elko County, Nevada. Currently no populations of Goose Creek Milkvetch are known to occur on the SNF; however, potential habitat does exits within the route designation area. Extensive surveys for Goose Creek Milkvetch were conducted in 2002, but no occupied habitat was located at that time (Mancuso 2003).

Environmental Consequences—Goose Creek Milkvetch

Alternative 1—Direct and Indirect Effects

Under Alternative 1, potential habitat for Goose Creek Milkvetch would be open to cross-country travel and could be used for dispersed camping associated with motorized access on the Minidoka RD. Potential habitat for Goose Creek Milkvetch could be directly impacted by trampling associated with motorized vehicles and disturbances associated with dispersed camping within populations. Such disturbances would occur over a much greater area under Alternative 1. Indirect effects could include increased introductions and infestations of noxious weeds on a much wider number of acres and locations given the acres open under Alternative 1.

Under this alternative, the potential habitat for Goose Creek Milkvetch populations that are not moving toward Forest Plan vegetation management and botanical resources management standards and guidelines would continue in their current trend. Under Alternative 1, the density of spread and infestation could increase within Goose Creek Milkvetch potential habitat given that a large number of acres would remain open for cross-country travel. Implementation of this alternative may impact Goose Creek Milkvetch potential habitat but would not trend towards listing under the ESA.

Alternatives 2, 3, and 4—Direct and Indirect Effects

The acres accessible for cross-county travel and dispersed camping related to motorized access within Goose Creek Milkvetch potential habitat would be reduced under the action alternatives. Given the narrow range in which potential habitat could occur on the Cassia Division and the proposal tied to the alternatives within this limited area, the action alternatives do not vary. Detectable differences among alternatives in potential habitat were not identified.

Under the action alternatives, the amount of Goose Creek Milkvetch potential habitat that is moving toward Forest Plan vegetation management and botanical resources objectives and standards would be greatly increased. Noxious weed infestations within the route designation area and adjacent to this area would continue to serve as seed sources for new infestations; however, the opportunity for motorized and non-motorized travel through infestations and potential spread undesired species is greatly reduced. Under the action alternatives (2, 3, and 4), the density of spread and infestation would likely decrease within portions of the occupied Goose Creek Milkvetch. Conditions for potential habitat for Goose Creek Milkvetch would receive less direct and indirect impacts. As such, soil conditions and native vegetation conditions would improve over time. Implementation of any of these alternatives may impact Goose Creek Milkvetch potential habitat but would not trend towards listing under the ESA.

Cumulative Effects

Cumulative effects for all TEPCS plant species on the Fairfield, Ketchum, and Minidoka RDs are presented in the next section.

Cumulative Effects for TEPCS Species

Cumulative effects for TEPCS species are defined and determined in the same manner that cumulative effects are defined and determined for the vegetation analysis, previously discussed.

The primary effect to TEPCS species is from the spread of noxious weeds and non-native plants which pose serious threats to biodiversity, the integrity and health of TEPCS communities. An assumption to factor in is that the current weed treatment programs on each RD will continue to occur. As new infestations are detected, they will be treated. The SNF treats 3400 acres of weeds annually, out of the over 15,000 acres inventoried. The acres treated could increase if more funding becomes available.

Past and Present Activities

Livestock grazing is authorized on all three RDs, however as previously presented, livestock grazing has not been identified as a significant contributor to broad-scale spread of noxious weeds. System routes would continue to receive maintenance in accordance with required maintenance levels and schedules. Disturbance associated with route maintenance could contribute to the spread of noxious weed species (Trombulak and Frissell 2000, Gelbard and Belnap 2003). On the Fairfield and Ketchum RDs, populations of bugleg goldenweed and potential habiat for Ute ladies'-tresses orchid that occur along roads and trails could have direct and indirect effects from trail and road maintenance. On the Minidoka RD, individuals within populations of Christ's Indian paintbrush, Davis' wavewing, and Idaho Penstemon, and potential habiat for Ute ladies'-tresses orchid and Goose Creek Milkvetch, which occur along roads and trails could have direct and indirect effects from trail and road maintenance. Motorized vehicles may also increase the incidence of non-native plant introduction and establishment. Such vehicles may encounter infestations in remote areas or along trails or roads and may serve as vectors to new remote locations. Additionally, these vehicles could introduce new highly invasive species from other sources such as private, federal or state lands. Many special-use permitted activities can increase the likelihood of introduction of noxious weeds into areas especially when large machinery or vehicles are required to complete installation of facilities. Noxious weeds could be introduced into areas planned for restoration or for timber harvest as a result of heavy machinery or restoration activities. Minerals activities can contribute to the introduction and spread of noxious weeds. Large equipment associated with minerals management can serve as vectors for noxious weed introduction. Noxious weeds may have been introduced as a result of fire suppression activities and associated fire effects.

Reasonably Foreseeable Actions

The reasonably foreseeable actions related to TEPCS species are the same as those already presented under the corresponding section in the vegetation analysis.

Cumulative Effects Summary

Alternative 1 has the greatest potential for adverse cumulative impacts than any other alternative because it does not restrict motorized recreation on non-system routes or cross-county travel. Dispersed camping associated with motorized recreation and cross-county travel would not be restricted. TEPCS plant populations are at risk from direct and indirect impacts including trampling, soil compaction, and habitat alteration given the magnitude of acres open to cross-country travel. User-created routes would continue to serve as corridors for introduction and spread of noxious weeds. Increased activities in areas with compacted soils, altered vegetation, and high levels of disturbance, have a higher likelihood of weed introduction and increased spread. As a result, areas with high infestation rates that experience heavy disturbance (i.e., wildfire, dispersed recreation) that can not be completely mitigated are less likely to improve over time under this alternative. Under Alternative 1, it is more difficult to meet Forest Plan standards for TEPCS plants and associated habitat than under the action alternatives given the magnitude of access acres open to travel and associated disturbance. Additionally, without mitigation or administrative closure of the 16-acre portion of *Castilleja christii* population, implementation of the Candidate Conservation Agreement and the anticipated BSIA management plan could not be fulfilled. Livestock grazing will continue to occur in the future, continuing the potential for spread. The timber harvest actions have potential to introduce noxious weeds.

The action alternatives (2, 3, and 4) would not allow cross-country travel except in designated open-use areas. Motor vehicle use would also be restricted to designated system roads and trails. The level of use along designated routes will increase under Alternatives 2, 3, and 4, and the level of disturbance will likely be concentrated along these routes and associated buffers. On the Fairfield and Ketchum RDs for Ute Ladies'-tresses orchid, bugleg goldenweed, and least phacelia, the acres open to cross-country travel and related disturbances are greatly reduced under all alternatives. The action alternatives would move the RDs' route designation areas closer to Forest Plan direction than would occur under Alternative 1.

On the Minidoka RD for Ute Ladies'-tresses orchid, Christ's Indian paintbrush, Davis' wavewing, Idaho Penstemon, and Goose Creek Milkvetch, the acres open to cross-country travel and related disturbances are greatly reduced or eliminated under all alternatives. The action alternatives would move the RD's route designation areas closer to Forest Plan direction than would alternative 1. Additionally, for Christ's Indian paintbrush, the action alternatives would allow for fulfillment of the Candidate Conservation Agreement and the anticipated Mount Harrison BSIA management plan.

Soils/Hydrologic Resources

Introduction

This section provides the information necessary to understand the environmental effects of the proposed action (Alternative 2) and alternatives on soils and hydrologic resources. The following four issues were identified through public scoping related to soils and hydrologic concerns: water quality, wetland and riparian conservation areas, watershed condition, and soil productivity. Analyses in this section are presented by issue. Because of the inter-connectedness of the issues presented, many of the issues use the same indicators. Where this occurs, numerical values associated with the indicators are presented in table format under one issue. Then, rather than repeat the information, the indicator tables are referenced where applicable under the other issues. Data from subbasin and conservation assessments, monitoring, field surveys, and etc., are used to describe the overall condition of each indicator.

Forest Plan Direction

The following Forest Plan direction (USDA 2003a) guides the analysis for evaluating the consistency of the proposed action and alternatives for protecting, maintaining, and restoring soil productivity and hydrologic resources.

- Maintain soil productivity and ecological processes where functioning properly, and restore where currently degraded. Maintain the physical, chemical, and biological properties of soils to support desired vegetation conditions and soil-hydrologic functions and processes within watersheds (SWGO01, goal).

- During fine-scale analysis, identify opportunities to restore degraded soil productivity and processes (SWOB03, objective).

- Management actions shall be designed in a manner that maintains or restores water quality to fully support beneficial uses and native and desired non-native fish species and their habitat, except as allowed under SWRA Standard 4 (SWST01, standard).

- Management activities that may affect soil detrimental disturbance (DD) shall meet the following requirements:

    - In an activity area where existing conditions of detrimental disturbance are below 15 % of the area, management activities shall leave the area in a condition of 15 % or less detrimental soil disturbance following completion of the activities.

    - In an activity area where existing conditions of detrimental disturbance exceed 15 % of the area, management activities shall include mitigation and restoration so that detrimental disturbance levels are moved back toward 15 % or less following completion of activities.

To estimate soil DD, it is essential that the glossary definitions for activity area, detrimental soil disturbance and total soil resource commitment (TSRC) are clearly understood (SWST02, standard).

- Management activities that may affect TSRC shall meet the following requirements:

    - In an activity area where existing conditions of TSRC are below 5 % of the area, management activities shall leave the area in a condition of 5 % or less TSRC following completion of the activities.

- In an activity area where existing conditions of TSRC exceed 5 % of the area, management activities shall include mitigation and restoration so that TSRC levels are moved back toward 5 % or less following completion of the activities (SWST03, standard).

- Management actions will neither degrade nor retard attainment of properly functioning soil, water, riparian, and aquatic desired conditions, except:

  - Where outweighed by demonstrable short- or long-term benefits to watershed resource conditions; or

  - Where the USFS has limited authority (e.g., access roads, hydropower, etc.). In these cases, the USFS shall work with permittee(s) to minimize the degradation of watershed resource conditions (SWST04, standard).

- Within legal authorities, ensure the new proposed management activities within watersheds containing 303(d) listed water bodies improve or maintain overall progress toward beneficial use attainment for pollutants that led to the listing (SWST07, standard).

- Where recreation facilities or practices have been identified as potentially contributing to degradation of water quality, aquatic species, or occupied sensitive and watch plant habitat, facilities and practices causing degradation should be considered for relocation, closure, changes in management strategy, alteration, or discontinuance (REGU07, guideline).

Assumptions/Methodology

Soils. The DD calculations assume that 100% of the buffered area adjacent to roads and trails is accessible and supports dispersed uses, and that all uses would result in detrimental soil damage.

Acre equivalents for TSRC calculations were 4 acres/mi for roads and 0.75 acre/mi for trails.

When calculating changes in TSRC, only the identified roads within the route designation area (i.e., project area) were included.

Riparian Conservation Areas (RCAs). Default RCAs were delineated by buffering intermittent streams 150 ft and perennial streams 300 ft on either side of the channel.

Non-System Routes. Total miles of non-system routes were calculated for each subwatershed that fell within the route designation area. Total miles of non-system routes within RCAs, by subwatershed, were also calculated by intersecting the RCA buffered areas with non-system routes. Although non-system routes would no longer be open to motorized use under any of the action alternatives, many of these routes will remain on the landscape for an extended period of time and may be used for non-motorized recreation access. Non-system routes left on the landscape may continue to contribute to localized impacts to aquatic resources, however, not to the same degree as when they were open to motorized uses. Many non-system routes would also slowly revegetate and close in over time, reducing potential effects to aquatic resources.

System Roads and Trails. Miles of system roads and trails were calculated for each alternative based on spatial coverages obtained from the USFS GIS themes library. Total miles of system roads and trails were calculated for each subwatershed that fell within the route designaton area. Total miles of system roads and trails were also calculated within RCAs by subwatershed.

Dispersed Motorized Recreation. RCAs open to motorized use and associated dispersed camping were estimated by buffering existing system and non-system routes (roads and trails) for Alternative 1, and existing system and proposed changes (removals, additions, etc.) for the action alternatives (2–4). Roads were buffered by 300 ft and trails by 100 ft on either side of the route. These areas were then intersected with the RCA buffers to determine acres by subwatershed. It is recognized that these acre calculations are liberal estimates of the areas open to motorized use and associated dispersed camping. This is because many routes occur in areas that are difficult to establish a dispersed site due to uneven and steep terrain, large barriers such as rocks, and/or dense vegetation. Therefore, calculations should be viewed as a way of assessing relative risk of motorized recreation and dispersed camping near designated routes across the project area.

Soils. Direct effects of the alternatives on soil productivity are summarized using the changes in values from existing conditions (Alternative 1) as compared to the action alternatives for the DD and TSRC indicators. DD is the alteration of natural soil characteristics that results in immediate or prolonged loss of soil productivity and soil-hydrologic conditions. On sensitive landtypes (i.e., those with high surface erosion hazards), OHV use can produce unacceptable levels of soil DD by compacting, displacing, or puddling the soil (USDA 2003a, Glossary p.11). DD is generally attributed to dispersed uses that occur adjacent to the existing routes. Calculations were based on buffering designated and/or existing routes accessible to motorized vehicles. The buffers applied were 100 ft each side of trails and 300 ft each side of roads.

TSRC is defined as the conversion of a productive site to an essentially non-productive site for a period of more than 50 years (USDA 2003a, Glossary p.31). TSRC is a quantifiable value of the total number of roads and trails in an activity area. These are essentially a dedicated use (i.e., transportation routes) that precludes other uses of the land and removes the productive capability from these areas. TSRC associated with routes also effects water quality, because routes have been identified as the greatest sources of accelerated soil erosion and sedimentation.

The DD and TSRC indicators are evaluated in the context of an "activity area" (USDA 2003a, Glossary p.1). The "activity area" for this analysis is the land area encompassed by the individual MU (portion of RD or division). This delineation was selected because the implementation and management of activities within each unit is under the authority of the respective District Ranger.

Effects Common to the No Action Alternative for All Issues

- This alternative would not restrict motor vehicle use to designated system roads and trails, except in areas currently restricted. As a result, cross-country motor vehicle use could add new non-system routes where terrain is conducive to motorized traffic. The extent to which new non-system routes would be established is difficult to predict. However, technological advances continue to change the shape of off-roading by providing more powerful vehicles that can travel on difficult terrain that was once considered inaccessible. This allows motorized users to travel further into the backcountry creating new non-system travel routes or extending existing ones.

- Motorized use of system and non-system routes is anticipated to increase as demand for recreation increases. Subwatersheds with a high overall route density have a higher probability of impacts from motorized recreation to water quality, slope hydrology, and riparian areas. Effects associated with motorized access also reach beyond direct effects to hydrologic functions and increased sediment delivery to streams (Quigley and Arbelbide 1997). Motorized access and the activities which accompany this access can magnify negative effects on aquatic systems beyond the routes themselves. Increased access typically results in more developed and dispersed recreation, firewood cutting in riparian areas, and human-caused wildfires. Subwatersheds with route densities higher than

1.7 mi/mi^2 are considered more likely to impact soils and aquatic resources (Quigley and Arbelbide 1997).

Effects Common to Alternatives 2–4 (Action Alternatives) for All Issues

Cross-Country Travel. Action alternatives would not allow cross-country travel. Motor vehicle use would be restricted to designated system roads and trails. As a result, new motorized non-system routes would not be established and effects to aquatic resources would be greatly diminished compared to those described in Alternative 1. Specifically, risks associated with surface erosion, channel and riparian impacts from route encroachments, and impacts to slope hydrology should all be reduced. The net result will be a beneficial effect for soil productivity, riparian areas, slope hydrology, and water quality.

Route Density. The density of motorized routes would decrease in almost all subwatersheds under each action alterative compared to Alternative 1. Non-system routes that are not converted into a system road or trail would no longer be available for motorized recreation. As the density of motorized routes decrease, so should impacts to water quality, slope hydrology, and riparian areas. This is because motorized vehicles will not be eroding route surfaces or changing ground cover/compacted soils on routes that are not maintained. Tracks created by motorized vehicles can concentrate water runoff increasing its power and exacerbating erosion impacts (Hinckley, Iverson, and Hallet 1983). Off-road vehicle tracks, especially on erosion-sensitive soil surfaces, can form continuous rills and channels that can become gullies (Heede 1983).

Associated effects (i.e., developed and dispersed recreation in riparian areas) from motorized access should also decline in most subwatersheds across the project area as motorized access decreases. As described previously, motorized access and associated activities can magnify negative effects on aquatic systems. Subwatersheds with route densities higher than 1.7 mi/mi^2 are considered more likely to impact aquatic resources (Quigley and Arbelbide 1997).

Route Maintenance. Each action alternative converts a portion of the user-created, non-system routes into system trails or roads. Currently many non-system routes have no features for proper drainage or erosion control. Water and sediment can concentrate on these travel routes during spring snowmelt or periods of intense rain and be delivered to streams. Poorly designed or maintained travel routes have a higher potential to directly and indirectly impact streams (Belt, O'Laughlin, and Merrill 1992).

Designation as a system route means non-system routes will receive required tread, drainage (culverts, waterbars, ditchlines), and trailway (brushing, removing fallen obsticles, etc.) maintenance to preserve tread and hillslope integrity. System routes that receive adequate maintenance generally have sufficient drainage, so water and sediment can be diverted off the route and not routed to streams (Furniss, Roelofs, and Yee 1991). As such, well maintained travel routes will generally mitigate many of the effects described in Alternative 1. System routes can also be relocated or realigned from locations (poorly drained soils, wetlands or high erosive soils) that can not be adequately maintained.

Use of Non-System Routes. Motorized use on existing user-created, non-system routes would not be allowed under any action alternative. Non-system routes would only be available for non-motorized recreation. The level of non-motorized use that remaining routes would receive is unknown. However, impacts to water quality, riparian areas, and slope hydrology would be less than those described under Alternative 1. Motorized travel would no longer occur in areas with high or very high surface erosion potential nor through riparian areas where motorized travel can damage riparian vegetation. Furthermore, not all remaining non-system routes would be used for non-motorized recreation. Routes used by mountain bikers and equestrians could see localized surface erosion and impacts to vegetation depending on the frequency and intensity of use.

Changes to Motorized Use in System Routes. The action alternatives change the type of motorized use on some existing system roads and trails. For example, some system roads that currently allow all types of motorized use would only allow motorcycles. In other cases, motorized use on system trails would change from all types of vehicles to motorized vehicles up to 50 in. in width.

Since all proposed trail use changes would result in system trails, the level of maintenance would stay the same for all routes. All system trails would receive the appropriate maintenance for their designated use including sufficient drainage and erosion control. Therefore, effects to water quality, riparian areas, and slope hydrology from these designation changes would be no different than what is occurring now.

Proposed System Road Full Size. Alternatives 2 and 3 would convert 1 mi of non-system route in the Kelley Creek Flats area to a full system road on the Fairfield RD. This route already exists and is currently used by motorized vehicles. No road construction is required with the proposed system road. The route will be brought up to standard where needed. This should improve drainage and reduce surface erosion and sediment to Upper Little Smoky Creek and the South Fork Boise River.

Issue 1: Water Quality

Travel routes can impact water quality by increasing water temperatures through the loss of riparian vegetation and increase in sediment and chemical pollution (hydrocarbons). Water quality can be altered by the delivery of sediment from chronic or catastrophic erosion from routes and upland sources. Vehicle traffic on designated routes can increase sediment delivery if the route is not properly designed or maintained. Pollutants can wash off or leak from vehicles at stream crossings.

Indicators:

- Miles of open or designated routes
- Miles of open or designated routes on high surface erosion hazard lands
- Miles of system trails receiving maintenance
- Miles of system routes closed to motorized use
- Density of routes.

Affected Environment—Water Quality

The data and information in this analysis can also be viewed in its original, detailed, data-table form in the Soils/Hydrology Resource Specialist Report found in the project record for the route designation EA.

Fairfield RD

There are two subbasins on the Fairfield RD that the route designation area falls within, the South Fork Boise River subbasin (hydrologic unit [HU] 17050113) and the Camas Creek subbasin (HU 17040220). The SNF administers 42% of the 835,840-acre South Fork Boise River subbasin and 13% of the 436,796-acre Camas Creek subbasin. The primary land management activities on NFS lands within the subbasins are timber management, livestock grazing, mining, and dispersed and developed recreation.

The route designation area comprises 162,362 acres of the South Fork Boise subbasin (19%). Subwatersheds within the route designation area boundary include Basalt Creek, Big Water–Virginia, Boardman, Houseman–Beaver, Kelley Creek, Lick–Five-Points, Middle Fork Lime, South Fork Lime, South Fork Lime Hearn, Miller–Bowns–Salt, Redrock–Carrie, Upper Little Smoky Creek, Upper South Fork Lime Creek, and Worswick–Grindstone.

For the Camas Creek subbasin, the route designation area comprises 55,394 acres or 12.7% of the subbasin. Subwatersheds within the route designation area boundary include Phillips–Wardrop, Upper Soldier Creek, East Fork Threemile Creek, Elk–Fricke, Threemile Creek, and Upper Willow Creek.

Information on water quality in streams within the route designation area consists of spot and thermograph temperatures, Wolman pebble count, and grid toss measurements. Within the South Fork Boise River subbasin, most subwatersheds have 7 day maximum water temperatures "functioning at risk (FR)" or "functioning at unacceptable risk (FUR)," as shown in Table 3-20. Temperatures in FR subwatersheds range from 16ºCelsius (ºC) in Houseman–Beaver to 22ºC in Upper Little Smoky Creek. Temperatures in FUR subwatersheds range from 18ºC in Middle Fork Lime Creek to 25ºC in South Fork Lime Hearn Creek.

Maximum water temperatures within the Camas Creek subbasin are "functioning appropriately (FA)" in Phillips–Wardrop, Upper Soldier Creek, and Upper Willow Creek subwatersheds averaging 17.5ºC. Temperatures in the Elk–Fricke subwatershed are considered to be FR.

The majority of subwatersheds within the route designation area have higher amounts of surface fines in pool tailouts or low gradient riffles because of more erosive granitic geology. Sedimentation has increased where localized impacts have occurred from mining, roads, timber harvest, livestock grazing, water diversions, wildfires, and recreation. Within the South Fork Boise River subbasin, FUR subwatersheds average 43% fines (<6mm) with a range of 13–83%. FR subwatersheds average 11% fines (<6mm) with a range of 6–32%. FUR subwatersheds within the Camas Creek subbasin average 35% fines (<6mm) with a range of 14–76%. The Upper Soldier Creek subwatershed is FA, averaging 10% fines (<6mm).

Within the South Fork Boise River subbasin, three subwatersheds (Kelley Creek, Big Water–Virginia, and Houseman–Beaver) in the route designation area have assessment units listed as impaired, in 2002, by the Idaho Department of Environmental Quality (IDEQ) under Section 303(d) of the Clean Water Act. All subwatersheds have assessment units listed for unknown pollutants.

Table 3-20. Water quality condition for within the route designation area on the Fairfield District.

Number	Subwatershed Name	Temperature	Sediment and Turbidity	Chemical Contamination/Nutrients
Camas Creek Subbasin				
170402200305	Phillips-Wardrop	FA	FUR	FR
170402200306	Upper Soldier Creek	FA	FA	FA
170402200802	Upper Willow Creek	FA	FUR	FR
170402200408	East Fork Threemile Creek	No Data	No Data	No Data
170402200201	Elk-Fricke	FR	FUR	FR
170402200407	Threemile Creek	No Data	No Data	No Data
S.F. Boise Subbasin				
170501130905	Basalt Cr.	FUR	FUR	FR
170501130807	Big Peak Cr.	FA	FUR	FA
170501130603	Big Water-Virginia	FR	FUR	FR
170501130607	Boardman Cr.	FA	FR	FA
170501130604	Houseman-Beaver	FR	FR	FR
170501130608	Kelley Cr.	FR	FUR	FR

Number	Subwatershed Name	Temperature	Sediment and Turbidity	Chemical Contamination/Nutrients
170501130901	Lick-Five Points	FUR	FUR	FA
170501131003	M. Fork Lime Cr.	FUR	FUR	FA
170501130606	Miller-Bowns-Salt	FA	FUR	FA
170501131002	N. Fork Lime Cr.	FUR	FUR	FA
170501130903	Redrock-Carrie	FUR	FUR	FR
170501131004	S. Fork Lime-Hearn	FUR	FUR	FA
170501130904	Upper Little Smoky Cr.	FR	FR	FA
170501131005	Upper S. Fork Lime Cr.	FR	FUR	FA
170501130902	Worswick-Grindstone	FUR	FUR	FA
FUR - functioning at unacceptable risk, FR - functioning at risk, FA – functioning appropriately.				

The Camas Creek Subbasin Assessment/Total Maximum Daily Load (TMDL) was approved in 2000. Pollutants of concern in the TMDL included suspended sediments, total phosphorus, pathogens (*Escherichia coli*), and temperature. Other pollutants included dissolved oxygen and flow alteration. Every waterbody within this subbasin has to meet the specifications for those pollutants defined in the TMDL whether or not they're listed on the 303(d) list. Non-point sources on NFS-managed public lands include grazing, roads, trails, and recreation. These impacts are amplified by the fact that natural sediment levels are relatively high.

Ketchum RD

The route designation area on the Ketchum RD falls within in two subbasins, the Big Wood River subbasin (HU 17040219) and the Little Wood River subbasin (HU 17040221). The SNF administers 36% of the 952,000-acre Big Wood River subbasin and 10% of the 760,338-acre Little Wood River subbasin. The remainder is located in private ownership and on State- and BLM-managed public lands. The primary uses on NFS lands include dispersed and developed recreation, livestock grazing, mining, and small-scale timber management.

The route designation area comprises 74,494 acres of the Big Wood River subbasin (8%) and only 2,328 acres of the Little Wood River subbasin (0.3%). Subwatersheds within the Big Wood River subbasin falling within the route designation area boundary include Cove Creek, Greenhorn Creek, Upper Deer Creek, Upper Warm Springs Creek, Warfield-West Fork Warm Spring, and Wolftone–North Fork Deer. Baugh Creek is the only subwatershed within the Little Wood River subbasin that falls within the route designation area.

Information on water quality is limited in streams within the route designation area to a few spot temperatures, Wolman pebble count, and/or thermographs measurements in each subwatershed (Table 3-21). Within the Big Wood River subbasin, maximum water temperatures are FA in Cove Creek, Upper Deer Creek, and Upper Warm Springs Creek subwatersheds ranging from 8ºC in Castle Creek to 17ºC in Rooks Creek. Temperatures in Greenhorn Creek, Warfield–West Fork Warm Spring, and Wolftone–North Fork Deer subwatersheds are considered to be FR, ranging from 19.3ºC at the confluence of Wolftone Creek and North Fork Deer to 24ºC in Greenhorn Creek. Wolman pebble counts found average fines of 41% fines (<6mm) with a range of 31–50% in FUR subwatersheds. The FR subwatersheds (Upper Deer Creek and Warfield–West Fork Warm Spring) average 17% fines (<6mm) (15–19% range).

Within the Little Wood subbasin, a spot temperature of 12ºC was taken near the USFS boundary on August 26, 2002, on Baugh Creek. Wolman pebble counts in a 195 meter reach in Baugh Creek near the

USFS boundary recorded fines (<2mm) at 80%, small gravel (2–8mm) at 18%, and gravel (8–64mm) at 2% of substrates. In addition, ocular estimates at this location estimated surface fines (<6mm) in pool tailouts and low gradient riffles at 64%.

Table 3-21. Water quality condition for subwatersheds within the travel management assessment area Ketchum RD.

Number	Subwatershed Name	Temperature	Sediment and Turbidity	Chemical Contamination/Nutrients
170402191304	Cove Creek	FA	FUR	FUR
170402190805	Greenhorn Creek	FR	FUR	FUR
170402190804	Upper Deer Creek	FA	FR	FA
170402191003	Upper Warm Springs Creek	FA	FUR	FUR
170402191001	Warfield-West FK Warm Spring	FR	FR	FA
170402190803	Wolftone-North Fork Deer	FR	FUR	FA
170402210601	Baugh Creek	FA	FUR	FR
FUR - functioning at unacceptable risk, FR - functioning at risk, FA – functioning appropriately				

The Big Wood River watershed management plan was developed by IDEQ to address water bodies that have been placed on the 303(d) list and to comply with Idaho’s TMDL schedule. The Big Wood River TMDL was approved in 2002. Pollutants of concern in the TMDL included suspended sediments, substrate sediments, total phosphorus, pathogens (*Escherichia coli*), and temperature. Other pollutants included ammonia, dissolved oxygen, and flow alteration. Every waterbody within this subbasin has to meet the specifications for those pollutants defined in the TMDL whether they’re listed on the 303(d) list or not. Non-point sources on NFS lands include forestry, grazing, roads, trails, mining, and recreation.

The Little Wood River Watershed Management Plan/TMDL was approved in 2005. Pollutants of concern in the TMDL included temperature, sediment, nutrients, and bacteria. Every waterbody within this subbasin has to meet the specifications for those pollutants defined in the TMDL whether they’re listed on the 303(d) list or not. Localized impacts in Baugh Creek occur from livestock grazing, mining, roads and trails.

Minidoka RD—Albion Division

The route designation area on the Albion Division falls within three subbasins, the Goose Creek subbasin (HU 17040211), the Lake Walcott subbasin (HU 17040209), and the Raft River subbasin (HU 17040210). A description of the Goose Creek subbasin can be found in the Cassia Division description, previously presented. The SNF administers less than 2% of Lake Walcott subbasin in two divisions on the Minidoka RD (Albion and Sublett) and about 19% of the 954,337-acre Raft River subbasin which falls within four divisions on the RD (Albion, Sublett, Black Pine and Raft River) . The majority of all three subbasins lie in areas of private ownership, with the rest residing on BLM and State-managed public lands. Land uses on private land include agriculture, grazing, municipal water uses, diversions and impoundments, residential development, recreation, and road construction and maintenance. Federal lands are managed for recreation, special uses (ski area, summer homes, electronic communication sites, irrigation, etc.) and grazing.

The route designation area comprises 183,244 acres of the Goose Creek subbasin; 29,977 acres of the Lake Walcott subbasin; and 203,292 acres of the Raft River subbasin. Subwatersheds within the route designation area in the Albion Division include Big Rocky-Smith-Willow, Mill Creek, Land Creek, and Birch Creek in the Goose Creek subbasin; Howell Creek and Upper Marsh Creek in the Lake Walcott subbasin; and Almo, Mid-Cassia, Upper Cassia Creek, Clyde Creek and Blacksmith Creeks in the Raft River subbasin.

The Raft River headwaters originate on the east side of the Albion Mountains southeast of the town of Oakley, Idaho, and in the Raft River Mountains in Utah. Perennially flowing headwater tributaries originating from the Albion Mountains near the City of Rocks National Reserve includes Almo Creek and Edwards Creek. Farther downstream near the town of Malta, Cassia Creek enters the Raft River. As Raft River flows northward through the high desert, it is continually dewatered. The Raft River connects to the mainstem Snake River only during periods of high flow in the spring and is subject to reduced flows or dewatering from 2,100 water diversions.

Information on water quality is limited in streams within the route designation area to spot temperature, Wolman pebble count, grid tosses, and thermographs measurements in each subwatershed (Table 3-22). Maximum water temperatures are FUR in the Birch Creek and Clyde Creek subwatersheds. Temperatures in the Mill Creek, Almo Creek, Mid-Cassia, and Upper Cassia Creek subwatersheds are considered to be FR, ranging from 15 to 22 C. Maximum water temperatures are FA in both upper Howell Creek and Upper Marsh Creek, ranging from 10ºC in upper Howell Creek to 15ºC in Upper Marsh Creek.

Table 3-22. Water quality condition for subwatersheds within the Albion Division.

Number	Subwatershed Name	Temperature	Sediment and Turbidity	Chemical Contamination/Nutrients
Goose Creek Subbasin				
170402110201	Big Rocky-Smith-Willow	No Data	No Data	No Data
170402110203	Land Creek	No Data	No Data	No Data
170402110205	Mill Creek	FR	FR	FR
170402110207	Birch Creek	FUR	FR	FUR
Lake Walcott Subbasin				
170402091103	Howell Creek	FA	FR	FR
170402091105	Upper Marsh Creek	FA	FUR	FR
Raft River Subbasin				
170402100802	Almo Creek	FA	FA	FUR
170402101005	Mid-Cassia	FA	FUR	FUR
170402101006	Upper Cassia Creek	FR	FUR	FR
170402101007	Clyde Creek	FUR	FUR	FR
170402101008	Blacksmith Creek	FA	FUR	FR

FUR - functioning at unacceptable risk, FR - functioning at risk, FA – functioning appropriately.

Sediment is elevated in most subwatersheds from historic and current land uses. FUR subwatersheds average 41% fines (<6mm) with a range of 16–65%. FR subwatersheds average 15% fines (<6mm) with a range of 7–20%. Upper Marsh Creek is FUR, averaging 27% fines, and Howell Creek is FR with an average of 15% fines.

All three subbasins have approved section 303(d) TMDLs. The Goose Creek subbasin Assessment/TMDL was approved in 2003. Pollutants of concern in the TMDL included suspended sediments, total phosphorus, pathogens (*Escherichia coli*), and temperature. Other pollutants included dissolved oxygen, flow alteration, and organics. The Lake Walcott Subbasin Assessment/TMDL was approved in 2000. Pollutants of concern in the TMDL included sediment, dissolved oxygen, nutrients, pesticides, and oil and grease. The Raft River Subbasin Assessment/TMDL was approved in 2004. Pollutants of concern in the TMDL included sediment bedload, total phosphorus, pathogens (*Escherichia* *coli*), and temperature. Other pollutants included flow and habitat alteration. Every waterbody within the three subbasins has to meet the specifications for those pollutants defined in the TMDLs whether they're listed on the 303(d) list or not. Non-point sources on NFS lands include grazing, roads, trails, and developed and dispersed recreation. Impacts also include depleted stream flows from irrigation uses outside of the SNF boundary.

Minidoka RD—Black Pine Division

The route designation area on the Black Pine Division falls within two subbasins the Raft River subbasin (described in the Albion Division, above) and the Curlew Valley subbasin (described in the Raft River Division narrative, subsequent to this section). Subwatersheds within the route designation area on the Black Pine Division include the Sweetzer Canyon–Meadow, West Dry–Eightmile–Fisher, and Sixmile–Kelsaw in the Raft River subbasin and the Pole Canyon Creek, Duffy Creek, Rice Canyon Creek, Black Pine Canyon Creek, and the East Dry–Burnt Basin subwatersheds in the Curlew Valley subbasin.

Information on water quality is limited in streams within the route designation area to spot temperature, Wolman pebble count, grid tosses, and thermographs measurements in each subwatershed (Table 3-23). Maximum water temperatures are FUR in the West Dry–Eightmile–Fisher subwatershed. Sediment is elevated in most subwatersheds from historic and current land uses. FUR subwatersheds average 41% fines (<6mm) (range 20–87%).

There are no 303(d) assessment units or TMDLs within the route designation area in the Curlew Valley subbasin. The Raft River subbasin Assessment/TMDL was approved in 2004. A description of this assessment/TMDL can be found in the Albion Division, previously presented.

Minidoka RD—Cassia Division

The route designation area on the Cassia Division of the Minidoka RD falls within three subbasins, the Middle Snake subbasin (HU 17040212), the Salmon Falls Creek subbasin (HU 17040213), and the Goose Creek Subbasin (HU 17040211). The SNF administers 6% of the 1,610,692-acre Middle Snake subbasin and 25% of the 718,921-acre Goose Creek subbasin and 3.4% of the Salmon Falls Creek subbasin.

Table 3-23. Water quality condition for subwatersheds within Black Pine Division.

Number	Subwatershed Name	Temperature	Sediment and Turbidity	Chemical Contamination/Nutrients
Curlew Valley Subbasin				
160203091702	Pole Canyon Creek	No Data	No Data	No Data
160203091502	Duffy Creek	No Data	No Data	No Data
160203091503	Rice Canyon Creek	No Data	No Data	No Data
160203091601	Black Pine Canyon Creek	No Data	No Data	No Data
160203091602	East Dry-Burnt Basin	No Data	No Data	No Data
Raft River Subbasin				
170402100304	Sweetzer Canyon-Meadow	No Data	No Data	FR
170402100403	West Dry-Eightmile-Fisher	FUR	FUR	FUR
170402100404	Sixmile-Kelsaw	No Data	FUR	FR
FUR - functioning at unacceptable risk, FR - functioning at risk, FA – functioning appropriately.				

However, a portion of the acreage in the Goose Creek subbasin falls within the Albion Division of the Minidoka RD. The majority of all three subbasins reside in private ownership. All three subbasins also cover BLM- and State-managed public lands. Land uses on private land include grazing, municipal water uses, residential development, recreation, and road construction and maintenance. Federal lands are managed for small-scale timber harvest, recreation, special uses (cabins, etc.) and grazing.

The route designation area comprises 86,154 acres of the Middle Snake subbasin (5.3%). Middle Snake subwatersheds within the route designation area boundary include Fifth Fork Rock Creek, Fourth Fork Rock Creek, Third Fork Rock Creek, Harrington Fork–Little-Rock, North Cottonwood Creek, Dry Cottonwood Creek, Green–Soldier, McMullen Creek, East Fork Dry Creek, and Middle and West Fork Dry Creek.

The route designation area comprises 47,435 acres within the Salmon Falls Creek subbasin. Salmon Falls Creek subwatersheds with proposed changes or additions within the route designation area boundary include Big Creek, Cottonwood Creek, North Fork Shoshone–Hopper, South Fork Shoshone Creek, Horse Creek, and Upper Shoshone Basin.

The route designation area comprises 183,244 acres of the Goose Creek subbasin (25%) within the Cassia and Albion Divisions. Goose Creek subwatersheds within the route designation area boundary on the Cassia Division include Beaverdam Creek, Big Cedar Canyon Creek, Little Cottonwood Creek, Mill Creek, Piney–Goose, South Cottonwood–Trapper, Trout Creek, Upper Big Cottonwood Creek, Lone Cedar Canyon Creek, Piney–Goose, Squaw–Rodeo, Sawmill Creek, Upper Goose Creek, South Cottonwood–Trapper, Big Hollow, Little Cedar–Buckhorn, and Upper Trapper Creek.

Information on water quality is limited in streams within the route designation area to a few spot and thermograph temperature, Wolman pebble count measurements and/or grid toss measurements (Table 3-24). Maximum water temperatures are FA in East Fork Dry Creek, Middle and West Fork Dry Creek, Harrington Fork-Little-Rock, McMullen Creek and North Cottonwood Creek subwatersheds, averaging 14.5ºC. Temperatures in Third Fork Rock Creek and Fifth Fork Rock Creek subwatersheds are considered to be FR averaging 18.7ºC. Within the Salmon Falls Creek subbasin, water temperatures are FUR in all subwatersheds with 7 day maximums averaging 23ºC. Maximum water temperatures are FUR in Birch Creek, Beaverdam Creek, Upper Goose Creek, and Little Cottonwood Creek subwatersheds ranging from 19.9ºC in Little Cottonwood Creek to 21.8ºC in Beaverdam Creek. Temperatures in Mill Creek, Trout Creek, Piney–Goose, South Cottonwood–Trapper, Squaw–Rodeo, and Upper Trapper Creek subwatersheds are considered to be FR ranging from 18.4ºC at Upper Goose Creek to 18.7ºC in Trapper Creek.

Table 3-24. Water quality condition for subwatersheds within the Cassia Division.

Number	Subwatershed Name	Temperature	Sediment and Turbidity	Chemical Contamination/Nutrients
Middle Snake Subbasin				
170402121605	East Fork Dry Creek	FA	FA	FA
170402121606	Middle & West Fork Dry Cr	FA	FA	FR
170402121702	Harrington FK-Little-Rock	FA	FUR	FR
170402121703	Third Fork Rock Creek	FR	FA	FA
170402121704	Fourth Fork Rock Creek	FA	FUR	FR
170402121705	Fifth Fork Rock Creek	FR	FUR	FR
170402121803	McMullen Creek	FA	FR	FUR
170402121804	North Cottonwood Creek	FA	FUR	FR
170402121805	Dry Cottonwood Creek	No Data	No Data	FR
170402121903	Green-Soldier	No Data	No Data	FR

Salmon Falls Creek Subbasin				
170402131102	Upper Shoshone Basin	FUR	FUR	FUR
170402131103	North FK Shoshone-Hopper	FUR	FUR	FUR
170402131104	South FK Shoshone Creek	FUR	FUR	FUR
170402131105	Cottonwood Creek	FUR	FUR	FUR
170402131106	Big Creek	FUR	FUR	FUR
Goose Creek Subbasin				
170402110309	Beaverdam Creek	FUR	FUR	FUR
170402110311	Lone Cedar Canyon Creek	No Data	No Data	No Data
170402110408	Trout Creek	FR	FUR	FR
170402110602	Piney-Goose	FR	FUR	FR
170402110603	Upper Goose Creek	FUR	FR	FR
170402110701	South Cottonwood-Trapper	FR	FUR	FR
170402110702	Squaw-Rodeo	FR	FUR	FUR
170402110703	Fall Creek	No Data	FUR	FR
170402110704	Upper Trapper Creek	FR	FA	FR
170402110801	Sawmill Creek	No Data	No Data	FR
170402110802	Little Cottonwood Creek	FUR	FUR	FR
170402110902	Upper Big Cottonwood Cr	FA	FR	FA
170402110903	Big Cedar Canyon Creek	No Data	No Data	No Data
170402110803	Big Hollow	No Data	No Data	No Data
170402110904	Little Cedar-Buckhorn	No Data	No Data	No Data
FUR - functioning at unacceptable risk, FR - functioning at risk, FA – functioning appropriately.				

The majority of subwatersheds within the route designation area have higher amounts of surface fines in pool tailouts or low gradient riffles. Middle Snake FUR subwatersheds average 28% fines (<6mm) with a range of 23–32%. The FA subwatershed averaged 8% fines (<6mm). The majority of route designation area subwatersheds within the Salmon Falls Creek subbasin also have higher amounts of surface fines in pool tailouts or low gradient riffles averaging 35% fines (<6mm) with a range of 20–45%. The Goose Creek FUR subwatersheds average 41% fines (<6mm) with a range of 16–65%. FR subwatersheds average 15% fines (<6mm) with a range of 7–20%.

The Upper Snake Rock Management Plan/TMDL was approved in 2000. Pollutants of concern in the TMDL included sediment, nutrients (phosphorus and nitrogen), pathogens (fecal coliform bacteria), ammonia, pesticides, and oil and grease. Every waterbody within this subbasin has to meet the specifications for those pollutants defined in the TMDL whether they're listed on the 303(d) list or not.

On privately-owned lands downstream, the middle Snake River is a managed water system where normal flow regimes are no longer present, which allows sediment to accumulate. In general, the middle Snake River and its tributaries are impacted by runoff from irrigated crop production, rangeland, pastureland, animal holding areas, feedlots, dredging, hydro-modification, and urban runoff. Natural springs have exhibited hydro-modification and stream bank modification from activities relating to sedimentation, aquaculture, hydropower, irrigated crop production, and land development.

A TMDL is being developed in the Salmon Falls subbasin. IDEQ expects to have the draft TMDL approved by the Environmental Protection Agency (EPA) following public comment. Currently all subwatersheds have assessment units listed on the 303(d) list in the route designation area. Pollutants of concern include suspended sediments, total phosphorus, pathogens (*Escherichia coli*), mercury, and temperature. Other pollutants included organics and flow alterations. Many streams in this area have accelerated sediment and nutrients from roads, livestock grazing, and dispersed recreation.

The Goose Creek subbasin assessment was developed by IDEQ to address water bodies that have been placed on the 303(d) list and to comply with Idaho's TMDL schedule. The Goose Creek Watershed Management Plan /TMDL was approved in 2003. Pollutants of concern in the TMDL included suspended sediments, total phosphorus, pathogens (*Escherichia coli*), and temperature. Other pollutants included dissolved oxygen, flow alteration, and organics. Every waterbody within this subbasin has to meet the specifications for those pollutants defined in the TMDL whether they're listed on the 303(d) list or not. Non-point sources on NUSFS lands include grazing, roads, trails, and developed and dispersed recreation.

Minidoka RD—Raft River Division

The route designation area on the Raft River Division falls within two subbasins, the Raft River subbasin and the Curlew Valley subbasin (HU 17040309). The SNF administers 6% of the 1,250,921-acre Curlew Valley subbasin. The majority of the subbasin resides in private ownership, with the remainder residing in areas managed by the BLM and the State. Land uses on private land include agriculture, grazing, municipal water uses, diversions and impoundments, residential development, mining, recreation, and road construction and maintenance. Federal lands are managed for recreation, special uses, mining, and grazing. A description of the Raft River subbasin can be found in the description for the Albion Division.

The route designation area comprises 108,092 acres of the subbasin within two divisions, the Raft River Division and the Black Pine Division. Subwatersheds within the route designation area on the Raft River Division include East Bally Mountain, Johnson Creek, Rice Creek, Upper Clear Creek, Onemile Creek, Wildcat Creek, Rocky Canyon–Lynn, and Upper George Creek in the Raft River subbasin and Duffy Creek in the Curlew Valley subbasin.

Information on water quality is limited in streams within the route designation area to spot temperature, Wolman pebble count, grid tosses, and thermograph measurements in each subwatershed (Table 3-25). Water temperatures in Johnson Creek and Wildcat Creek subwatersheds are considered to be FR ranging from17.7ºC in Johnson Creek to 18.5ºC at Wildcat Creek.

Table 3-25. Water quality condition for subwatersheds within the Raft River Division.

Number	Subwatershed Name	Temperature	Sediment and Turbidity	Chemical Contamination/Nutrients
Raft River Subbasin				
170402100504	Rice Creek	No Data	No Data	FR
170402100505	Upper Clear Creek	FA	FUR	FA
170402100604	Onemile Creek	FA	FUR	FA
170402100607	East Bally Mountain	FA	FR	FUR
170402100609	Upper George Creek	FA	FR	FR
170402100610	Johnson Creek	FR	FUR	FR
170402100613	Wildcat Creek	FR	FUR	FR
170402100701	Rocky Canyon-Lynn	No Data	No Data	No Data
Curlew Valley Subbasin				
160203091502	Duffy Creek	No Data	No Data	No Data
FUR - functioning at unacceptable risk, FR - functioning at risk, FA – functioning appropriately.				

Sediment is elevated in most subwatersheds from historic and current land uses. Subwatersheds FUR average 41% fines (<6mm) (range 20–87%), while FA subwatersheds average 6% fines.

The Raft River Subbasin Assessment/TMDL was approved in 2004. A description of the pollutants associated with this TMDL can be found in the Albion Division description. There are no 303(d) assessment units or TMDLS within the route designation area in the Curlew Valley subbasin.

Minidoka RD—Sublett Division

The route designation area within the Sublett Division falls within two subbains, the Lake Walcott subbasin and the Raft River subbasin. Descriptions of both subbasins can be found in Albion Division description previously presented.

Subwatersheds within the route designation area on the Sublett Division include Houtz Canyon and Upper South Fork Rock Creek within the Lake Walcott subbasin and North Heglar Canyon Creek, South Heglar Canyon Creek, Lake Fork Creek and Sublett Creek within the Raft River subbasin.

Information on water quality is limited in streams within the travel management assessment area to spot temperature, Wolman pebble count, grid tosses, and /or thermographs measurements in each subwatershed (Table 3-26). Maximum water temperatures are FUR in South Heglar Canyon Creek and Upper Sublett Creek (19.9ºC). Temperatures in Lake Fork Creek are considered to be FR at 16.8ºC.

Sediment is considered to be elevated in each subwatershed from historic and current land uses. Available data shows that Upper South Fork Rock Creek, South Heglar Canyon, Lake Fork Creek and Upper Sublett Creek are FUR.

Both the Lake Walcott and the Raft River subbasins have approved TMDLs. A description of the pollutants associated with the TMDLs for these subbasins can be found under the description for the Albion Division.

Environmental Consequences—Water Quality Effects

Alternative 1—No Action

Sediment. Non-system routes often have greater impacts to soil/aquatic resources than properly designed and constructed system routes. Non-system routes may occur in poor locations such as areas with poor drainage, multiple stream crossings, and on highly erodible or unstable soils, etc. Weaver and Dale (1978) noted that trails located on poorly drained soils are usually wider, deeper, and less uniform (greater roughness) than trails located on well drained sites. Proximity to groundwater or streams can increase travel route erosion due to excessive wetness and periodic flooding. Erosion from soil compaction is generally greater in wet, poorly drained soils than well drained soils, especially if subjected to heavy use (Willard and Marr 1970; Burde and Renfro 1986).

Non-system routes can have greater impacts to aquatic resources because they are not maintained. Poorly maintained routes have a higher potential to directly and indirectly affect streams (Belt, O'Laughlin, and Merrill 1992). User-created trails usually have no features for proper drainage or erosion control. Water and sediment can concentrate on routes during runoff or periods of intense rain and be delivered to streams. Routes that receive regular maintenance generally have sufficient drainage, so water and sediment is diverted off the route, filtered through forest vegetation, and not routed to streams (Furniss, Roelofs, and Yee 1991). As such, well maintained travel routes can generally be designed to mitigate sediment delivery concerns.

Table 3-26. Water quality condition for subwatersheds within the Sublett Division.

Number	Subwatershed Name	Temperature	Sediment and Turbidity	Chemical Contamination/Nutrients
Lake Walcott Subbasin				
170402090906	Houtz Canyon Creek	No Data	No Data	No Data
170402091005	Upper South FK Rock Creek	No Data	FUR	FR
Raft River Subbasin				
170402100103	North Heglar Canyon Creek	No Data	No Data	FR
170402100104	South Heglar Canyon Creek	FUR	FUR	FR
170402100202	Lake Fork Creek	FR	FUR	FUR
170402100203	Upper Sublett Creek	FUR	FUR	FR
FUR - functioning at unacceptable risk, FR - functioning at risk, FA – functioning appropriately.				

Non-system routes have a higher propensity for stream fords. Routes with multiple stream crossings increase sediment from surface erosion and users crossing the stream. Brown (1994) in a study of Australian river fords found that recreational vehicles were responsible for adding significant amounts of sediment to rivers. The amount of sediment deposited was related to length of the ford, frequency of use, and vehicle backwash that undercut streambanks. Studies of stream fords on the Fishlake NF in Utah found that crossings caused an increase in fine sediment (< 2mm) deposition below the crossing and exceedance of state water quality turbidity criteria for cold water fish (Deiter 2005). Factors that influenced the size and duration of turbidity increases are related to the substrate size, number of crossings, and number of vehicles using each crossing.

Chemical Contamination. Research suggests that off-road vehicles, motorcycles, ATVs, etc., contribute to water pollution by depositing unburned fuel into the soil or water (Gucinski et al. 2001). In addition, off-road vehicles release compounds that are known human carcinogens (particulate matter, benzene and polycyclic aromatic hydrocarbons, (PAHs), and a suspected carcinogen (methyl tertiary-butyl ether, MTBE).

Dixie, Fishlake and Manti–LaSal NFs and the Richfield BLM, initiated a study of a Rocky Mountain and Fillmore ATV jamborees for an EA (Deiter 2001). Volatile organic compounds (VOC) such as benzene, toluene, ethylbenzene, and p-xylene (also known as BTEX) and total petroleum hydrocarbons (TPH) were assessed at stream crossings. VOCs are a group of organic compounds found in products such as gasoline, paint, paint thinner, and solvents used for dry cleaning and metal degreasing. More organic compounds were detected during the jamboree than either before or after, but only marginally, and well below EPA maximum health recommendations. However, gas and diesel compounds (e.g., naphthalene) temporarily exceeded safe drinking water levels.

Fairfield RD

Table 3-27 visually depicts the summary of indicators, by alternative, for the Fairfield RD. The summary was derived from a much more detailed analysis that is found in the Soils/Hydrology Resource Specialist Report found in the project record for the route designation EA.

On the Fairfield RD, there are approximately 675 mi of system and non-system routes (roads and trails), with approximately 446 mi located on lands having a high surface erosion hazard. There are 11 subwatersheds within the route designation area having route densities that exceed 1.7 mi/mi^2. Under Alternative 1, no action, these route densities are expected to remain the same or increase as additional user-created routes are established as a result of unregulated cross-country travel.

Table 3-27. Summary of indicators by alternative for the Fairfield RD.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Miles of open or designated motorized routes	675	387	430	351
Miles of open or designated motorized routes on high surface erosion lands	446	247	270	225
Miles of motorized system trails	204	225	268	202
Miles of system routes closed to motorized use	0	18.11	12.47	34.94
Number of subwatersheds where route density exceeds 1.7 mi/mi^2	11	5	7	3

The 11 subwatersheds with high road densities on lands having high or very high surface erosion potential have an increased potential for higher erosion and more efficient sediment delivery to streams. This is because many of the routes within these subwatersheds include numerous stream crossings and fords. Most of these subwatersheds already have water quality concerns from cattle grazing, historic mining, and dispersed recreation in riparian areas. As described in the Affected Environment section, previously presented, the Upper Willow Creek subwatershed falls within the Camas Creek Subbasin Assessment/TMDL. High route densities in these subwatersheds are most likely a contributing factor to the pollutants of concern, particularly suspended sediments. The Kelley Creek, Big Water–Virginia, and Houseman-Beaver subwatersheds have assessment units listed as impaired in 2002 by IDEQ under Section 303(d) of the Clean Water Act. Similar to Upper Willow Creek, high route densities within these subwatersheds are most likely contributing to the impaired status.

All subwatersheds for which data was available, with the exception of Upper Soldier Creek, were found to be FR or FUR for one or more water quality indicators. Under Alternative 1, the contribution of motorized travel on system and non-system routes to the FR and FUR determinations would continue.

Continued use of non-system routes and the potential for new non-system routes associated with cross-country travel in these subwatersheds will make it harder to maintain or improve water quality. Given this, Alternative 1 may not be consistent with the Camas Creek Subbasin Assessment/TMDL for the Upper Willow Creek subwatershed and does not meet Forest Plan direction (SWST01) for the 11 subwatersheds with route densities exceeding 1.7 mi/mi^2.

Ketchum RD

Table 3-28 visually depicts the summary of indicators, by alternative, for the Ketchum RD. The summary was derived from a much more detailed analysis that is found in the Soils/Hydrology Resource Specialist Report found in the project record for the route designation EA.

On the Ketchum RD there are about 203 mi of system and non-system routes accessible to motorized vehicles. Roughly 114 mi of these routes are on high surface erosion landtypes. The Greenhorn Creek subwatershed has a high route density (above 1.7 mi/mi^2). This subwatershed occurs in an area with an IDEQ-approved Big Wood River watershed management plan (TMDL) that is intended to reduce sediment, nutrients, and temperature pollutants on or near streams that support Wood River sculpin populations.

All subwatersheds for which data was available were found to be FR or FUR for one or more water quality indicators. Under Alternative 1, the contribution of motorized travel on system and non-system routes to the FR and FUR determinations would continue.

Table 3-28. Summary of indicators by alternative for the Ketchum RD.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Miles of open or designated motorized routes	203	139	147	127
Miles of open or designated motorized routes on high surface erosion lands	114	70	71	69
Miles of motorized system trails	95	105	111	94
Miles of system routes closed to motorized use	0	0.80	0.80	1.47
Number of subwatersheds where route density exceeds 1.7 mi/mi^2	1	0	0	0

Continued use of non-system routes in this subwatershed may make it harder to improve water quality as routes are not maintained. Thus, Alternative 1 may not be consistent with recommendations in the watershed management plan (TMDL), may result in impairment of beneficial uses, and does not meet Forest Plan direction (SWST01) for subwatersheds with route densities exceeding 1.7 mi/mi^2.

Minidoka RD

Table 3-29 visually depicts the summary of indicators, by alternative, for the Minidoka RD and its five divisions. The summary was derived from a much more detailed analysis that is found in the Soils/Hydrology Resource Specialist Report found in the project record for the route designation EA.

Table 3-29. Summary of indicators by alternative, by division, for the Minidoka RD.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Miles of open or designated motorized routes	Albion: 123 Black Pine: 146 Cassia: 1,165 Raft River: 247 Sublett: 191	Albion: 77 Black Pine: 107 Cassia: 770 Raft River: 111 Sublett: 132	Albion: 77 Black Pine: 107 Cassia: 800 Raft River: 112 Sublett: 133	Albion: 75 Black Pine: 105 Cassia: 751 Raft River: 111 Sublett: 132
Miles of open or designated routes on high surface erosion lands	Albion: 0 Black Pine: 16 Cassia: 216 Raft River: 221 Sublett: 39	Albion: 0 Black Pine: 16 Cassia: 127 Raft River: 84 Sublett: 21	Albion: 0 Black Pine: 16 Cassia: 128 Raft River: 85 Sublett: 21	Albion: 0 Black Pine: 16 Cassia: 122 Raft River: 84 Sublett: 21
Miles of motorized system trails	Albion: 20 Black Pine: 4 Cassia: 88 Raft River: 9 Sublett: 12	Albion: 27 Black Pine: 6 Cassia: 150 Raft River: 14 Sublett: 18	Albion: 33 Black Pine: 6 Cassia: 180 Raft River: 14 Sublett: 19	Albion: 27 Black Pine: 4 Cassia: 134 Raft River: 14 Sublett: 18
Miles of system routes closed to motorized use	Albion: 0 Black Pine: 0 Cassia: 0 Raft River: 0 Sublett: 0	Albion: 0 Black Pine: 0 Cassia: 1.46 Raft River: 0 Sublett: 0	Albion: 0 Black Pine: 0 Cassia: 0.63 Raft River: 0 Sublett: 0	Albion: 1.64 Black Pine: 0 Cassia: 4.99 Raft River: 0 Sublett: 0
Number of subwatersheds where route density exceeds 1.7 mi/mi^2	Albion: 1 Black Pine: 0 Cassia: 21 Raft River: 0 Sublett: 0	Albion: 1 Black Pine: 0 Cassia: 9 Raft River: 0 Sublett: 0	Albion: 1 Black Pine: 0 Cassia: 11 Raft River 0 Sublett: 0	Albion: 1 Black Pine: 0 Cassia: 9 Raft River: 0 Sublett: 0

Minidoka RD—Albion Division

There are approximately 123 mi of system and non-system routes on the Albion Division; none of these routes are on lands with a high surface erosion hazard rating. With the exception of the Upper Cassia Creek subwatershed, total route densities on the Albion Division are below 1.7 mi/mi^2. This subwatershed occurs in an area with approved IDEQ Raft River watershed management plan (TMDL), which is intended to reduce sediment, nutrients, and temperature pollutants.

All subwatersheds for which data was available were found to be FR or FUR for one or more water quality indicators. Under Alternative1, the contribution of motorized travel on system and non-system routes to the FR and FUR determinations would continue.

Continued use of non-system routes and the potential for new non-system routes associated with cross-country travel in these subwatersheds may increase sediment and impact water quality as these routes are not maintained. This will make it harder to maintain or improve water quality. Given this, Alternative 1 may not be consistent with approved IDEQ watershed management plans intended to reduce sediment, nutrients, and temperature pollutants., and does not meet Forest Plan direction (SWST01) for subwatersheds with route densities exceeding 1.7 mi/mi^2.

Minidoka RD—Black Pine Division

There is an estimated 146 mi of system and non-system routes on the Black Pine Division, with about 15 mi on high surface erosion lands. Overall, route densities are relatively below 1.7 mi/mi^2. All subwatersheds for which data was available were found to be FR or FUR for one or more water quality indicators. Under Alternative 1, the contribution of motorized travel on system and non-system routes to the FR and FUR determinations would continue.

Continued use of non-system routes and the potential for new non-system routes associated with cross-country travel in these subwatersheds may increase sediment and impact water quality as these routes are not maintained. This will make it harder to maintain or improve water quality. Given this, Alternative 1 may not be consistent with approved IDEQ watershed management plans intended to reduce sediment, nutrients, and temperature pollutants, and may cause impairment of beneficial uses.

Minidoka RD—Cassia Division

Of the 1,165 mi of system and non-system routes identified on the Cassia Division, roughly 216 mi are on lands having a high potential for surface erosion. Many of the subwatersheds have high overall route densities in large part due to more open and accessible terrain and close proximity to large cities (i.e., Burley, Twin Falls). High route densities (above 1.7 mi/mi^2) occur in the majority of subwatersheds in the Cassia Division. Several of these subwatersheds (Upper South Fork Rock Creek, McMullen Creek, and Dry Cottonwood Creek) include routes on high or very high surface erosion lands, increasing the likelihood of sedimentation to streams.

As previously presented, with the exception of East Fork Dry Creek, all subwatersheds were found to be FR or FUR for one or more water quality indicators. Under Alternative 1, the contribution of motorized travel on system and non-system routes to the FR and FUR determinations would continue.

Continued use of non-system routes and the potential for new non-system routes associated with cross-country travel in these subwatersheds may increase sediment and impact water quality as these routes are not maintained. This will make it harder to maintain or improve water quality. Most subwatersheds with high non-system route densities are in areas with approved IDEQ watershed management plans (TMDL) that are intended to reduce sediment, nutrients, and temperature pollutants. Thus, Alternative 1 may not be consistent with recommendations in the watershed management plan, may result in impairment of beneficial uses, and does not meet Forest Plan direction (SWST01) for subwatersheds with route densities exceeding 1.7 mi/mi^2.

Minidoka RD—Raft River Division

Approximately 247 mi of system and non-system routes have been identified on the Raft River Division; about 221 mi are on high surface erosion lands. Overall, the total route densities on the Raft River Division are below 1.7 mi/mi^2. The highest route densities in the Raft Division occur in Rocky Canyon–Lynn and Johnson Creek subwatersheds.

All subwatersheds for which data was available were found to be FR or FUR for one or more water quality indicators. Under Alternative 1, the contribution of motorized travel on system and non-system routes to the FR and FUR determinations would continue.

Continued use of non-system routes and the potential for new non-system routes associated with cross-country travel in these subwatersheds may increase sediment and impact water quality as these routes are not maintained. This will make it harder to maintain or improve water quality. Given this, Alternative 1 may not be consistent with approved IDEQ watershed management plans that are intended to reduce sediment, nutrients, and temperature pollutants and may cause impairment of beneficial uses.

Minidoka RD—Sublett Division

Of the estimated 191 mi of system and non-system routes identified on the Sublett Division, about 39 mi are on high surface erosion lands. Total route densities are below 1.7 mi/mi^2. The highest route densities in the Sublett Division occur in Upper Sublett Creek and Lake Fork Creek subwatersheds.

All subwatersheds for which data was available were found to be FR or FUR for one or more water quality indicators. Under Alternative 1, the contribution of motorized travel on system and non-system routes to the FR and FUR determinations would continue.

Continued use of non-system routes and the potential for new non-system routes associated with motorized cross-country travel in these subwatersheds may increase sediment and impact water quality as these routes are not maintained. This will make it harder to maintain or improve water quality. Given this, Alternative 1 may not be consistent with approved IDEQ watershed management plans that are intended to reduce sediment, nutrients, and temperature pollutants and may cause impairment of beneficial uses.

Alternatives 2–4 (Action Alternatives)

The data supporting the conclusions within this section of the analysis can also be viewed in its original form in the Soils/Hydrology Resource Specialist Report found in the project record for the route designation EA.

Effects Common to Alternatives 2–4

Once a system route is closed to motorized use, the route would no longer receive annual maintenance, but would remain open to non-motorized recreation. Many system routes currently have ditchlines, stream culverts, and other drainage features to safely route water downstream and keep treads intact. These drainage features can plug and cause increased surface erosion or structure failure. To prevent these problems, any system road or trail that has drainage features in place and received routine maintenance in the past that is converted to a non-system route will be reviewed by the SNF within three years of the decision to determine what long-term stabilization measures are required to prevent erosion to streams and route failures. Measures may include installation of self-maintaining drainage features, stabilization of unstable cut and fill slopes, and removal of structured stream crossings. Stabilization measures would be implemented on highest priority routes as soon as funding becomes available. Closure of system routes will benefit hydrologic and riparian conditions by reducing sediment sources and restoring natural slope hydrology as stabilization measures are implemented.

Fairfield RD

Subwatersheds exceeding 1.7 mi/mi^2. Open or designated motorized routes decrease from 675 mi to 387, 430, and 351, respectively, for Alternatives 2, 3, and 4. Motorized routes on high surface erosion lands decrease from 446 mi to 247, 270, and 225 mi, respectively, for Alternatives 2, 3, and 4. With the elimination of cross-country travel and motorized use of non-system routes, there are corresponding decreases in route densities in most subwatersheds from Alternative 1. Of the 11 subwatersheds that exceeded the 1.7 mi/mi^2 route density under Alternative 1, four no longer exceed that density under any alternative. Of the action alternatives, Alternative 3 has the highest number of subwatersheds exceeding the 1.7 mi/mi^2 route density with seven subwatersheds exceeding the threshold, followed by Alternative 2 with five subwatersheds and Alternative 4 with three subwatersheds exceeding the 1.7 mi/mi^2 route density. The elimination of cross-country travel under all action alternatives, as well as the conversion of non-system routes to system routes should reduce impacts to water quality as a number of miles of routes on erodible lands, stream crossings, and improperly designed and maintained routes are no longer available for motorized use.

Route Maintenance. Most subwatersheds under Alternative 3 would see system trail increases as non-system routes are converted to system routes. The largest system trails increase would occur in the Phillips–Wardrop, Upper Willow Creek (Camas Creek subbasin), Big Water–Virginia, and Little Smoky drainage (Worswick–Grindstone, Red Rock Carrie, Upper Little Smoky Creek and Basalt Creek (South Fork Boise River subbasin). Aquatic resource impacts associated with 66 mi of the existing non-system routes would be reduced or eliminated under Alternative 3 as these routes (65 mi of trail and 1 mi of road) are converted to system roads or trails and receive maintenance. Alternative 2 would see a reduction in impacts associated with 14 mi of non-system routes (13 mi of trail and 1 mi of road) and Alternative 4 would see a reduction in impacts associated with 10 mi of non-system routes as routes are converted to system roads or trails and receive maintenance.

Alternatives 2 and 4 would see more moderate system trail increases in many of the same subwatersheds as Alternative 3. However, these alternatives decrease more system trails in Upper Willow Creek, House–Beaver, and Miller-Bowns-Salt than Alternative 3, as system trails are closed to motorized use. Finally, Alternative 4 would convert fewer non-system routes to system trails than Alternatives 2 and 3. The largest differences are in Big Water–Virginia, Upper Little Smoky Creek, and Basalt Creek subwatersheds. These subwatersheds are in areas with high or very high surface erosion potential. Leaving non-system routes in these subwatersheds may cause localized impacts to water quality. However, impacts would not be as great as those portrayed in Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time reducing surface erosion to streams. Thus, the action alternatives should help to slowly improve water quality and help to implement watershed management plans (i.e., TMDLs). Upgrading non-system routes to system routes and elimination of cross-country travel should also reduce sediment sources and result in localized improvements to water quality.

System Route Closure to Motorized Use. The Fairfield RD would close approximately 12.48 mi of system routes in Elk–Fricke and Upper Willow Creek, Abbot–Shake, Big Water–Virginia, Upper Little Smoky Creek, and Basalt Creek subwatersheds in all alternatives. Alternative 2 would close an additional 6.02 mi of system routes in Upper Soldier Creek, Houseman–Beaver, and Miller-Bowns-Salt subwatersheds. Finally, Alternative 4 would close an additional 12.68 mi in Upper Willow Creek, Lick–Five Points and Worswick–Grindstone subwatersheds. Routes in Upper Soldier Creek, Lick–Five Points, Abbot–Shake, and Upper Willow Creek parallel riparian areas and streams for some or all of their distance. All subwatersheds have high or very high surface erosion potential increasing the risk of sedimentation to streams if not properly stabilized when routes become non-system trails. Motorized travel would no longer occur along any of these routes thereby reducing impacts to water quality, riparian areas and slope hydrology. These routes would remain available to non-motorized travel, however would not be as great as those portrayed in Alternative 1 because non-system routes would not be open to motorized vehicles.

Ketchum RD

Subwatersheds exceeding 1.7 mi/mi^2. Open and designated motorized routes decrease from 203 mi to 139, 147, and 127 mi, respectively, for Alternatives 2, 3, and 4. Motorized routes on high surface erosion lands decrease from 114 mi to about 70 mi for all action alternatives. With the elimination of cross-country travel and motorized use of non-system routes, there are corresponding decreases in route densities in most subwatersheds in comparison to Alternative 1. No subwatersheds would have route densities higher than 1.7 mi/mi^2. The elimination of cross-country travel under all action alternatives, as well as the conversion of non-system routes to system routes should reduce impacts to water quality as stream crossings and improperly designed and maintained routes are no longer available for motorized use. Continued use of system routes in these subwatersheds is not expected to impact water quality because all routes will be maintained.

Route Maintenance. The largest increases in system trails are in the Upper Warm Springs Creek, Warfield-West FK Warm Spring, Greenhorn Creek, and Cove Creek (Big Wood River subbasin) and Baugh Creek (Little Wood River subbasin) subwatersheds under Alternative 3. Aquatic resource impacts associated with 25 mi of the existing non-system routes would be reduced or eliminated under Alternative 3 as these routes are converted to system roads (2 mi) and trails (23 mi) and receive maintenance. Similarly, Alternative 2 would see a reduction in impacts associated with 18 mi of non-system routes and Alternative 4 would see a reduction in impacts associated with 7 mi of non-system routes as routes are converted to system trails and receive maintenance.

Alternative 2 would see fewer non-system route impacts addressed through conversion to system trails in the Cove Creek subwatershed as compared to Alternative 3. Alternative 4 would see fewer non-system route impacts addressed through conversion to system trails in Greenhorn Creek, Warfield-West FK Warm Spring, and Cove Creek subwatersheds as compared to Alternative 3. Several of the non-system routes parallel streams or have multiple stream crossings in Greenhorn Creek, Warfield-West FK Warm Spring, and Cove Creek subwatersheds. The Warfield-West FK Warm Spring subwatershed also has a high to very high surface erosion potential. These subwatersheds under Alternative 4 would not see as great a reduction of localized effects as the other 2 alternatives because these non-system routes would not be converted to system routes and maintained. Localized effects to aquatic habitat may persist from non-system routes until they recover vegetatively.

System Route Closure to Motorized Use. The Ketchum RD would close a segment of system road in the Wolftone–North Fork Deer subwatershed (Big Wood River subbasin) in all alternatives and replace it with single-track trail on the slope above the riparian area. Alternative 4 also closes a system road in the Greenhorn Creek subwatershed. Both routes being closed parallel riparian areas and streams for most of their distance. The Wolftone–North Fork Deer subwatershed also has high or very high surface erosion potential increasing the risk of sedimentation to streams if not properly stabilized when routes become non-system trails.

Elimination of cross-country travel and motorized use of non-system routes, conversion of non-system routes to system routes, and closure of select system routes to motorized travel would help improve subwatersheds with water quality in a FR and FUR condition and maintain water quality in subwatersheds in an FA condition.

Minidoka RD—Albion Division

Subwatersheds exceeding 1.7 mi/mi^2. Open or designated motorized routes decrease from 123 mi to 77 mi Alternatives 2 and 3 and 75 mi for Alternative 4. None of the proposed designated routes are on high surface erosion lands. With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease in most subwatersheds in comparison to Alternative 1. Only Upper Cassia subwatersheds would have route densities higher than 1.7 mi/mi^2 in all action alternatives. This high density is from existing system roads and trails. Because these routes are maintained, impacts to water quality from erosion should be limited as problem locations are addressed over time. Still the better access is more likely to enable other activities (i.e., dispersed recreation, firewood cutting in riparian areas) that may impact riparian and hydrologic resources. This subwatershed would be periodically reviewed to ensure these activities do not pose a risk to water quality. If they do, the SNF can take administrative actions before serious resource damage occurs.

The elimination of cross-country travel under all action alternatives, as well as the conversion of non-system routes to system routes, should reduce impacts to water quality as stream crossings and improperly designed and maintained routes are no longer available for motorized use. Continued use of system routes in these subwatersheds is not expected to impact water quality because all routes will be maintained.

Route Maintenance. In the Albion Division, aquatic resource impacts associated with 3 mi of non-system routes would be reduced or eliminated under all action alternatives as these routes are converted to system trails and receive maintenance. Two of the three non-system routes converted to system trails in these alternatives occur near streams (Brim Canyon in Upper Marsh Creek and Dry Creek in Mid-Cassia). These subwatersheds could potentially see the greatest reduction of non-system route impacts to water quality as problem areas are addressed through maintenance and poor route locations are eventually relocated.

Non-system routes will remain in portions of Upper Cassia, Mill Creek, Birch Creek, and Almo Creek subwatersheds. The precise condition of these routes is unknown as these routes have never been maintained, but several parallel headwater streams or have multiple stream crossings. Leaving non-system routes in these subwatersheds may cause localized impacts to water quality. However, impacts would not be as great as those portrayed under Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time reducing surface erosion to streams. Thus, the action alternatives should help to slowly improve water quality and help to implement watershed management plans (TMDLs).

System Route Closure to Motorized Use. No system routes would be closed under any of the alternatives in the Albion Division.

Minidoka RD—Black Pine Division

Subwatersheds exceeding 1.7 mi/mi^2. Open and designated motorized routes decrease from 146 mi to less than 107 mi or less for all action alternatives. Motorized routes on high surface erosion lands remain at about 16 mi for all action alternatives. With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease in most subwatersheds as compared to Alternative 1. No subwatersheds would have route densities higher than 1.7 mi/mi^2 in all action alternatives. The elimination of cross-country travel under all action alternatives, as well as the conversion of non-system routes to system routes should reduce impacts to water quality as stream crossings and improperly designed and maintained routes are no longer available for motorized use. Continued use of system routes in these subwatersheds is not expected to impact water quality because all routes will be maintained.

Route Maintenance. In the Black Pine Division, aquatic resource impacts associated with 2 mi of non-system routes will be reduced or eliminated under Alternatives 2 and 3 as these routes are converted to system trails and receive maintenance. Alternative 4 does not convert any non-system routes to system trails.

Non-system routes will remain in portions of several subwatersheds in this division (e.g., East Dry–Burnt Basin, Sixmile–Kelsaw, and Rice Canyon Creek). The precise condition of these routes is unknown as these routes have never been maintained, but several parallel headwater streams or have multiple stream crossings. Leaving non-system routes in these subwatersheds may cause localized impacts to water quality. However, impacts would not be as great as those portrayed under Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time helping to recover routes hydrologically. Finally, most streams on the Curlew Valley side of this division go subsurface, so the possibility of transporting sediment to a perennial or intermittent stream is very low.

System Route Closure to Motorized Use. In the Black Pine Division, there are no system routes that will be closed to motorized use.

Elimination of cross-country travel and motorized use of non-system routes would help improve subwatersheds with water quality in a FR and FUR condition and maintain water quality in subwatersheds in an FA condition.

Minidoka RD—Cassia Division

Subwatersheds exceeding 1.7 mi/mi^2. Open and designated motorized routes decrease from 1,165 mi to 770, 800, and 751 mi, respectively, for Alternatives 2, 3, and 4. Motorized routes on high surface erosion lands decrease from 217 mi to 127, 128, 122 mi, respectively, for Alternatives 2, 3, and 4. With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease in many subwatersheds as compared to Alternative 1. However, Upper Goose Creek, Upper Trapper Creek, Sawmill Creek, Upper Big Cottonwood Creek, Little Cedar–Buckhorn, Third Fork Rock Creek, North Fork Shoshone–Hopper, South Fork Shoshone Creek, and Big Creek subwatersheds would still retain route densities higher than 1.7 mi/mi^2 in all action alternatives. These high densities are from a combination of existing system roads and trails and conversion of non-system routes to system routes. Because all of these routes are maintained, impacts to water quality from erosion should be limited as problem locations are addressed over time. Still the better access is more likely to enable other activities (i.e., dispersed recreation, firewood cutting in riparian areas) that may impact soil, riparian and hydrologic resources. These subwatersheds would be periodically reviewed to ensure these activities do not pose a risk to water quality. If they do, the SNF can take administrative actions before serious resource damage occurs.

The elimination of cross-country travel under all action alternatives, as well as the conversion of non-system routes to system routes should reduce impacts to water quality as stream crossings and improperly designed and maintained routes are no longer available for motorized use. Continued use of system routes in these subwatersheds is not expected to impact water quality because all routes will be maintained.

Route Maintenance. On the Minidoka RD, the largest increase in system trails occurs on the Cassia Division (Goose Creek, Rock Creek, and Salmon Falls Creek) with all action alternatives. Aquatic resource impacts associated with 96 mi of non-system routes would be reduced or eliminated under Alternative 3 as these routes are converted to system routes and receive maintenance. Similarly, Alternative 2 would see a reduction in impacts associated with 67 mi of non-system routes and

Alternative 4 would see a reduction of impacts associated with 58 mi of non-system routes as these routes are converted to system trails and receive maintenance. Trout Creek, Piney Goose, Upper Goose Creek, Fall Creek, Third Fork Rock Creek, and North Fork/South Fork Shoshone Creek subwatersheds would have the greatest number of non-system routes converted to system routes across all action alternatives. Other subwatersheds would see improvements as problem locations receive maintenance or are relocated over time.

Alternative 4 would convert fewer non-system routes to system trails than Alternative 2 in Beaverdam Creek, Cave Gulch, Upper Goose Creek, and Fifth Fork of Rock Creek. More non-system routes will remain in these subwatersheds, which will not receive maintenance. The precise condition of these routes is unknown, but several parallel streams for most of their distance and have multiple stream crossings in Beaverdam Creek, Upper Goose Creek, and Fifth Fork of Rock Creek. Given their location it is possible some routes would continue to intercept overland flow and cause erosion to streams. This may result in localized impacts to water quality. However, impacts would not be as great as those portrayed in Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time helping to recover routes hydrologically.

System Route Closure to Motorized Use. Alternative 3 closes the fewest system miles on the Minidoka RD, while Alternative 4 closes the most. The Minidoka RD would close a system road and trails in Upper Big Cottonwood Creek in all alternatives. Alternatives 2 and 4 would both close a system trail in Bear Hollow in Upper Goose Creek, while Alternative 4 would close system routes in Big Hollow subwatersheds. The Bear Hollow route parallels riparian areas and streams for some or all of its distance.

Minidoka RD—Raft River Division

Subwatersheds exceeding 1.7 mi/mi^2. Open and designated motorized routes decrease from 247 mi to about 111 mi for all action alternatives. Motorized routes on high surface erosion lands decrease from 221 mi to about 85 mi for each of the action alternatives. With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease in most subwatersheds in comparison to Alternative 1. No subwatersheds would have route densities higher than 1.7 mi/mi^2 in all action alternatives. The elimination of cross-country travel under all action alternatives, as well as the conversion of non-system routes to system routes should reduce impacts to water quality as stream crossings and improperly designed and maintained routes are no longer available for motorized use. Continued use of system routes in these subwatersheds is not expected to impact water quality because all routes will be maintained.

Route Maintenance. On the Raft River Division, the largest increase in system trails occurs in Upper Clear Creek, East Bally Mountain, and Wildcat Creek subwatersheds with all action alternatives. Aquatic resource impacts associated with 7 mi of non-system routes (5 mi of trail and 2 mi of road) would be reduced or eliminated under Alternative 3 as these routes are converted to system roads or trails and receive maintenance. Similarly, aquatic resource impacts associated with 6 mi of non-system routes (5 mi of trails and 1 mi of road) would be reduced or eliminated under Alternatives 2 and 4 as these routes are converted to system roads or trails and receive maintenance.

Several non-system routes will remain in Johnson Creek, Onemile Creek, and Rice Creek subwatersheds. The precise condition of these routes is unknown, but several parallel streams for most of their distance and have multiple stream crossings. Given their location it is possible some routes would continue to intercept overland flow and cause erosion to streams. This may result in localized impacts to water quality. However, impacts would not be as great as those portrayed under Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time helping to recover routes hydrologically.

System Route Closure to Motorized Use. In the Raft River Division, there are no system routes that will be closed to motorized use.

Elimination of cross-country travel and motorized use of non-system routes, and conversion of some non-system routes to system routes would help improve subwatersheds with water quality in a FR and FUR condition and maintain water quality in subwatersheds in an FA condition.

Minidoka RD—Sublett Division

Subwatersheds exceeding 1.7 mi/mi^2. Open and designated motorized routes decrease from 191 mi to about 132 mi for all action alternatives. Motorized routes on high surface erosion lands decrease from 39 to 21 mi for each of the alternatives. With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease in most subwatersheds in comparison to Alternative 1. No subwatersheds would have route densities higher than 1.7 mi/mi^2 in all action alternatives. The elimination of cross-country travel under all action alternatives, as well as the conversion of non-system routes to system routes should reduce impacts to water quality as stream crossings and improperly designed and maintained routes are no longer available for motorized use. Continued use of system routes in these subwatersheds is not expected to impact water quality because all routes will be maintained.

Route Maintenance. On the Sublett Division, aquatic resource impacts associated with 6 mi of non-system routes would be reduced or eliminated under all the action alternatives as these routes are converted to system trails and receive maintenance. The largest increase in system trails occurs in the North Heglar Canyon Creek and South Heglar Canyon Creek subwatersheds. Lake Fork Creek and Upper Sublett Creek subwatersheds would also see improvements to non-system routes as problem locations receive maintenance or are relocated over time.

Several non-system routes will remain in North Heglar Canyon Creek, Lake Fork Creek and Upper Sublett Creek subwatersheds. The precise condition of these routes is unknown, but several parallel streams for most of their distance and have multiple stream crossings. Given their location it is possible some routes would continue to intercept overland flow and cause erosion to streams. This may result in localized impacts to water quality. However, impacts would not be as great as those portrayed under Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time helping to recover routes hydrologically.

System Route Closure to Motorized Use. In the Cassia Division, there are no system routes that will be closed to motorized use.

Elimination of cross-country travel and motorized use of non-system routes, and conversion of some non-system routes to system routes would help improve subwatersheds with water quality in a FR and FUR condition and maintain water quality in subwatersheds in an FA condition.

Issue 2: Wetland and Riparian Conservation Areas

Wetland and riparian areas are particularly vulnerable to motorized impacts because human use is often concentrated in and near these areas where the terrain and gradient often provide easy access. Off-route use can modify wetland hydrology by causing headcutting or by altering or concentrating diffuse water flows. Either process induces erosion, and can drain the local water table, affecting wetland and riparian condition and function. Rutting and compaction can lead to a loss of organic content of wetland soils from oxidation, which can lead to a loss of productivity and hydrologic function.

Indicators:

- Miles of open or designated roads within RCAs
- Miles of open or designated roads within RCAs on high surface erosion hazard lands
- Percent of RCAs open to motorized use and dispersed camping.

Affected Environment—Wetlands Habitat and Riparian Condition

The data presented in this section can also be viewed in its original, detailed, data-table form in the Soils/Hydrology Resource Specialist Report found in the project record for the route designation EA.

Fairfield RD

Boardman Creek is the only subwatershed in the route designation area that has overall FA aquatic conditions (instream habitat and riparian). This subwatershed has good water quality (inchannel sediment averaging 8%); stable stream banks (>85%); no fish barriers; low road densities; no cattle grazing; and few developed or dispersed campsites. The East Fork Threemile Creek, Threemile, and Elk–Fricke subwatersheds in the route designation area have overall FUR aquatic conditions (instream habitat and riparian). This is due to habitat and riparian modification from residential developments, agriculture, grazing, and roads on private land. Streambank stability has been impacted by grazing and agriculture, averaging 76%. Streams on private land frequently go dry in the summer from irrigation, except in areas that are replenished by springs. All 303(d) listed stream segments occur entirely on private land in these drainages.

The majority of subwatersheds within the South Fork Boise River subbasin (Abbot–Shake, Big Peak, Big Water–Virginia, Houseman–Beaver) have overall FR aquatic conditions. These subwatersheds generally have marginal water quality (inchannel sediment averaging 14%), some culvert barriers, marginal habitat conditions, road densities averaging 0.56 mi/mi^2, moderate road densities (1.34 mi/mi^2) in RCAs, cattle grazing, and some developed or dispersed campsites.

Subwatersheds (Lick–Five Points, Miller-Bowns-Salt, Redrock–Carrie) have overall FUR aquatic conditions. These subwatersheds generally have poorer water quality (inchannel sediment averaging 30%), more unstable stream banks, more culvert barriers, simplified habitat conditions, road densities above 1.00 mi/mi^2, higher road densities (3.10 mi/mi^2) in RCAs, more cattle grazing, and many developed or dispersed campsites.

Within the Camas Creek subbasin, the Upper Willow Creek, Phillips–Wardrop, Upper Soldier Creek subwatersheds have mixed aquatic conditions (instream habitat and riparian). Phillips–Wardrop has FUR riparian conditions due to moderate road densities within RCAs, residential developments, grazing, dispersed recreation, and trails. However, habitat conditions are FR because excessive sediment fills pools, there is high substrate embeddedness (70% average), and loss of cottonwood stands in select locations from developments within RCAs. In contrast, aquatic conditions are better in Upper Soldier Creek. Overall habitat conditions are FA because road densities within RCAs are moderate (1.6 mi/mi^2), embeddedness averages 23%, and bank stability is >90%. Riparian conditions are FR due to localized impacts occurring from grazing and activities associated with roads, Soldier Mountain ski area, recreation (campsites and trails), and residential construction on private land.

Ketchum RD

The majority of subwatersheds (Cove Creek, Greenhorn Creek, Upper Deer Creek, Upper Warm Springs Creek) in the route designation area have overall FR aquatic conditions (instream habitat and riparian). These subwatersheds have generally fair to good habitat conditions (average bank stability 94%), road densities averaging 0.54 mi/mi^2, moderate road densities in RCAs (1.76 mi/mi^2 average), localized impacts from sheep, and some developed or dispersed campsites in RCAs.

Overall, aquatic habitat is FUR in the Baugh Creek subwatershed due to higher sedimentation and bank instability (59% stable) and moderate road densities in RCAs (2.58 mi/mi^2). Additional roads occur on private lands in the lower portions of Baugh Creek. Livestock grazing, dispersed recreation, roads, activities on private land and high natural sedimentation rates also affect fish habitat.

Aquatic conditions in remaining subwatersheds (Warfield–West Fork Warm Spring, and Wolftone–North Fork Deer) are FUR. These subwatersheds generally have fair habitat conditions (average bank stability 90% and high surface fines), road densities averaging 0.93 mi/mi^2, high road densities in RCAs (5.83 mi/mi^2 average), localized impacts from sheep grazing, mining, and many developed or dispersed campsites in RCAs. Aquatic conditions in the lower portions of the Wolftone–North Fork Deer and Greenhorn Creek subwatersheds also are influenced by residential developments, grazing, and roads on private land.

Minidoka RD—Albion Division

Aquatic conditions (instream habitat and riparian) are FUR in the majority of the Goose Creek subwatersheds due to high road densities in RCAs (average 4.1 mi/mi^2), bank stability averages 67%, high surface fines (21%), and localized impacts from grazing, dispersed recreation, and trails. Similarly, the Almo Creek, Mid-Cassia and Upper Cassia Creek subwatersheds have FUR instream habitat and/or riparian conditions. These subwatersheds have road densities averaging 1.16 mi/mi^2, higher surface fines (41%), and localized impacts from grazing, dispersed recreation, and trails. Aquatic conditions (instream habitat and riparian) are FR in the Howell Creek and Upper Marsh Creek due to moderate road densities in RCAs (average 1.62 mi/mi^2), high surface fines (21%), and localized impacts from grazing, recreation, and activities on private land. The Clyde Creek and Blacksmith Creek subwatersheds also have FR aquatic conditions (instream habitat and riparian). These subwatersheds have generally fair conditions (average bank stability 82%), road densities averaging 1.30 mi/mi^2, localized grazing impacts, and some developed or dispersed campsites in RCAs. Some locations within these subwatersheds are in a FA condition as shown by the bank stability rating (averages 87%) in Upper Marsh Creek. Riparian vegetation is not functioning properly in localized areas due to impacts from roads, livestock grazing, and dispersed recreation. Many streams are also still recovering from historic grazing that caused channel downcutting, lower water tables, and increased sedimentation. Where roads parallel streams for long distances streams have likely been straightened, harden, or relocated.

Stream conditions have been degraded on private lands from irrigation diversions, roads, channelization, dispersed recreation and grazing. This has caused increased sedimentation, higher bank instability, and intermittent flows. An example of this is lower Mill Creek, which has been channelized and/or moved from its original course and dewatered by irrigation. Cassia and Almo Creeks rarely reach the Raft River during the irrigation season. Numerous grain fields, pastures, and hay crop fields border streams along much of the lower reaches. Similarly, much of the flow in lower Marsh and Howell Creek is diverted for irrigation uses. Most streams are dewatered in the lower reaches during the irrigation season, severely impacting fish habitat. Where they are not completely dewatered, reduced flows have resulted in elevated water temperatures, fragmented habitat, and accelerated sediment.

Minidoka RD—Black Pine Division

Streams within the Curlew Valley subbasin that fall within the Black Pine division tend to be small and ephemeral in nature. Riparian habitat consists of woody vegetation along ephemeral streams or in areas with shallow groundwater. Riparian vegetation is FR in localized areas due to impacts from livestock grazing, roads, dispersed recreation, and fire exclusion. Aspen and willow communities are becoming old and decadent, and are not regenerating due to fire exclusion and livestock use.

The West Dry-Eightmile-Fisher and Sixmile–Kelsaw subwatersheds have FUR instream habitat and/or riparian conditions. These subwatersheds have road densities averaging 3.16 mi/mi^2 within RCAs, higher surface fines (41%), and localized impacts from grazing, dispersed recreation, and trails. Riparian vegetation is not functioning properly in localized areas due to impacts from roads, livestock grazing, and dispersed recreation.

Poorer conditions are also due to impacts from irrigation diversions, roads, channelization, and grazing on private land. Eightmile and Sixmile Creeks rarely reach the Raft River during the irrigation season. Numerous grain fields, pastures, and hay crop fields border streams along much of the lower reaches. Most streams are dewatered in the lower reaches during the irrigation season, severely impacting fish habitat. Other activities have also lead to higher bank instability, channelization, and higher sedimentation.

Minidoka RD—Cassia Division

The majority of subwatersheds in the route designation area have overall FUR ratings for instream habitat and FR ratings for riparian condition. Overall, aquatic conditions (instream habitat and riparian) in the Middle Snake subbasin are FA in the East Fork Dry Creek and Middle and West Fork Dry Creek subwatersheds in the route designation area. These subwatersheds have good water quality (inchannel sediment averaging 8%), stable stream banks (>90%), no culvert fish barriers, and no streamside roads. Localized impacts from grazing and developed/dispersed recreation occur, but are not severe enough to affect overall conditions in each subwatershed. The Fourth Fork Rock Creek, Fifth Fork Rock Creek, and North Cottonwood Creek subwatersheds have FUR aquatic conditions (instream habitat and riparian). These subwatersheds have bank stability averaging 76%, higher surface fines (28%), and localized impacts from grazing, dispersed recreation, and trails.

Aquatic conditions (instream habitat and riparian) are FUR in several subwatersheds in the Salmon Falls subbasin due to high road densities in RCAs (average 4.58 mi/mi^2), bank stability (averages 59%), high amounts of surface fines (35%), and localized impacts from grazing, dispersed recreation, and trails. Many streams are also still recovering from historic grazing that caused channel downcutting, lower water tables, and increased sedimentation.

Aquatic conditions (instream habitat and riparian) are FUR in the majority of Goose Creek subwatersheds due to high road densities in RCAs (average 4.1 mi/mi^2), bank stability (averages 67%), high surface fines (21%), and localized impacts from grazing, dispersed recreation, and trails. Many streams are also still recovering from historic grazing that caused channel downcutting, lower water tables, and increased sedimentation. Where roads parallel streams for long distances, streams have likely been have straightened, harden, or relocated. Some of the higher fine sediment in lower portions of Trapper, Lone Cedar Canyon, and Beaverdam subwatersheds may be due to streams flowing through floodplains composed of fine textured sands and silt derived from alluvium and Miocene lake deposits.

Minidoka RD—Raft River Division

All of the Raft River subwatersheds except Johnson Creek have FR instream habitat and/or riparian conditions due to high road densities within RCAs (an average of 3.54 mi/mi^2) and localized impacts from grazing, recreation, and activities on private land.

Poorer conditions are also due to impacts from irrigation diversions, roads, channelization, and grazing on private land. Johnson Creek rarely reaches the Raft River during the irrigation season. Numerous grain fields, pastures, and hay crop fields border streams along much of the lower reaches. Most streams are dewatered in the lower reaches during the irrigation season, severely impacting fish habitat. Other activities have also lead to higher bank instability, channelization, and higher sedimentation. There is no fish habitat in the Duffy Creek subwatersheds due to the small size and ephemeral nature of area streams. Riparian habitat consists of woody vegetation along ephemeral streams or in areas with shallow groundwater. Riparian vegetation is FR in localized areas due to impacts from livestock grazing, roads, dispersed recreation, and fire exclusion. Aspen and willow communities are becoming old and decadent, and are not regenerating due to fire exclusion and livestock use.

The Upper Clear Creek, Onemile Creek, Upper George Creek, and Wildcat Creek subwatersheds have FR aquatic conditions (instream habitat and riparian). These subwatersheds generally have fair conditions (average bank stability 82%), with road densities averaging 1.27 mi/mi^2, and localized grazing impacts and some developed or dispersed campsites in RCAs. Aquatic conditions on private land are similar to those described previously with impacts from irrigation diversions, roads, channelization, and grazing.

Minidoka RD—Sublett Division

Aquatic conditions (instream habitat and riparian) are FR in the Houtz Canyon, North Heglar Canyon Creek, South Heglar Canyon Creek, Lake Fork Creek and Upper Sublett Creek subwatersheds due to moderate road densities. Within RCAs, the Upper South Fork Rock Creek, North Heglar Canyon Creek, South Heglar Canyon Creek, Lake Fork Creek and Upper Sublett Creek subwatersheds are all FUR due to high road densities within RCAs (average 7.29 mi/mi^2) and localized impacts from grazing, recreation, and activities on private land.

Stream conditions have been degraded on private lands from irrigation diversions, roads, channelization, agriculture, and grazing. This has caused elevated water temperatures, fragmented habitat, reduced stream flows, and accelerated sediment.

Aquatic conditions are FUR in Upper South Fork Rock Creek due to high surface fines (85%) and poor bank stability (55%). There is no fish habitat in subwatersheds that drain NFS lands on the east side of the Sublett MA due to the small size and ephemeral nature of area streams. Rock Creek on private land has been altered from agricultural activities. The Lake Fork Creek and Upper Sublett Creek subwatersheds have FR aquatic conditions (instream habitat and riparian). These subwatersheds generally have fair conditions (average bank stability 82%), road densities averaging 1.30 mi/mi^2, localized grazing impacts, and some developed or dispersed campsites in RCAs. Aquatic conditions on private land are similar to those described previously with impacts from irrigation diversions, roads, channelization, and grazing.

Environmental Effects—Wetland Habitat and RCAs

Effects Common to Alternative 1—No Action

Roads and trails provide access to and concentrate use within riparian areas and streams by humans. Travel routes within riparian corridors can alter or remove riparian vegetative communities, with direct and indirect impacts on riparian and stream ecosystems (Furniss Roelorfs, and Yee 1991; Forman 2003). Payne, Foster and Leininger (1983) recorded a direct relationship between the number of trips over an area and the amount of damage to vegetation: up to 99% vegetation loss resulted after 32 passes with an ATV. Vegetation loss was found to carry over into subsequent years and, after one year, up to 85% of ATV tracks were still visible. Some tracks were still evident two years after the last passage of an ATV.

Non-system routes through riparian areas are susceptible to compaction, rutting, and puddling when used by wheeled or tracked vehicles (Aust 1994). Such impacts result in alterations to soil strength and structure, accelerated erosion, decreased site productivity, and disruption of the area's hydrology (Aust et al. 1992). Studies found that OHV use in wetlands, meadows, and bogs create ruts that alter hydrological patterns as they change surface flow and groundwater patterns (Lodge 1994; Duever et al. 1986; Heede 1983; Duever, Carlson, and Riopelle 1981).

Establishment of riparian campsites often leads to trampling or cutting of riparian vegetation, soil compaction, erosion, bank erosion, and litter and water pollution. Campsites situated in flatter terrain tend to be larger and more numerous, and result in greater impacts to soils and hydrologic resources. Campsites established in streamside areas can create a localized loss of large woody debris (LWD) and potential recruitment. Users are often attracted to water and will seek it out for campsites or play areas if in the vicinity.

With continued unregulated cross-country travel and its associated dispersed recreation, riparian trend is not expected to improve. Forest Plan direction (SWST01, SWST04, etc.) will not be met.

Fairfield RD

Table 3-30 visually depicts the summary of indicators, by alternative, for the Fairfield RD. The summary was derived from a much more detailed analysis that is found in the Soils/Hydrology Resource Specialist Report found in the project record for the route designation EA.

Table 3-30. Summary of indicators by alternative for the Fairfield RD.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Miles of open or designated routes in Riparian Conservation Areas (RCAs)	203	147	160	143
Miles of open or designated routes in RCAs on high surface erosion lands	95	66	69	61
Percent of RCAs open to motorized use and dispersed camping[a]	40	27	28	27

a. Percentage based on total acres within RCAs adjacent to open or designated motorized routes.

Approximately 13,521 acres of riparian habitat adjacent to 203 mi of existing system and non-system routes would continue to be used for motorized travel and dispersed camping on the Fairfield RD. Approximately 95 mi of these routes are located on landtypes with high surface erosion hazards. Eight of the subwatersheds on the Fairfield RD have more than half of their riparian acres accessible by system or non-system routes. Abbot–Shake, Threemile Creek, Big Water–Virginia, Lick–Five Points, Red Rock–Carrie, Upper Little Smoky Creek, Basalt Creek, and South Fork Lime–Hearn have the highest amount of accessible riparian areas. These subwatersheds may be more prone to damage of vegetation, soil compaction, and soil erosion in riparian areas from motorized use and dispersed recreation.

With the exception of the North Fork Lime Creek subwatershed, RCAs within all of the subwatersheds in the route designation area were determined to be FR or FUR. System and non-system routes and dispersed camping have contributed to this ranking. Route densities within RCAs are expected to remain the same or increase under Alternative 1.

Ketchum RD

Table 3-31 visually depicts the summary of indicators, by alternative, for the Ketchum RD. The summary was derived from a much more detailed analysis that is found in the Soils/Hydrology Resource Specialist Report found in the project record for the route designation EA.

Table 3-31. Summary of indicators by alternative for the Ketchum RD.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Miles of open or designated routes in Riparian Conservatin Areas (RCAs)	95	66	69	61
Miles of open or designated routes in RCAs on high surface erosion lands	47	32	33	31
Percent of RCAs open to motorized use and dispersed camping[a]	49	34	36	33
a. Percentage based on total acres within RCAs adjacent to open or designated motorized routes.				

Approximately 4,342 acres of riparian habitat associated with motorized recreation and cross-county travel could be used for dispersed camping on the Ketchum RD. The riparian areas are located adjacent to about 95 mi of existing routes, with 47 mi of routes on lands with a high erosion potential. This accounts for about 50% of the subwatersheds on the Ketchum RD having more than one-half of their riparian acres accessible by system or non-system routes. Wolftone–North Fork Deer, Warfield–West Fork Warm Springs, and Baugh Creek have the highest amount of accessible riparian areas. These subwatersheds may be more prone to damage of vegetation, soil compaction, and soil erosion in riparian areas from motorized use and dispersed recreation.

With the exception of the Upper Deer Creek subwatershed, RCAs within all of the subwatersheds in the route designation area were determined to be FR or FUR. System and non-system routes and dispersed camping have contributed to this ranking. Route densities within RCAs are expected to remain the same or increase under Alternative 1.

Minidoka RD

Table 3-32 visually depicts the summary of indicators, by alternative, for the Minidoka RD and its five divisions. The summary was derived from a much more detailed analysis that is found in the Soils/Hydrology Resource Specialist Report found in the project record for the route designation EA.

Minidoka RD—Albion Division

Approximately 1,811 acres of riparian habitat currently associated with motorized recreation and cross-county travel could be used for dispersed camping on the Albion Division. Of these acres, 38% are currently accessible by 28 mi of system or non-system motorized routes. Subwatersheds with the highest amount of accessible riparian areas occur in the Upper Cassia Creek, Howell Creek, and Blacksmith Creek subwatersheds. These subwatersheds may be more prone to damage of vegetation, soil compaction, and soil erosion in riparian areas from motorized use and dispersed recreation.

Table 3-32. Summary of indicators by alternative, by division, for the Minidoka RD.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Miles of Open or Designated Routes in Riparian Conservation Areas (RCAs)	Albion: 28 Black Pine: 58 Cassia: 320 Raft River: 49 Sublett: 116	Albion: 16 Black Pine: 46 Cassia: 188 Raft River: 27 Sublett: 80	Albion: 16 Black Pine: 46 Cassia: 196 Raft River: 27 Sublett: 80	Albion: 16 Black Pine: 46 Cassia: 179 Raft River: 27 Sublett: 80
Miles of Open or Designated Routes on High Surface Erosion Lands	Albion: 0 Black Pine: 12 Cassia: 97 Raft River: 40 Sublett: 24	Albion: 0 Black Pine: 12 Cassia: 53 Raft River: 22 Sublett: 16	Albion: 0 Black Pine: 12 Cassia: 54 Raft River: 22 Sublett: 16	Albion: 0 Black Pine: 12 Cassia: 52 Raft River: 22 Sublett: 16
Percent of RCAs open to motorized use and dispersed camping[a]	Albion:38 Black Pine: 55 Cassia:59 Raft River: 53 Sublett: 86	Albion: 29 Black Pine: 27 Cassia: 28 Raft River: 22 Sublett: 37	Albion: 36 Black Pine: 27 Cassia: 28 Raft River: 23 Sublett: 37	Albion: 28 Black Pine: 27 Cassia: 27 Raft River: 22 Sublett: 37

a. Percentage based on total acres within RCAs adjacent to open or designated motorized routes.

RCAs within all of the subwatersheds in the route designation area were determined to be FR or FUR. System and non-system routes and dispersed camping have contributed to this ranking. Route densities within RCAs are expected to remain the same or increase under Alternative 1.

Minidoka RD—Black Pine Division

Approximately 4,269 acres of riparian habitat associated with motorized recreation and cross-county travel could be used for dispersed camping on the Black Pine Division. There are an estimated 58 mi of system and non-system routes located in riparian areas and about 12 mi of these routes are on high surface erosion lands. These routes provide access to approximately 55% of the riparian acres within the Black Pine Division. Subwatersheds with the highest amount of accessible riparian areas occur in Sixmile–Kelsaw, Sweetzer Canyon–Meadow, and Pole Canyon Creek subwatersheds. These subwatersheds may be more prone to damage of vegetation, soil compaction, and soil erosion in riparian areas from motorized use and dispersed recreation.

RCAs for which data was available were determined to be FUR. System and non-system routes and dispersed camping have contributed to this ranking. Route densities within RCAs are expected to remain the same or increase under Alternative 1.

Minidoka RD—Cassia Division

Approximately 16,390 acres of riparian habitat associated with motorized recreation and cross-county travel could be used for dispersed camping on the Cassia Division. These areas are accessible by 320 mi of roads and trails currently open to motorized travel. The 97 mi of the RCA routes on high surface erosion lands increases the likelihood that eroded materials are more efficiently delivered to nearby streams. Subwatersheds with extensive system and non-system routes have a higher potential for dispersed camping. Approximately 60% of the riparian acres within the Cassia Division currently are accessible by some type of system or non-system motorized routes. Subwatersheds with the highest amount of accessible riparian areas occur in Lone Cedar Canyon Creek, Fall Creek, Big Cedar Canyon Creek, Little Cedar–Buckhorn, Fourth Fork Rock Creek, North Cottonwood Creek, Horse Creek, North Fork Shoshone–Hopper, and South Fork Shoshone Creek subwatersheds. These subwatersheds may be more prone to damage of vegetation, soil compaction, and soil erosion in riparian areas from motorized use and dispersed recreation.

RCAs for which data was available were determined to be FR or FUR. System and non-system routes and dispersed camping have contributed to this ranking. Route densities within RCAs are expected to remain the same or increase under Alternative 1.

Minidoka RD—Raft River Division

About 50 mi of existing routes have been identified in riparian areas on the Raft River Division; 40 mi are on high surface erosion lands. These routes provide motorized access to approximately 3,359 acres of riparian habitat, which could also be used for dispersed camping and other uses. Approximately 53% of the riparian acres within the Raft River Division currently are accessible by some type of system or non-system motorized routes. Subwatersheds with the highest amount of accessible riparian areas occur in Onemile Creek and East Bally Mountain subwatersheds. These subwatersheds may be more prone to damage of vegetation, soil compaction, and soil erosion in riparian areas from motorized use and dispersed recreation.

RCAs for which data was available were determined to be FR or FUR. System and non-system routes and dispersed camping have contributed to this ranking. Route densities within RCAs are expected to remain the same or increase under Alternative 1. With continued unregulated cross-country travel and its associated dispersed recreation, riparian trend is not expected to improve. Forest Plan direction (SWST01, SWST04, etc.) will not be met.

Minidoka RD—Sublett Division

On the Sublett Division, there are 116 mi of routes that provide motorized access to approximately 5,500 acres of riparian habitat that could be used for dispersed camping. About 24 mi of the existing routes are on high surface erosion lands. Approximately 86% of the riparian acres within the Sublett Division currently are accessible by some type of system or non-system motorized routes. Subwatersheds with the highest amount of accessible riparian areas occur in Upper South Fork Rock Creek, North Heglar Canyon Creek, and Upper Sublett Creek subwatersheds. These subwatersheds may be more prone to damage of vegetation, soil compaction, and soil erosion in riparian areas from motorized use and dispersed recreation.

RCAs in all subwatersheds, except South Heglar Canyon Creek, for which data was available, were determined to be FR or FUR. System and non-system routes and dispersed camping have contributed to this ranking. Route densities within RCAs are expected to remain the same or increase under Alternative 1.

Alternatives 2–4 Wetland and RCAs

Effects Common to Alternatives 2–4

As cross-country travel decreases and motorized use is limited to designated routes, impacts to riparian areas should decrease. Unregulated motorized travel would no longer occur in riparian areas where motorized travel can damage riparian vegetation, soils and stream banks. Non-system routes through riparian areas are susceptible to compaction, rutting, and puddling when used by wheeled or tracked vehicles (Aust 1994). Studies found that OHV use in wetlands, meadows, and bogs create ruts that alter hydrological patterns as they change surface flow and groundwater patterns (Lodge 1994; Duever et al. 1986; Heede 1983; Duever, Carlson, and Riopelle 1981).

Fairfield RD

Overall, open or designated routes in RCAs decrease from 235 mi to 147, 160, and 143 mi, respectively, for Alternatives 2, 3, and 4. Miles of routes on lands with high erosion potential decrease from 95 to 66, 69, and 61, respectively, for Alternatives 2, 3, and 4. The acres open for dispersed camping from motorized recreation and cross-county travel decrease under each action alternative. Accessible RCA acres are reduced by 32% in Alternative 2 (8,953 acres), by 31% in Alternative 3 (9,138 acres) and 33% in Alternative 4 (8,810 acres) compared to Alternative 1 across the route designation area. At the subwatershed scale, differences among alternatives are minor. Alternative 4 reduces accessible areas in RCAs most in Upper Willow Creek, and Lick–Five Points, Worswick–Grindstone, and Upper Little Smoky Creek by removal of system routes and by not designating as many non-system routes for motorized use.

Designation of select non-system routes would have minor influence on motorized use and dispersed camping within subwatersheds, because the majority of proposed system routes on the Fairfield RD occur on ridgetops or steeper mid-slope areas. The few routes that are located in riparian areas occur in narrow, headwater valley bottoms where dispersed recreation is less conducive.

Ketchum RD

Overall, open or designated rotes in RCAs decrease from 95 mi to 66, 69, and 61 mi, respectively, for Alternatives 2, 3, and 4. Miles of routes on lands with high erosion potential decrease from 47 mi to about 33 mi for all action alternatives. The acres open for dispersed camping from motorized recreation and cross-county travel decrease under each action alternative. Accessible acres are reduced by about 30% from Alternative 1 across the route designation area. Acres are reduced from 4,342 under Alternative 1 to approximately 2,919 acres in Alternative 4, 3,056 acres in Alternative 2, and 3,196 acres in Alternative 3. At the subwatershed scale, differences among alternatives for accessible acres are minor. Alternative 4 reduces accessible areas in RCAs most in Greenhorn and Cove Creeks (Big Wood River) and Baugh Creek (Little Wood River) due to removal of system routes and not designating as many non-system routes for motorized use.

Designation of select non-system routes would have a minor influence on motorized use and dispersed camping within most subwatersheds, because the majority of proposed system routes on the Ketchum RD are on steeper mid-slope areas or narrow, headwater valley bottoms where dispersed recreation is less conducive. One exception is Cove Creek (Big Wood River subbasin) where Alternative 3 would designate 2.25 mi of non-system routes (open to vehicles 50 in. wide or less) along riparian areas in the Finley Gulch and Big Witch Creek drainages. Although these routes currently exist, motorized recreation and dispersed camping is allowed 100 ft off the designated route. This may cause trampling of riparian vegetation and soil compaction in sensitive areas. If use becomes excessive, the USFS can take administrative actions to mitigate or close the area before serious resource damage occurs.

Minidoka RD—Albion Division

Overall, open or designated routes in RCAs decrease from 28 to 16 mi for all action alternatives, with none of these routes on lands with high erosion potential. The acres accessible for dispersed camping from motorized recreation and cross-county travel decrease under each action alternative. Acres are reduced from 1,811 under Alternative 1 to approximately 1,364 acres under Alternative 4, 1,383 acres under Alternative 2 and 1,712 under Alternative 3.

Overall, establishment of new dispersed campsites from motorized recreation would decrease with all action alternatives because cross-country travel will not be allowed and many non-system routes will not be designated for motorized use. At the subwatershed scale, differences among alternatives for accessible acres are minor. Alternative 4 reduces accessible areas in RCAs slightly more in Upper Marsh Creek and Big Rocky-Smith-Willow subwatersheds due to removal of system routes and not designating as many non-system routes for motorized use.

Designation of select non-system routes in the Albion Division should have minor influences on motorized use and dispersed camping within most subwatersheds because the majority of the proposed system routes occur on steeper mid-slope areas or narrower, headwater valley bottoms where dispersed recreation is less conducive.

Minidoka RD—Black Pine Division

Overall, open or designated routes in RCAs decrease from 58 to 46 mi for all action alternatives. Routes on lands with high erosion potential decrease slightly from 12 mi to 10 or 11 mi for the action alternatives. The acres accessible for dispersed camping from motorized recreation and cross-county travel decrease under each action alternative. On the Black Pine Division, accessible acres are reduced by more than 50% from Alternative 1 across the route designation area. Acres are reduced from 4,269 under Alternative 1 to approximately 2,037 acres under Alternative 4 and 2,059 acres under Alternatives 2 and 3.

Overall, establishment of new dispersed campsites from motorized recreation would decrease with all action alternatives because cross-country travel will not be allowed and many non-system routes will not be designated for motorized use. At the subwatershed scale, differences among alternatives for accessible acres are minor. Alternative 4 reduces accessible areas in RCAs slightly more in the Sweetzer Canyon–Meadow subwatershed due to not designating as many non-system routes for motorized use.

Designation of select non-system routes in the Black Pine Division should have minor influences on motorized use and dispersed camping within most subwatersheds because the majority of the proposed system routes occur on steeper mid-slope areas or narrower, headwater valley bottoms where dispersed recreation is less conducive.

Minidoka RD—Cassia Division

Overall, open or designated routes in RCAs decrease from 320 mi to 188, 196, and 179 mi, respectively, for Alternatives 2, 3, and 4. Routes on lands with high erosion potential decrease from 97 mi to 53, 54, and 52 mi, respectively, for Alternatives 2, 3, and 4. The acres accessible for dispersed camping from motorized recreation and cross-county travel decrease under each action alternative. On the Cassia Division, accessible acres are reduced by more than 50% from Alternative 1 across the route designation area. Acres are reduced from 16,390 under Alternative 1 to approximately 7,641 acres under Alternative 4, 7,723 acres under Alternative 2 and 7,811 acres under Alternative 3.

Overall, establishment of new dispersed campsites from motorized recreation would decrease with all action alternatives because cross-country travel will not be allowed and many non-system routes will not be designated for motorized use. At the subwatershed scale, differences among alternatives for accessible acres are minor. Alternative 4 reduces accessible areas in RCAs the most in Upper Goose, Cottonwood, and Big Creeks due to removal of system routes and not designating as many non-system routes for motorized use.

On the Cassia Division, all action alternatives propose routes that parallel riparian areas for extended distances: Swanty Creek, a tributary to Trout Creek (1.72 mi, proposed trail open to vehicles 50 in. wide or less); Pole Camp Creek, a tributary to North Fork Shoshone Creek (1.07 mi, open to vehicles 50 in. wide or less); Cold Spring Canyon, a tributary to Fall Creek (1.49 mi, proposed trail open to motorcycle, bike, horse, and foot traffic); and McMullen Creek (2.09 mi, proposed trail open to motorcycle, bike, horse, and foot traffic).

In addition to these routes, Alternative 2 would designate a non-system route (proposed trail open to motorcycle, bike, horse, and foot traffic) that parallels upper Goose Creek for 2.26 mi. Alternative 3 would designate a second non-system route that parallels the other side of the Upper Goose Creek for 2 mi. Alternative 3 also would designate 2.46 mi of non-system routes in the Cottonwood Creek drainage of the Salmon Falls Creek subbasin. Finally, Alternative 4 would designate 1.96 mi of non-system routes in Little Piney Creek in Goose Creek.

Although all of these non-system routes already exist, motorized recreation and dispersed camping would be allowed 100 ft off these routes once designated. Because these proposed system routes parallel riparian areas and streams for extended distances, there are greater risks of localized impacts to riparian vegetation, stream banks, and soils if use becomes excessive. These areas should be periodically monitored for excessive use allowing the USFS to take administrative actions such as relocating or closing designated routes before serious resource damage occurs.

Minidoka RD—Raft River Division

Overall, open or designated routes in RCAs decrease from 49 to 27 mi for all three action alternatives. Miles of routes on lands with high erosion potential decrease from 40 mi to about 22 mi for all action alternatives. The acres accessible for dispersed camping from motorized recreation decrease under each action alternative. On the Cassia Division, accessible riparian areas are reduced by more than 55% from Alternative 1. Acres are reduced from 3,359 under Alternative 1 to approximately 1,361 acres under Alternatives 2 and 4, and 1,462 acres under Alternative 3.

Overall, establishment of new dispersed campsites from motorized recreation would decrease with all action alternatives because cross-country travel will not be allowed and many non-system routes will not be designated for motorized use. At the subwatershed scale, differences among alternatives for accessible acres are minor in most subwatersheds.

Minidoka RD—Sublett Division

Overall, open or designated routes in RCAs decrease from 116 mi to 80 mi for each of the action alternatives. Miles of routes on lands with high erosion potential decrease from 24 to 16 mi for all three action alternatives. The acres accessible for dispersed camping from motorized recreation and cross-county travel decrease under each action alternative. On the Cassia Division, accessible acres are reduced by more than 55% from Alternative 1 across the route designation area. Acres are reduced from approximately 5,500 under Alternative 1 to approximately 2,393 acres under all action alternatives.

Overall, establishment of new dispersed campsites from motorized recreation would decrease with all action alternatives because cross-country travel will not be allowed and many non-system routes will not be designated for motorized use. At the subwatershed level, there are no differences among alternatives for accessible acres in subwatersheds.

Issue 3: Slope Hydrology (Watershed Condition)

Travel routes can alter slope hydrology by concentrating and re-routing overland flows and intercepted groundwater, causing gullies where too much water is drained from the road and trail surface or ditchlines to a single location, and increasing stream densities within the watershed by directly draining road and trail treads and ditchlines into the channel network. Repeated motorized cross-country travel can lead to user-created routes that often have greater impacts than routes that have been engineered and constructed to reduce interactions with the water cycle and erosional processes.

- Miles of system trails receiving maintenance
- Miles of system routes closed to motorized use
- Density of routes.

Affected Environment—Watershed Condition

Fairfield RD

Total Route Density

Watershed conditions in the South Fork Boise River subbasin are largely influenced by actions on federally-managed public land. Of the 15 subwatersheds within the route designation area, 7% have total route densities (system and non-system roads and trails) less than 0.7 mi/mi^2 (FA condition), 33% have route densities between 0.7–1.7 mi/mi^2 (FR condition), and 60% have densities greater than 1.7 mi/mi^2 (FUR).

Watershed conditions within the Camas Creek subbasin are largely influenced by actions on private land. Fifty percent (50%) of the 6 subwatersheds within the route designation area have total route densities < 0.7 mi/mi^2 (FA condition) on NFS lands, while 33% have road densities between 0.7–1.7 mi/mi^2 (FR) and 17% have densities greater than 1.7 mi/mi^2 (FUR).

Density of System and Non-System Roads

In the South Fork Boise River subbasin, 33% of the 15 subwatersheds have road densities less than 0.7 mi/mi^2 (FA condition), 47% have road densities between 0.7–1.7 mi/mi^2 (FR), and 20% have densities greater than 1.7 mi/mi^2 (FUR). Those subwatersheds that have a poorer watershed condition tend to have higher overall and RCA road densities (i.e., Basalt Creek, Lick–Five Points, Miller-Bowns-Salt, Redrock–Carrie). Roads have facilitated mining, developed and dispersed recreation, non-system travel routes, and riparian firewood cutting. Some of these activities have increased sediment, altered flow regimes as travel routes intercept surface and groundwater, and accelerated impacts to riparian habitat.

In the Camas Creek subbasin, 50% of the 6 subwatersheds within the route designation area have road densities < 0.7 mi/mi^2 (FA condition) on NFS lands, while 50% have road densities between 0.7–1.7 mi/mi^2 (FR). Phillips–Wardrop and Upper Willow Creek have valley bottom roads that parallel each stream for much of their lengths resulting in high RCA road densities.

Those subwatersheds (i.e., Phillips–Wardrop and Upper Willow Creek) with higher overall and RCA road densities generally have more developed and dispersed recreation and riparian firewood cutting. The lower portions of Phillips–Wardrop, East Fork Threemile Creek, Threemile Creek, and Elk–Fricke subwatersheds are also heavily influenced by municipal water uses, agriculture, grazing, residential development and roads on private land. Collectively, these activities have resulted in increased stream sediment, removal of riparian vegetation, altered flow regimes as travel routes intercept surface flows and groundwater, reduced wood recruitment to streams, lower stream access for fish, and altered stream channels from roads and other developments.

Geomorphic integrity ratings for each subwatershed determine the current condition of soils, hydrology, and stream stability based on past and current disturbances caused by, for example, roads, timber harvest, grazing, and landslide prone areas as compared to historical conditions. Ratings are based on the ability of subwatershed soil-hydrologic conditions to absorb and store water, geomorphic resilience of streams, and overall condition of riparian areas. High geomorphic integrity represents a FA condition; while a low integrity rating represents a FUR condition that is more prone to effects from additional human or natural disturbances. Geomorphic integrity ratings for most subwatersheds in the route designation area are FR from mining, livestock grazing, roads, timber harvest, and higher amounts of surface fines from more erosive granitic geology.

Ketchum RD

Total Route Density

Watershed conditions in the Big Wood River subbasin are largely influenced by actions on federally-managed public land. Of the 6 subwatersheds within the route designation area, 83% have route densities between 0.7–1.7 mi/mi^2 (FR), and 17% have densities greater than 1.7 mi/mi^2 (FUR). Within the Little Wood River, Baugh Creek is FR, with a total route density of 0.83 mi/mi^2.

Density of System and Non-System Roads

Watershed conditions are largely influenced by actions on federally-managed land. The Greenhorn Creek, Upper Deer Creek, and Upper Warm Springs Creek within the Big Wood River subbasin and Baugh within the Little Wood River subbasin have road densities < 0.7 mi/mi^2 (FA condition) on NFS lands within the route designation area. The remaining watersheds in the route designation area have road densities between 0.7–1.7 mi/mi^2 (FR). Those subwatersheds (i.e., Warfield–West Fork Warm Spring and Wolftone–North Fork Deer) with higher road densities generally have more mining, developed and dispersed recreation, non-system travel routes, and riparian firewood cutting in localized areas. The lower portions of Wolftone–North Fork Deer and Greenhorn Creek subwatersheds are also influenced by municipal water uses, residential development, and roads on private land. Collectively these activities have resulted in increased stream sediment, removal of riparian vegetation, altered flow regimes as travel routes intercept surface flows and groundwater, reduced wood recruitment to streams, and altered stream channels from roads and other developments.

Headwater subwatersheds (i.e., Greenhorn Creek, Upper Deer Creek, and Upper Warm Springs Creek) generally are in better condition because they have fewer roads and associated management activities. However, even in these areas, localized impacts have occurred from riparian roads and trails, and sheep grazing.

Overall, road densities in the Baugh Creek subwatershed are in a FA condition (0.47 mi/mi^2), but road densities in RCAs are FUR averaging 2.58 mi/mi^2. Downstream on private land, watershed conditions are influenced by livestock grazing, irrigation, recreation, and roads. These actions have resulted in increased stream sediment, removal of riparian vegetation, altered flow regimes as travel routes intercept surface flows and groundwater, and altered stream channels from roads and other developments.

Geomorphic integrity ratings for most subwatersheds in the route designation area are FR from livestock grazing, developed and dispersed recreation, roads, irrigation withdrawals, mining, and higher amounts of surface fines from more erosive granitic geology. The geomorphic integrity in the Cove Creek subwatershed is FUR due to higher road densities and higher risk from additional disturbance. The geomorphic integrity rating for Baugh Creek is FUR from livestock grazing, developed and dispersed recreation, roads, and higher amounts of surface fines from more erosive granitic geology.

Minidoka RD—Albion Division

Total Route Density

Watershed conditions are influenced by activities on federal and private land. Of the 11 subwatersheds within the Albion Division, 82% have total route densities (system and non-system roads and trails) less than 0.7 mi/mi^2 (FA condition) and 18% have densities greater than 1.7 mi/mi^2 (FUR).

Density of System and Non-System Roads

Two of the 11 subwatersheds within the route designation area on the Albion Division have road densities less than 0.7 mi/mi^2 (FA condition) on NFS lands, 7 have road densities between 0.7–1.7 mi/mi^2 (FR) and two have road densities greater than 1.7 mi/mi^2 (FUR). Most subwatersheds have high road densities in RCAs (average 4.1 mi/mi^2).

The lower portions of most subwatersheds are heavily influenced by agriculture, irrigation, grazing, and roads on private land. Collectively these activities have resulted in increased stream sediment, removal of riparian vegetation, altered flow regimes as travel routes intercept surface flows and groundwater, reduced stream access for fish, and altered stream channels from roads and other developments.

Geomorphic integrity ratings for most subwatersheds in the route designation area are FR. Localized areas have impacts from roads, livestock grazing, and dispersed recreation. Impacts include accelerated erosion, upland compaction, and stream bank and channel modification.

Minidoka RD—Black Pine Division

Total Route Density

Watershed conditions are influenced mainly by activities on private land. Of the 8 subwatersheds within the route designation area, 50% have total route densities (system and non-system roads and trails) less than 0.7 mi/mi^2 (FA condition) and 50% have route densities between 0.7–1.7 mi/mi^2 (FR).

Density of System and Non-System Roads

Four of the eight subwatersheds within the route designation area have road densities less than 0.7 mi/mi^2 (FA condition) and three have road densities between 0.7–1.7 mi/mi^2 (FR). Most subwatersheds have high road densities in RCAs (average 3.53 mi/mi^2), with Sweetzer Canyon–Meadow having the highest (6.86 mi/mi^2) and Pole Canyon Creek having the second highest (4.97 mi/mi^2).

The lower portions of most subwatersheds are heavily influenced by grazing and roads on private land. Collectively, these activities have resulted in increased stream sediment, altered riparian vegetation and stream channels, and altered flow regimes as travel routes intercept surface flows and groundwater.

Geomorphic integrity ratings for most subwatersheds in the route designation area are FR. Some areas have impacts from roads, livestock grazing, and mining. Impacts include accelerated erosion and upland soil compaction. Geomorphic integrity in the Rice Canyon Creek, West Dry-Eightmile-Fisher and Sixmile–Kelsaw subwatersheds is FUR due to higher road densities and grazing impacts. Impacts include accelerated erosion, upland compaction, and stream bank and channel modification. Geomorphic integrity in West Dry-Eightmile-Fisher and Sixmile–Kelsaw subwatersheds are FUR due to higher road densities, grazing impacts, and water diversions.

Minidoka RD—Cassia Division

Watershed conditions are influenced by activities on federal and private land. Five of the ten Middle Snake subwatersheds within the route designation area have road densities between 0.7–1.7 mi/mi^2 (FR) on NFS lands, and the other five have road densities greater than 1.7 mi/mi^2 (FUR). Most subwatersheds also have high road densities in RCAs (average 2.98 mi/mi^2). Four of the five Salmon Falls Creek subwatersheds within the route designation area have road densities greater than 1.7 mi/mi^2 (FUR). Most subwatersheds also have high road densities in RCAs (average 4.1 mi/mi^2). One of the 15 Goose Creek subwatersheds within the route designation area has road densities less than 0.7 mi/mi^2 (FA condition) on NFS lands, six have road densities between 0.7–1.7 mi/mi^2 (FR), and the remaining eight have road densities greater than 1.7 mi/mi^2 (FUR). Most subwatersheds have high road densities in RCAs (average 4.1 mi/mi^2).

The lower portions of Middle and West Fork Dry Cr, McMullen Creek, North Cottonwood Creek, Dry Cottonwood Creek, Green–Soldier, Upper Shoshone Basin, Cottonwood Creek, and Big Creek subwatersheds, and the lower portions of most of the Goose Creek subwatersheds are heavily influenced by agriculture, grazing, residential development and roads on private land. Collectively, these activities have resulted in increased stream sediment, removal of riparian vegetation, altered flow regimes as travel routes intercept surface flows and groundwater, reduced stream access for fish, and altered stream channels from roads and other developments.

Geomorphic integrity ratings for most subwatersheds in the travel management assessment area are FR. Localized areas have impacts from roads, livestock grazing, and dispersed recreation. Impacts include accelerated erosion, upland compaction, and stream bank and channel modification. Geomorphic integrity in South Cottonwood–Trapper, Sawmill Creek, Little Cottonwood Creek, and Big Cedar Canyon Creek subwatersheds is FUR due to higher road densities and are at higher risk from additional disturbance.

Minidoka RD—Raft River Division

Total Route Density

Of the 9 subwatersheds within the Raft River Division, 11% have total route densities (system and non-system roads and trails) less than 0.7 mi/mi^2 (FA condition) and 89% have route densities between 0.7–1.7 mi/mi^2 (FR).

Density of System and Non-System Roads

Watershed conditions in the Raft River and Curlew Valley subbasins are influenced mainly by activities on federal and private land. One of the 9 subwatersheds within the route designation area has road densities less than 0.7 mi/mi^2 (FA condition) and 8 have road densities between 0.7–1.7 mi/mi^2 (FR). Most subwatersheds also have high road densities in RCAs (average 3.10 mi/mi^2), with East Bally Mountain having the highest (5.56 mi/mi^2).

The lower portions of most subwatersheds are heavily influenced by agriculture, irrigation, grazing, and roads on private land. Collectively, these activities have resulted in increased stream sediment, altered riparian vegetation and stream channels, altered flow regimes as travel routes intercept surface flows and groundwater, and reduced stream access for fish.

Geomorphic integrity ratings for most subwatersheds in the route designation area are FR. Some areas have impacts from roads, livestock grazing, and dispersed recreation. Impacts include accelerated erosion, upland compaction, and stream bank and channel modification. Geomorphic integrity in West Dry-Eightmile-Fisher and Sixmile–Kelsaw subwatersheds is FUR due to higher road densities, grazing impacts, and water diversions.

Duffy Creek in the Curlew Valley subbasin has a high road density within the RCA, but a low overall density across the subwatershed. The lower portion of this subwatershed is influenced by grazing and roads on private land. Collectively, these activities have resulted in increased stream sediment, altered riparian vegetation and stream channels, and altered flow regimes as travel routes intercept surface flows and groundwater.

Geomorphic integrity ratings for most subwatersheds in the route designation area are FR. Some areas have impacts from roads, livestock grazing, and mining. Impacts include accelerated erosion and upland soil compaction.

Minidoka RD—Sublett Division

Total Route Density

Of the 6 subwatersheds within the Sublett Division, 33% have total route densities (system and non-system roads and trails) less than 0.7 mi/mi^2 (FA) and 67% have route densities between 0.7–1.7 mi/mi^2 (FR).

Density of System and Non-System Roads

Watershed conditions are influenced mainly by activities on private land. Two of the 6 subwatersheds within the route designation area have road densities less than 0.7 mi/mi^2 (FA) and the other 4 have road densities greater than 0.7–1.7 mi/mi^2 (FR). Most subwatersheds have high road densities in RCAs, with Upper Sublett Creek having the highest at 10.2 mi/mi^2 and Upper South Fork Rock Creek having the second highest at 9.37 mi/mi^2.

The lower portions of most subwatersheds are heavily influenced by agriculture, irrigation, grazing, and roads on private land. Collectively, these activities have resulted in increased stream sediment, altered riparian vegetation and stream channels, altered flow regimes as travel routes intercept surface flows and groundwater, and reduced stream access for fish.

Geomorphic integrity ratings for all subwatersheds in the route designation area are FR from livestock grazing, roads, and irrigation withdrawals.

Environmental Effects—Watershed Condition

Effects Common to Alternative 1

Non-system routes are more likely to impact slope hydrology because they are not properly designed or maintained to safely remove intercepted surface and groundwater. Because roads and trails parallel slope contours, they connect slope areas and channels that otherwise function independently. This creates cumulative disturbances and interactions that would not exist otherwise. Higher route densities have a greater potential to concentrate and reroute overland flow and groundwater into streams (Gucinski et al. 2001). This alters the timing and magnitude of peak flows and changes base stream discharge and sub-surface flows (Furniss, Roelofs, and Yee 1991; Harr et al. 1975; Megahan 1972). As routes intercept and concentrate water, downslope gullies form and stream channels widen or downcut. Concentrated water on naturally unstable slopes also increases the potential for mass erosion.

Subwatersheds with high route densities have a higher probability of impacts from motorized recreation to slope hydrology. As motorized route densities increase, soil compaction and loss of ground cover adjacent to existing non-system routes and from the establishment of new routes increases. This may reduce geomorphic integrity by reducing a subwatershed's ability to absorb and store precipitation.

Fairfield RD

Table 3-33 visually depicts the summary of indicators, by alternative, for the Fairfield RD.

Table 3-33. Summary of indicators by alternative for the Fairfield RD.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Number of subwatersheds where route density exceeds 1.7 mi/mi^2	11	5	7	3
Miles of motorized system trails	204	225	268	202
Miles of system routes closed to motorized use	0	18.11	12.47	34.94

Under Alternative 1, route densities are expected to increase as additional user-created routes are established because of unregulated cross-country travel. This will increase impacts to slope hydrology as surface and groundwater are intercepted. On the Fairfield RD, 11 subwatersheds within the route designation area have route densities that exceed 1.7 mi/mi^2. Subwatersheds with higher route densities are more likely to have a greater potential to concentrate and reroute overland flow and groundwater into streams. Higher route densities may also alter the timing and magnitude of peak flows and changes base stream discharge and sub-surface flows (Furniss, Roelofs, and Yee 1991; Harr et al. 1975; Megahan 1972).

Ketchum RD

Table 3-34 visually depicts the summary of indicators, by alternative, for the Ketchum RD.

Table 3-34. Summary of indicators by alternative for the Ketchum RD.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Number of subwatersheds where route density exceeds 1.7 mi/mi^2	1	0	0	0
Miles of motorized system trails	95	105	111	94
Miles of system routes closed to motorized use	0	0.80	0.80	1.47

Under Alternative 1, route densities are expected to increase as additional user-created routes are established as a result of unregulated cross-country travel. This will increase impacts to slope hydrology as surface and groundwater are intercepted. On the Ketchum RD, Greenhorn Creek has a high route density (above 1.7 mi/mi^2). Subwatersheds with higher route densities are more likely to have a greater potential to concentrate and reroute overland flow and groundwater into streams. Higher route densities may also alter the timing and magnitude of peak flows and changes base stream discharge and sub-surface flows (Furniss, Roelofs, and Yee 1991; Harr et al. 1975; Megahan 1972).

Minidoka RD

Table 3-35 visually depicts the summary of indicators, by alternative and by division, for the Minidoka RD.

Table 3-35. Summary of indicators by alternative, by division, for the Minidoka RD.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Number of subwatersheds where route density exceeds 1.7 mi/mi^2	Albion: 1 Black Pine: 0 Cassia: 21 Raft River: 0 Sublett: 0	Albion: 1 Black Pine: 0 Cassia: 9 Raft River: 0 Sublett: 0	Albion: 1 Black Pine: 0 Cassia: 11 Raft River: 0 Sublett: 0	Albion: 1 Black Pine: 0 Cassia: 9 Raft River: 0 Sublett: 0
Miles of motorized system trails	Albion: 20 Black Pine: 4 Cassia: 188 Raft River: 9 Sublett: 12	Albion: 27 Black Pine: 6 Cassia: 150 Raft River: 14 Sublett: 18	Albion: 33 Black Pine: 6 Cassia: 180 Raft River: 14 Sublett: 19	Albion: 27 Black Pine: 4 Cassia: 134 Raft River: 14 Sublett: 18
Miles of system routes closed to motorized use	Albion: 0 Black Pine: 0 Cassia: 0 Raft River: 0 Sublett: 0	Albion: 0 Black Pine: 0 Cassia: 1.46 Raft River: 0 Sublett: 0	Albion: 0 Black Pine: 0 Cassia: 0.63 Raft River: 0 Sublett: 0	Albion: 1.64 Black Pine: 0 Cassia: 4.99 Raft River: 0 Sublett : 0

Minidoka RD—Albion Division

Under Alternative 1, route densities are expected to increase across the Albion Division as additional user-created routes are established as a result of unregulated cross-country travel. This will increase impacts to slope hydrology as surface and groundwater is intercepted. Subwatersheds with higher route densities (Upper Cassia Creek) are more likely to have a greater potential to concentrate and reroute overland flow and groundwater into streams. Higher route densities may also alter the timing and magnitude of peak flows and changes base stream discharge and sub-surface flows (Furniss, Roelofs, and Yee 1991; Harr et al. 1975; Megahan 1972).

Minidoka RD—Black Pine Division

Under Alternative 1, route densities are expected to increase as additional user-created routes are established as a result of unregulated cross-country travel. This will increase impacts to slope hydrology across the Black Pine Division as surface and groundwater are intercepted.

Minidoka RD—Cassia Division

Under Alternative 1, route densities are expected to increase as additional user-created routes are established as a result of unregulated cross-country travel. This will increase impacts to slope hydrology as surface and groundwater are intercepted. On the Cassia Division, 21 subwatersheds within the route designation area have route densities that exceed 1.7 mi/mi^2. Subwatersheds with higher route densities are more likely to have a greater potential to concentrate and reroute overland flow and groundwater into streams. Higher route densities may also alter the timing and magnitude of peak flows and changes base stream discharge and sub-surface flows (Furniss, Roelofs, and Yee 1991; Harr et al. 1975; Megahan 1972).

Minidoka RD—Raft River and Sublett Divisions

Under Alternative 1, route densities for both the Raft River and Sublett divisions are expected to increase as additional user-created routes are established as a result of unregulated cross-country travel. This will increase impacts to slope hydrology as surface and groundwater is intercepted. Higher route densities may also alter the timing and magnitude of peak flows and changes base stream discharge and sub-surface flows (Furniss, Roelofs, and Yee 1991; Harr et al. 1975; Megahan 1972).

Watershed Condition Effects Common to Alternatives 2–4

As motorized route densities decreases, soil compaction and loss of ground cover adjacent to existing non-system routes and from the establishment of new routes will decrease. This should slowly improve geomorphic integrity because a subwatershed's ability to absorb and store precipitation will be increased.

Once a system road is closed to motorized use, these routes would no longer receive annual maintenance, but would remain open to non-motorized recreation. These system routes likely have ditchlines, small stream culverts, and other drainage features to safely route water downstream and keep treads intact. These drainage features can plug and cause increased surface erosion or structure failure. To prevent these problems, any system road or trail that has drainage features in place and received routine maintenance in the past that is converted to a non-system route will be reviewed by the SNF within three years of the decision to determine what long-term stabilization measures are required to prevent erosion to streams and route failures. Measures may include installation of self-maintaining drainage features, stabilization of unstable cut and fill slopes, and removal of structured stream crossings. Stabilization measures would be implemented on highest priority routes as soon as funding becomes available. Closure of system routes will benefit soils and hydrologic conditions by reducing sediment sources and restoring natural slope hydrology as stabilization measures are implemented.

Fairfield RD

Subwatersheds exceeding 1.7 mi/mi^2. With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease in most subwatersheds from densities seen in Alternative 1. As previously described (water quality indicator), the number of subwatersheds with a motorized route density above 1.7 mi/mi^2 decreases under each action alternative compared to Alternative 1. Subwatersheds with lower motorized densities are less likely to concentrate and reroute overland flow and groundwater into streams. The elimination of cross-country travel under all action alternatives should also reduce impacts to slope hydrology as additional routes that are not properly designed and maintained are no longer created.

Route Maintenance. As previously described (water quality indicator), subwatersheds where the most non-system routes are converted to system routes will have fewer impacts to slope hydrology as problem areas are addressed or routes in poor locations are moved. Most subwatersheds under Alternative 3 would see system trail increases as non-system routes are converted to system routes. The largest system trails increase would occur in the Phillips–Wardrop, Upper Willow Creek (Camas Creek subbasin), Big Water–Virginia, and Little Smoky drainage (Worswick–Grindstone, Red Rock Carrie, Upper Little Smoky Creek and Basalt Creek (South Fork Boise River subbasin). Aquatic resource impacts associated with 66 mi of the existing non-system routes would be reduced or eliminated under Alternative 3 as these routes (65 mi of trail and 1 mi of road) are converted to system roads or trails and receive maintenance. Alternative 2 would see a reduction in impacts associated with 14 mi of non-system routes (13 mi of trail and 1 mi of road) and Alternative 4 would see a reduction in impacts associated with 10 mi of non-system routes as routes are converted to system roads or trails and receive maintenance.

Alternatives 2 and 4 would see more moderate system trail increases in many of the same subwatersheds as Alternative 3. However, these alternatives decrease more system trails in Upper Willow Creek, House–Beaver, and Miller-Bowns-Salt than Alternative 3, as system trails are closed to motorized use. Finally, Alternative 4 would convert fewer non-system routes to system trails than Alternatives 2 and 3. The largest differences are in Big Water–Virginia, Upper Little Smoky Creek, and Basalt Creek subwatersheds. These subwatersheds are in areas with high or very high surface erosion potential. Leaving non-system routes in these subwatersheds may cause localized impacts to slope hydrology. However, impacts would not be as great as those portrayed in Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time helping to recover routes hydrologically.

System Route Closure to Motorized Use. The Fairfield RD would close approximately 12.48 mi of system routes in Elk–Fricke and Upper Willow Creek, Abbot–Shake, Big Water–Virginia, Upper Little Smoky Creek, and Basalt Creek subwatersheds in all alternatives. Alternative 2 would close an additional 6.02 mi of system routes in Upper Soldier Creek, Houseman–Beaver, and Miller-Bowns-Salt subwatersheds. Finally, Alternative 4 would close an additional 12.68 mi in Upper Willow Creek Lick–Five Points and Worswick–Grindstone subwatersheds. Routes in Upper Soldier Creek, Lick–Five Points, Abbot–Shake, and Upper Willow Creek parallel riparian areas and streams for some or all of their distance. All subwatersheds have high or very high surface erosion potential increasing the risk of sedimentation to streams if not properly stabilized when routes become non-system trails.

Ketchum RD

Subwatersheds exceeding 1.7 mi/mi^2. With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease in most subwatersheds from densities reported for Alternative 1. As described previously (i.e., water quality indicator), the number of subwatersheds with a motorized route density above 1.7 mi/mi^2 decreases under each action alternative compared to Alternative 1. Subwatersheds with lower motorized densities are less likely to concentrate and reroute overland flow and groundwater into streams. The elimination of cross-country travel under all action alternatives should also reduce impacts to slope hydrology as additional routes that are not properly designed and maintained are no longer created.

Route Maintenance. As previously described (water quality indicator), subwatersheds where the most non-system routes are converted to system routes will have fewer impacts to slope hydrology as problem areas are addressed or routes in poor locations are moved. The largest increases in system trails are in the Upper Warm Springs Creek, Warfield-West FK Warm Spring, Greenhorn Creek, and Cove Creek (Big Wood River subbasin) and Baugh Creek (Little Wood River subbasin) subwatersheds under Alternative 3. Aquatic resource impacts associated with 25 mi of the existing non-system routes would be reduced or eliminated under Alternative 3 as these routes are converted to system roads (2 mi) and trails (23 mi) and receive maintenance. Similarly, Alternative 2 would see a reduction in impacts associated with 18 mi of non-system routes and Alternative 4 would see a reduction in impacts associated with 7 mi of non-system routes as routes are converted to system trails and receive maintenance.

Alternative 2 would see fewer non-system route impacts addressed through conversion to system trails in the Cove Creek subwatershed as compared to Alternative 3. Alternative 4 would see fewer non-system route impacts addressed through conversion to system trails in Greenhorn Creek, Warfield-West FK Warm Spring, and Cove Creek subwatersheds as compared to Alternative 3. Several of the non-system routes parallel streams or have multiple stream crossings in Greenhorn Creek, Warfield–West Fork Warm Spring, and Cove Creek subwatersheds. The Warfield–West Fork Warm Spring subwatershed also has a high to very high surface erosion potential. These subwatersheds under Alternative 4 would not see as great a reduction of localized effects to slope hydrology as the other 2 alternatives because these non-system routes would not be converted to system routes and maintained. Localized effects to slope hydrology may persist from non-system routes until they recover vegetatively.

System Route Closure to Motorized Use. The Ketchum RD would close a segment of system road in the Wolftone–North Fork Deer subwatershed (Big Wood River subbasin) in all alternatives and replace it with a single-track trail on the slope above the riparian area. It would also close a system road in Greenhorn Creek subwatershed in Alternative 4. Both routes parallel riparian areas and streams for most of their distance. The Wolftone–North Fork Deer subwatershed also has high or very high surface erosion potential increasing the risk of sedimentation to streams if not properly stabilized when routes become non-system trails.

Minidoka RD—Albion Division

Subwatersheds exceeding 1.7 mi/mi^2. With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease in most subwatersheds from densities presented under Alternative 1. This should reduce impacts to slope hydrology as routes that are not properly designed and maintained are no longer created.

As previously described (water quality indicator), only Upper Cassia subwatersheds would have route densities higher than 1.7 mi/mi^2 in all action alternatives. Subwatersheds with lower motorized densities are less likely to concentrate and reroute overland flow and groundwater into streams. This high density is from existing system roads and trails. Because these routes are maintained, impacts to slope hydrology from surface and groundwater interception should be limited as problem locations are addressed over time.

Route Maintenance. As previously described (water quality indicator), subwatersheds where the most non-system routes are converted to system routes will have fewer impacts to soils and hydrologic resources as problem areas are addressed or routes in poor locations are moved. Two of the three non-system routes converted to system trails in these alternatives occur near streams (Brim Canyon in Upper Marsh Creek and Dry Creek in Mid-Cassia). These subwatersheds could potentially see the greatest reduction of non-system route impacts to slope hydrology as problem areas are addressed through maintenance and poor route locations are eventually relocated. Alternative 4 converts fewer non-system routes to system trails because a non-system route in Big Rocky-Smith-Willow subwatershed would not be added and a system route in Upper Marsh Creek would no longer be open to motorized use. The non-system route in Big Rocky-Smith-Willow is close to a ridge so this should not impact slope hydrology.

Impacts to slope hydrology from closure of the system trail will be reviewed by the SNF within three years of the decision to determine what long-term stabilization measures are required to prevent erosion to streams and route failures.

Non-system routes will remain in portions of Upper Cassia, Mill Creek, Birch Creek, and Almo Creek subwatersheds. The precise condition of these routes is unknown as these routes have never been maintained, but several parallel headwater streams or have multiple stream crossings. Leaving more non-system routes in these subwatersheds may cause localized impacts to slope hydrology. However, impacts would not be as great as those portrayed under Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time helping to recover routes hydrologically.

System Route Closure to Motorized Use. Alternatives 2 and 3 close the fewest system miles on the Albion Division, while Alternative 4 closes the most. Alternative 4 would close a system trail in Upper Marsh Creek that parallels the headwaters of Marsh Creek for some its distance.

Minidoka RD—Black Pine Division

Subwatersheds exceeding 1.7 mi/mi^2. With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease in most subwatersheds from densities presented under Alternative 1. This should reduce impacts to slope hydrology as routes that are not properly designed and maintained are no longer created. Continued use of system routes in these subwatersheds is not expected to impact slope hydrology because all routes will be maintained.

Route Maintenance. In the Black Pine Division, aquatic resource impacts associated with 2 mi of non-system routes will be reduced or eliminated under Alternatives 2 and 3 as these routes are converted to system trails and receive maintenance. Alternative 4 does not convert any non-system routes to system trails.

Non-system routes will remain in portions of several subwatersheds in this division (e.g., East Dry–Burnt Basin, Sixmile–Kelsaw, and Rice Canyon Creek). The precise condition of these routes is unknown as these routes have never been maintained, but several parallel headwater streams or have multiple stream crossings. Leaving more non-system routes in these subwatersheds may cause localized impacts to water quality. However, impacts would not be as great as those portrayed under Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time helping to recover routes hydrologically. Finally, most streams on the Curlew Valley side of this division go subsurface, so the possibility of transporting sediment to a perennial or intermittent stream is very low.

System Route Closure to Motorized. In the Black Pine Division, there are no system routes that will be closed to motorized use.

Minidoka RD—Cassia Division

Subwatersheds exceeding 1.7 mi/mi^2. With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease in most subwatersheds from densities presented under Alternative 1. This should reduce impacts to slope hydrology as routes that are not properly designed and maintained are no longer created.

As previously described (water quality indicator), Upper Goose Creek, Upper Trapper Creek, Sawmill Creek, Upper Big Cottonwood Creek, Little Cedar–Buckhorn, Third Fork Rock Creek, North Fork Shoshone–Hopper, South Fork Shoshone Creek, and Big Creek subwatersheds would still retain route densities higher than 1.7 mi/mi^2 in all action alternatives. Because all of these routes are maintained, impacts to slope hydrology from erosion should be limited as problem locations are addressed over time. However, cumulatively higher route densities may make some subwatersheds more hydrologically responsive to precipitation events as routes capture and concentrate overland flow and groundwater into streams. Maintenance alone may not mitigate all impacts to slope hydrology in these locations. Periodic reviews in these areas should take place to determine if cumulative impacts become excessive. If they are, then additional route drainage or route removal may be required.

Route Maintenance. As previously described (water quality indicator), subwatersheds where the most non-system routes are converted to system routes will have fewer impacts to soils and hyrdologic resources as problem areas are addressed or routes in poor locations are moved. On the Minidoka RD, the largest increase in system trails occurs on the Cassia Division (Goose Creek, Rock Creek, and Salmon Falls Creek) with all action alternatives. Slope hydrology impacts associated with 96 mi of non-system routes would be reduced or eliminated under Alternative 3 as these routes are converted to system routes and receive maintenance. Similarly, Alternative 2 would see a reduction in impacts associated with 67 mi of non-system routes and Alternative 4 would see a reduction of impacts associated with 58 mi of non-system routes as these routes are converted to system trails and receive maintenance. Trout Creek, Piney Goose, Upper Goose Creek, Fall Creek, Third Fork Rock Creek, and North Fork/South Fork Shoshone Creek subwatersheds would have the greatest number of non-system routes converted to system routes across all action alternatives. Other subwatersheds would see improvements as problem locations receive maintenance or are relocated over time.

Alternative 4 would convert fewer non-system routes to system trails than Alternative 2 in Beaverdam Creek, Cave Gulch, Upper Goose Creek, and Fifth Fork of Rock Creek. More non-system routes will remain in these subwatersheds, which will not receive maintenance. The precise condition of these routes is unknown, but several parallel streams for most of their distance and have multiple stream crossings in Beaverdam Creek, Upper Goose Creek, and Fifth Fork of Rock Creek. Given their location it is possible some routes would continue to intercept overland flow and cause erosion to streams. This may result in localized impacts to slope hydrology. However, impacts would not be as great as those portrayed in Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time helping to recover routes hydrologically.

System Route Closure to Motorized Use. Alternative 3 closes the fewest system miles on the Minidoka RD, while Alternative 4 closes the most. The Minidoka RD would close system roads and trails in Upper Big Cottonwood Creek under all alternatives. Alternatives 2 and 4 would close a system road in Bear Hollow in Upper Goose Creek, while Alternative 4 would close system routes in Big Hollow subwatersheds. The Bear Hollow route parallels riparian areas and streams for some or all of its distance.

Minidoka RD—Raft River Division

Subwatersheds exceeding 1.7 mi/mi^2. With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease in most subwatersheds from densities reported under Alternative 1. No subwatersheds would have route densities higher than 1.7 mi/mi^2 under all action alternatives. The elimination of cross-country travel under all action alternatives, as well as the conversion of non-system routes to system routes should reduce impacts to slope hydrology as stream crossings and improperly designed and maintained routes are no longer available for motorized use.

Continued use of system routes in these subwatersheds is not expected to impact slope hydrology because all routes will be maintained.

Route Maintenance. As previously described (water quality indicator), subwatersheds where the most non-system routes are converted to system routes will have fewer impacts to soils and hydrologic resources as problem areas are addressed or routes in poor locations are moved. On the Raft River Division, the largest increase in system trails occurs in Upper Clear Creek, East Bally Mountain, and Wildcat Creek subwatersheds with all action alternatives. Slope hydrology impacts associated with 7 mi of non-system routes (5 mi of trail and 2 mi of road) would be reduced or eliminated under Alternative 3 as these routes are converted to system roads or trails and receive maintenance. Similarly, aquatic resource impacts associated with 6 mi of non-system routes (5 mi of trails and 1 mi of road) would be reduced or eliminated under Alternatives 2 and 4 as these routes are converted to system roads or trails and receive maintenance.

Several non-system routes will remain in Johnson Creek, Onemile Creek, and Rice Creek subwatersheds that will not receive maintenance. The precise condition of these routes is unknown, but several parallel streams for most of their distance and have multiple stream crossings. Given their location, it is possible that some routes would continue to intercept overland flow and cause erosion to streams. This may result in localized impacts to slope hydrology. However, impacts would not be as great as those portrayed under Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time helping to recover routes hydrologically.

System Route Closure to Motorized Use. In the Raft River Division, there is one (1) mile of FR 60009 system road that will be closed to motorized use.

Minidoka RD—Sublett Division

Subwatersheds exceeding 1.7 mi/mi^2. With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease in most subwatersheds from densities presented under Alternative 1. No subwatersheds would have route densities higher than 1.7 mi/mi^2 under all action alternatives. The elimination of cross-country travel under all action alternatives, as well as the conversion of non-system routes to system routes should reduce impacts to slope hydrology as stream crossings and improperly designed and maintained routes are no longer available for motorized use. Continued use of system routes in these subwatersheds is not expected to impact slope hydrology because all routes will be maintained.

Route Maintenance. As previously described (water quality indicator), subwatersheds where the most non-system routes are converted to system routes will have fewer impacts to soils and hydrologic resources as problem areas are addressed or routes in poor locations are moved. On the Sublett Division, slope hydrology impacts associated with 6 mi of non-system routes would be reduced or eliminated under all the action alternatives as these routes are converted to system trails and receive maintenance. The largest increase in system trails occurs in the North Heglar Canyon Creek and South Heglar Canyon Creek subwatersheds. Lake Fork Creek and Upper Sublett Creek subwatersheds would also see improvements to non-system routes as problem locations receive maintenance or are relocated over time.

Several non-system routes will remain in North Heglar Canyon Creek, Lake Fork Creek and Upper Sublett Creek subwatersheds. The precise condition of these routes is unknown, but several parallel streams for most of their distance and have multiple stream crossings. Given their location it is possible some routes would continue to intercept overland flow and cause erosion to streams. This may result in localized impacts to slope hydrology. However, impacts would not be as great as those portrayed under

Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time helping to recover routes hydrologically.

System Route Closure to Motorized. In the Sublett Division, there are no system routes that will be closed to motorized use.

Issue 4: Soil Productivity

The existence of travel routes can directly impact soil productivity and erosion rates by removing from productivity the land on which routes are located, contributing to long-term accelerated erosion and increasing susceptibility to detrimental disturbance as a result of dispersed uses associated with routes. Accelerated erosion and sediment delivery have been identified as a primary source of water quality pollution in many watersheds within the SNF boundary.

Indicators:

- Acres subject to DD by activity area (MU).
- Acres of TSRC by activity area (MU).

Affected Environment—Soil Productivity

Fairfield RD

The alteration of natural soil characteristics that results in immediate or prolonged loss of soil productivity and soil-hydrologic conditions (DD) is estimated to be a minimum of 14.3% within the route designation area on the Fairfield RD. Calculations for determining DD were based on documented miles of route, both system and non-system, buffered by 300 ft for roads and 100 ft for trails to account for dispersed use that occurs adjacent to those routes. Given the area open to cross-country travel and the probability of undocumented non-system routes, actual DD is most likely higher than 14.3%. This represents soil displacement and compaction primarily from past and current OHV use and dispersed uses that occur adjacent to existing routes. Thus, DD has the potential to exceed the 15% threshold stated in the Forest Plan (Standard SWST02).

TSRC, the conversion of a productive site to an essentially non-productive site for a period of more than 50 years, is estimated to be less than 1% within the route designation area. The existing roads, grazing allotment range facilities (i.e., salting areas, water developments, shipping locations), and dispersed recreation sites account for the long-term loss of soil productivity.

Ketchum RD

DD is conservatively estimated to be a minimum of 11.1% within the route designation area on the Ketchum RD. Given the area open to cross-country travel and the probability of undocumented non-system routes, actual DD is likely higher. Thus, DD has the potential to exceed the 15% threshold stated in the Forest Plan (Standard SWST02).

TSRC is estimated to be less than 1% within the route designation area. The existing roads, grazing allotment range facilities (i.e., salting areas, water developments, shipping locations), and dispersed recreation sites account for the long-term loss of soil productivity.

Minidoka RD—Albion Division

DD is conservatively estimated to be a minimum of 10.8% within the route designation area on the Albion Division of the Minidoka RD. Given the area open to cross-country travel and the probability of undocumented non-system routes, actual DD is most likely higher. However, given the existing estimate of 10.8% DD, it likely remains below the 15% threshold stated in the Forest Plan (Standard SWST02).

TSRC is estimated to be 0.6% within the route designation area. The existing roads, grazing allotment range facilities (i.e., salting areas, water developments, shipping locations), and dispersed recreation sites account for the long-term loss of soil productivity.

Minidoka RD—Black Pine Division

DD is estimated to be a minimum of 15.2% within the route designation area on the Black Pine Division of the Minidoka RD. Given the area open to cross-country travel and the probability of undocumented non-system routes, actual DD is most likely higher than 15.2%. Thus, DD exceeds the 15% threshold stated in the Forest Plan (Standard SWST02).

TSRC is estimated to be 0.8% within the route designation area. The existing roads, grazing allotment range facilities (i.e., salting areas, water developments, shipping locations), and dispersed recreation sites account for the long-term loss of soil productivity.

Minidoka RD—Cassia Division

DD is estimated to be a minimum of 24.4% within the route designation area on the Cassia Division of the Minidoka RD. Given the area open to cross-country travel and the probability of undocumented non-system routes, actual DD is most likely higher than 24.4%. DD exceeds the 15% threshold stated in the Forest Plan (Standard SWST02).

TSRC is estimated to be 1.3% within the route designation area. The existing roads, grazing allotment range facilities (i.e., salting areas, water developments, shipping locations), and dispersed recreation sites account for the long-term loss of soil productivity.

Minidoka RD—Raft River Division

DD is estimated to be a minimum of 18.2% within the route designation area on the Raft River Division of the Minidoka RD. Given the area open to cross-country travel and the probability of undocumented non-system routes, actual DD is most likely higher than 18.2%. DD exceeds the 15% threshold stated in the Forest Plan (Standard SWST02).

TSRC is estimated to be 1.0% within the route designation area. The existing roads, grazing allotment range facilities (i.e., salting areas, water developments, shipping locations), and dispersed recreation sites account for the long-term loss of soil productivity.

Minidoka RD—Sublett Division

DD is estimated to be a minimum of 16.9% within the route designation area on the Sublett Division of the Minidoka RD. Given the area open to cross-country travel and the probability of undocumented non-system routes, actual DD is most likely higher. DD exceeds the 15% threshold stated in the Forest Plan (Standard SWST02).

TSRC is estimated to be 0.9% within the route designation area. The existing roads, grazing allotment range facilities (i.e., salting areas, water developments, shipping locations), and dispersed recreation sites account for the long-term loss of soil productivity.

Environmental Effects—Soil Productivity

Summaries and conclusions in this section are derived from a more detailed analysis that is found in the Soils/Hydrology Resource Specialist Report and located in the project record for the route designation EA.

Effects Common to Alternative 1

The existence of travel routes can directly impact soil productivity and indirectly impact related watershed values through the type, extent, and location of a route, and level of traffic on a route by varying types of motorized vehicles. Direct mechanical impacts to soil resources include abrasion, compaction, shear, and displacement (Meyer and Lamansky 2002). Abrasion removes the surface vegetation and roots, increasing the susceptibility of a site to accelerated erosion. Compaction reduces pore space in the soil profile and causes loss of infiltration, which accelerates and can concentrate overland flows from surface water runoff. Shear is the destructive transfer of force through the soil that destroys the soil structure essential for soil water and nutrient movement through the soil profile. Displacement is the erosion of soil particles, generally the highly productive surface soils, from a site.

Indirect impacts to hillslope hydrologic functions include disruption of surface and groundwater flows, reduction in infiltration and percolation, surface ponding, and the loss of water holding capacity (Meyer 2002). Other indirect effects associated with erosion and sedimentation are impacts to water quality and other beneficial uses (e.g., fish habitat). These resources can be adversely impacted when accelerated erosion generates above natural levels of sediment that are delivered to nearby lakes and streams. Impacts to soil productivity and recovery of disturbed sites can be difficult and prolonged as opportunistic invasive plant species and noxious weeds from seeds transported by motorized vehicles can occupy the disturbed sites.

For TSRC values, for all RDs and divisions, Alternative 1 estimates basically represent wide-spread, unregulated opportunities for cross-country travel and unlimited development of user-created trails.

Fairfield RD

Table 3-36 visually depicts the summary of indicators for the Fairfield RD. Under Alternative 1, DD within the route designation area is estimated to be 14.3%. Continued unregulated dispersed disturbances associated with cross-country travel can potentially elevate DD to levels above 15% and exceed the threshold defined by Forest Plan Standard SWST02.

TSRC for Alternative 1 is estimated to be 0.7% and is below the 5% limit defined by Forest Plan Standard SWST03.

Table 3-36. Summary of indicators by alternative for the Fairfield RD.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Percent Detrimental Disturbance	14.3	7.8	8.1	7.1
Percent Total Soil Resource Commitment	0.7	0.4	0.4	0.4

Ketchum RD

Table 3-37 visually depicts the summary of indicators for the Ketchum RD. Under Alternative 1, DD within the route designation area on the Ketchum RD is estimated to be 11.1%. Under current management and no action (Alternative 1), unregulated dispersed disturbances associated with cross-country travel can potentially elevate DD to levels above 15%, which would exceed the threshold defined by Forest Plan Standard SWST02.

TSRC for Alternative 1 is estimated to be 0.5% and is below the 5% limit defined by Forest Plan Standard SWST03.

Table 3-37. Summary of indicators by alternative for the Ketchum RD.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Detrimental Disturbance	11.1	6.8	7.1	6.4
Total Soil Resource Commitment	0.5	0.3	0.3	0.3

Minidoka RD

Table 3-38 visually depicts the summary of soil productivity indicators for the Minidoka RD, by division. The corresponding discussions for each division follow the table.

Table 3-38. Summary of indicators by alternative, by division, for the Minidoka RD.

Indicators	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Detrimental Disturbance	Albion: 10.8 Black Pine: 15.2 Cassia: 10.8 Raft River: 18.2 Sublett: 16.9	Albion: 6.6 Black Pine: 9.0 Cassia: 6.6 Raft River: 7.2 Sublett: 9.4	Albion: 6.6 Black Pine: 9.0 Cassia: 6.6 Raft River: 7.3 Sublett: 9.4	Albion: 6.5 Black Pine: 9.0 Cassia: 6.5 Raft River: 7.2 Sublett: 9.4
Total Soil Resource Commitment	Albion: 0.6 Black Pine: 0.8 Cassia: 0.6 Raft River: 1.0 Sublett: 0.9	Albion: 0.3 Black Pine: 0.5 Cassia: 0.3 Raft River: 0.4 Sublett: 0.6	Albion: 0.3 Black Pine: 0.5 Cassia: 0.3 Raft River: 0.4 Sublett: 0.6	Albion: 0.3 Black Pine: 0.5 Cassia: 0.3 Raft River: 0.4 Sublett: 0.6

Minidoka RD—Albion Division

Under Alternative 1, approximately 10.8% of the Albion Division within the route designation area is considered DD and is attributed primarily to unregulated dispersed disturbances associated with cross-country travel. Continuation of cross-country travel can potentially elevate DD to levels above 15%.

TSRC values for Alternative 1 is 0.6% and is below the 5% limit defined by Forest Plan Standard SWST03.

Minidoka RD—Black Pine Division

Under Alternative 1, approximately 15.2% of the Black Pine Division within the route designation area is considered DD. Although the data suggests the Black Pine Division is currently not meeting SWST02, this is based on the analysis assumption that 100% of the buffered area adjacent to roads and trails is accessible and supports dispersed uses, and that all uses would result in DD. Completion of on-the-ground reconnaissance to support this analysis, field data collections for other NEPA activities, and watershed and aquatic resource monitoring activities furnish the rationale to support professional judgment that the DD percentage is more likely one-half or less of the 15.2% estimate. However, the existing DD estimate is attributed primarily to unregulated dispersed uses associated with cross-country travel and continuation of unregulated cross-country motorized travel can potentially elevate DD to levels above 15%.

TSRC for Alternative 1 is 0.8% and is below the 5% limit defined by Forest Plan Standard SWST03.

Minidoka RD—Cassia Division

Under Alternative 1, approximately 24.4% of the Cassia Division within the route designation area is considered DD. Although the data suggests the Cassia Division is currently not meeting SWST02, this is based on the analysis assumption that 100% of the buffered area adjacent to roads and trails is accessible and supports dispersed uses, and that all uses would result in DD. Completion of on-the-ground reconnaissance to support this analysis, field data collections for other NEPA activities, and watershed and aquatic resource monitoring activities furnish the rationale to support professional judgment that the DD percentage is more likely one-half or less of the 24.4% estimate. The existing DD estimate is attributed to unregulated dispersed uses associated with cross-country motorized travel, and continuation of unregulated cross-country motorized travel can potentially elevate DD to levels above 15%.

TSRC for Alternative 1 is 1.3% and is below the 5% limit defined by Forest Plan Standard SWST03.

Minidoka RD—Raft River Division

Under Alternative 1, approximately 18.2% of the Raft River Division within the route designation area is considered DD. Although the data suggests the DD levels are not meeting SWST02, this is based on the analysis assumption that 100% of the buffered area adjacent to roads and trails is accessible and supports dispersed uses, and that all uses would result in DD. Completion of on-the-ground reconnaissance to support this analysis, field data collections for other NEPA activities, and watershed and aquatic resource monitoring activities furnish the rationale to support professional judgment that the DD percentage is more likely one-half or less of the 18.2% estimate. The existing DD estimate is attributed to unregulated dispersed uses associated with cross-country motorized travel, and continuation of unmanaged cross-country motorized travel can potentially elevate DD to levels above 15%.

TSRC for Alternative 1 is 1.0% and is below the 5% limit defined by Forest Plan Standard SWST03.

Minidoka RD—Sublett Division

Under Alternative 1, approximately 16.9% of the Raft River Division within the route designation area is considered DD. Although the data suggests the DD levels are not meeting SWST02, this is based on the analysis assumption that 100% of the buffered area adjacent to roads and trails is accessible and supports dispersed uses, and that all uses would result in DD. Completion of on-the-ground reconnaissance to support this analysis, field data collections for other NEPA activities, and watershed and aquatic resource monitoring activities furnish the rationale to support professional judgment that the DD percentage is more likely one-half or less of the 16.9% estimate. The existing DD estimate is attributed to unregulated dispersed uses associated with cross-country motorized travel, and continuation of unmanaged cross-country motorized travel can potentially elevate DD to levels above 15%.

TSRC for Alternative 1 is 0.9% and is below the 5% limit defined by Forest Plan Standard SWST03.

Effects Common to Alternatives 2–4

The DD estimates for the action alternatives represent the section of the Travel Management Rule (36 CFR §212 Subpart B et seq. 2007) that allows dispersed uses adjacent to routes (roads, 300 ft; trails, 100 ft). Buffering the routes in GIS software provided the values for the maximum area potentially impacted by dispersed uses. The DD percentages assume that 100% of the buffered area adjacent to roads and trails is accessible and supports dispersed uses, and that all uses would result in DD.

TSRC for all alternatives for all MUs is consistent with Forest Plan management direction. For no action (Alternative 1), TSRC values range from 1.3% (Cassia Division, Minidoka RD) to 0.5% (Ketchum RD). Thus, TSRC is below the 5% limit defined by Forest Plan Standard SWST03. Alternative 1 basically represents wide-spread, unregulated opportunities for cross-country travel and unlimited development of user-created trails.

Fairfield RD

The DD values decrease for all the action alternatives (Table 3-39). DD levels are well under the Forest Plan threshold of 15% for the action alternatives, ranging from a low of 7.1% for Alternative 4 to a high of 8.1% for Alternative 3. TSRC values for all alternatives are consistent with Forest Plan management direction (Table 3-39). Calculations reveal TSRC values do not exceed 0.4% for all three action alternatives.

Table 3-39. Soil productivity DD and TSRC by acreage and percentages, by alternative, for the Fairfield RD.

Indicator[a]	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4
DD (acres)	31,119	17,527	18,594	16,242
DD (percent)	14.3	7.8	8.1	7.1
TSRC (acres)	893	826	861	763
TSRC (percent)	0.7	0.4	0.4	0.4
a. DD = detrimental disturbance; TSRC = total soil resource commitment.				

Ketchum RD

The DD values decrease for all the action alternatives (Table 3-40). DD levels are well under the Forest Plan threshold of 15% for the action alternatives, ranging from a low of 6.4% for Alternative 4 to a high of 7.1% for Alternative 3. TSRC values for all alternatives are consistent with Forest Plan management direction (Table 3-40). Calculations reveal TSRC values do not exceed 0.3% for all three action alternatives.

Table 3-40. Soil productivity DD and TSRC by acreage and percentages, by alternative, for the Ketchum RD.

Indicator[a]	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4
DD (acres)	8,557	5,212	5,600	4,921
DD (percent)	11.1	6.8	7.1	6.4
TSRC (acres)	300	221	236	210
TSRC (percent)	0.5	0.3	0.3	0.3
a. DD = detrimental disturbance; TSRC = total soil resource commitment.				

Minidoka RD—Albion Division

The DD values decrease for all the action alternatives (Table 3-41). DD levels are well below the Forest Plan threshold of 15% for the action alternatives, and average about 6.6% for all action alternatives. TSRC values for all alternatives for all MUs are consistent with the Forest Plan management direction (Table 3-41). Calculations reveal TSRC values are about 0.3% for all three action alternatives.

Table 3-41. Soil productivity DD and TSRC by acreage and percentages, by alternative, for the Albion Division, Minidoka RD.

Indicator[a]	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4
DD (acres)	7,225	4,555	4,549	4,450
DD (percent)	10.8	6.6	6.6	6.5
TSRC (acres)	257	229	228	225
TSRC (percent)	0.6	0.3	0.3	0.3
a. DD = detrimental disturbance; TSRC = total soil resource commitment.				

Minidoka RD—Black Pine Division

The DD values decrease for all the action alternatives (Table 3-42). DD levels for the action alternatives are estimated to be about 9% and well under the Forest Plan threshold of 15%. TSRC values for all alternatives are consistent with Forest Plan management direction (Table 3-42). Calculations reveal TSRC values are 0.5% for all three action alternatives.

Table 3-42. Soil productivity DD and TSRC by acreage and percentages, by alternative, for the Black Pine Division, Minidoka RD.

Indicator[a]	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4
DD (acres)	11,603	7,556	7,534	7,497
DD (percent)	15.2	9.0	9.0	9.0
TSRC (acres)	634	411	410	409
TSRC (percent)	0.8	0.5	0.5	0.5
a. DD = detrimental disturbance; TSRC = total soil resource commitment.				

Minidoka RD—Cassia Division

DD values decrease for all the action alternatives; however, the calculations indicate all action alternatives slightly exceed the Forest Plan threshold of 15% (Table 3-43). While the data suggests DD values for the Cassia Division do not meet SWST02, completion of on-the-ground reconnaissance to support this analysis, field data collections for other NEPA activities, and watershed and aquatic resource monitoring activities furnish the rationale to support professional judgment that the DD percentages for all alternatives for all MUs, in this division are more likely one-half or less of the values presented in the table. TSRC values for all alternatives are consistent with the Forest Plan management direction (Table 3-43). Calculations reveal TSRC values do not exceed 0.9% for all three action alternatives.

Table 3-43. Soil productivity DD and TSRC by acreage and percentages, by alternative, for the Cassia Division, Minidoka RD.

Indicator[a]	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4
DD (acres)	72,427	50,366	52,057	50,927
DD (percent)	24.4	16.0	16.2	15.9
TSRC (acres)	3,795	2,669	2,744	2,704
TSRC (percent)	1.3	0.9	0.9	0.9
a. DD = detrimental disturbance; TSRC = total soil resource commitment.				

Minidoka RD—Raft River Division

The DD values decrease for all the action alternatives (Table 3-44). At about 7.2% for all action alternatives, DD levels are well below the Forest Plan threshold of 15%. TSRC values for all alternatives are consistent with the Forest Plan management direction (Table 3-44). Calculations reveal TSRC values do not exceed 0.4% for all three action alternatives.

Table 3-44. Soil productivity DD and TSRC by acreage and percentages, by alternative, for the Raft River Division, Minidoka RD.

Indicator[a]	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4
DD (acres)	16,809	7,466	7,467	7,467
DD (percent)	18.2	7.2	7.3	7.2
TSRC (acres)	901	402	403	403
TSRC (percent)	1.0	0.4	0.4	0.4

a. DD = detrimental disturbance; TSRC = total soil resource commitment.

Minidoka RD—Sublett Division

The DD values decrease for all the action alternatives (Table 3-45). At about 9.4%, DD levels are below the Forest Plan threshold of 15% for all three action alternatives. TSRC values for all alternatives are consistent with Forest Plan management direction (Table 3-45). Calculations reveal TSRC values do not exceed 0.6% for all three action alternatives.

Table 3-45. Soil productivity DD and TSRC by acreage and percentages, by alternative, for the Sublett Division, Minidoka RD.

Indicator	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4
DD (acres)	13,204	8,788	8,787	8,787
DD (percent)	16.9	9.4	9.4	9.4
TSRC (acres)	717	471	471	471
TSRC (percent)	0.9	0.6	0.6	0.6

a. DD = detrimental disturbance; TSRC = total soil resource commitment.

Cumulative Effects—Soil and Hydrology—Alternative 1

Cumulative effects are defined as “the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions, regardless of what agency or persons undertake them” (40 CFR 1508, 2004).

As described in each issue indicator section, motorized recreation and travel routes (system and non-system) can increase sediment to streams, impact riparian vegetation and stream channels, and alter slope hydrology. All of these effects can impact water quality where the activities occur and downstream of those activities. Of all these effects, fine sediment has the greatest potential to move the furthest downstream. How far sediment moves downstream depends on the intensity, frequency, and duration of use and the spatial location of routes in relation to streams.

It is because of these fine sediment effects that the cumulative effects area for Alternative 1 is defined as all subwatersheds within the route designation area. This typically encompasses the lowest point in a subwatershed where sediment impacts are either masked by other management activities or diluted by a larger waterbody (confluence with a stream, reservoir, or lake).

Past and Present Activities

The net effect of past activities on lands administered by the SNF (included past activities by land owners and public land management agencies that have impacted SNF-administered lands) is reflected by the baseline conditions presented in Chapter 3. In general, subwatersheds with better access (high route densities) have poorer habitat and riparian conditions, altered streamflows and slope hydrology. In many locations, stream and riparian habitats have been largely altered from historic activities such as road construction, grazing, firewood cutting in riparian areas, recreation, water diversions, agriculture, and urbanization.

Short-term and site-specific effects to riparian vegetation, bank erosion, and channel widening may occur from livestock grazing in RCAs. System routes would continue to receive maintenance in accordance with required maintenance levels and schedules. Maintenance helps to limit sediment from routes over time. System routes that receive adequate maintenance in most circumstances have sufficient drainage, so water and sediment can be diverted off the route, filtered through vegetation, and not routed to streams (Furniss, Roelofs, and Yee 1991). Maintenance activities themselves can cause localized sediment increases and impacts to riparian vegetation. Fine sediment can be generated from surface and drainage maintenance, culvert replacement, repair, and cleaning, and small slide or slump removal. Brushing or removal of hazard trees near streams can cut riparian vegetation needed to maintain bank stability, shade, and LWD recruitment to streams. High visitor use of existing recreational facilities in riparian areas may trample riparian soils, stream banks, and vegetation. Many special-use permit activities can increase sediment to stream channels or impact riparian vegetation when ground disturbance near stream channels or on steeper slopes occurs. Water withdrawals can increase sediment to streams when diversion structures are maintained or replaced, and impact riparian vegetation, and fish habitat, when streams are dewatered. Restoration activities may have temporary effects from sediment increases. Actions will occur where the risk of short-term effects are worth taking because there will be significant benefits to watershed resource conditions over the long term. Timber management activities may cause localized erosion and sediment increases from yarding and hauling operations (Note: the SNF 5-year timber plan is located in the route designation EA project record). Placer mining can impact stream channels and water quality.

Wildfires

In 2006, three wildfires occurred within the route designation area on the Minidoka RD. The Burnt fire burned 791 acres on the Black Pine Division in the Curlew Valley subbasin. The potential for rill or rainsplash erosion is low due to low burn severity and well drained soils. There are also no live or intermittent streams on SNF lands within the burn, so the chance of downstream erosion is very low.

The Brown’s Canyon fire burned 345 acres in Upper George Creek on the Raft River Division. The fire was a mixed-severity burn, with some areas not burned at all and others burning at a high severity. The hydrologic analysis concluded that higher baseflows and some upslope fine sediment can be expected in the high-severity burn areas until enough vegetative recovery occurs. Upslope and riparian downed wood should store some, but not all, of the transported hillslope sediment.

The Green Canyon fire burned 2,828 acres on the Sublett Division in the Lake Walcott subbasin. Field surveys indicate that the majority of the areas burned were of a low or moderate severity with isolated areas of high severity on hydrophobic soils. The majority of the moderate and high-severity burned areas was in the Green Canyon drainage. The hydrologic analysis concluded that higher baseflows and some upslope fine sediment can be expected until enough vegetative recovery occurs. However, there are no live or intermittent streams on SNF lands in the burn area, so the chance of downstream erosion is very low.

In July, 2007, approximately 33,481 acres of National Forest land was burned in the Black Pine 2 Fire on the Black Pine Division. Plant communities affected to some degree by the Black Pine 2 Fire are primarily sagebrush/grass, mountain brush, juniper, mountain mahogany, aspen and Douglas–fir. Over the entire affected area of the burn, the fire produced patches of burned and unburned vegetation of low (72% of acreage) to moderate (27% of acreage) intensity.

Reasonably Foreseeable SNF Activities

Reasonably foreseeable activities include livestock grazing, timber sales, prescribed fire treatments, road and trail reconstruction and maintenance, use of designated recreation sites, and watershed restoration projects. On the Minidoka RD, 82.55 mi of spur and redundant roads have been identified for review and possible closure.

Reasonably Foreseeable Non-SNF Activities

It is assumed that activities on private lands will likely continue to affect riparian conditions, streamflows, and slope hydrology, albeit less than historic impacts. Those subbasins with the larger amounts of state and private lands are more likely to see greater effects (Table 3-46). Effects in these subbasins would be greatest along river valleys and the lower portions of major tributaries.

Local and state efforts (driven by, for instance, IDEQ TMDLs and the Idaho Stream Channel Protection Act) would continue to address land management activities that impact riparian conditions, streamflows, slope hydrology and aquatic resources. Because of these efforts, it is assumed that adverse effects would diminish and riparian conditions and water quality could improve over the long term.

Table 3-46. Ownership within the subbasin in the routed designation area/cumulative effects area.

Subbasin Name	Subbasin Number	Total Acres	National Forest	Private	Other Federal	State	Unclassified
Big Wood River	17040219	948,514	335,470 (35.4%)	213,843 (22.5%)	368,248 (38.8%)	30,953 (3.3%)	0
Little Wood River	17040221	758,949	69,548 (9.2%)	254,475 (33.5%)	390,519 (51.5%)	44407 (5.8%)	0
S.F. Boise River	17050113	841,560	686,726 (81.6%)	110,379 (13.1%)	10,821 (1.3%)	33,634 (4.0%)	0
Camas Creek	17040220	435,940	55,717 (12.8%)	278,349 (63.8%)	81,231 (18.6%)	20,193 (4.8%)	0
Middle Snake	17040212	1,604,786	95,623 (6.0%)	860,687 (53.6%)	616,474 (38.4%)	32,002 (2.0%)	0
Salmon Falls Creek	17040213	1,332,009	44,837 (3.4%)	133,161 (10.0%)	347,677 (26.1%)	25,613 (1.9%)	780,721 (58.6%)
Goose Creek	17040211	717,903	182,362 (25.4%)	155,009 (21.6%)	94,028 (13.1%)	12,017 (1.7%)	274,487 (38.2%)
Lake Walcott	17040209	2,291,932	40,068 (1.7%)	761,524 (33.2%)	1,422,825 (62.1%)	67,515 (3.0%)	0
Raft River	17040210	1,012,368	191,270 (18.9%)	339,098 (33.5%)	283,132 (28.0%)	23,649 (2.3%)	175,219 (17.3%)
Curlew Valley	17040309	1,250,921	76,271 (6.1%)	154,504 (12.4%)	216,656 (17.3%)	7,493 (0.6%)	795,997 (63.6%)

Cumulative Effects Summary—Alternative 1

Alternative 1 has the greatest potential for adverse cumulative impacts than any other alternative because it does not restrict either motorized recreation on non-system routes or cross-county travel. As non-system routes may exist in poor locations and usually have no design features to provide for proper drainage and erosion control, higher amounts of stream erosion and impacts to water quality, riparian areas, and slope hydrology are anticipated. These effects may be higher in subwatersheds with degraded baselines, with more on-going USFS activities where impacts cannot be completely mitigated, and where there are a higher percentage of impacts from activities conducted on private lands. Water quality is less likely to improve over time where sediment inputs remain high, which would subsequently impact everything that depends upon water quality. These impacts would likely not be consistent with Clean Water Act requirements and may result in further impairment of beneficial uses.

Dispersed camping associated with motorized recreation and cross-county travel would not be restricted. User-created routes would continue to encroach upon riparian areas and streams. Those subwatersheds with high non-system route densities have a higher probability of continued impacts to streams, riparian areas, and water quality as described previously. Again, these effects may be higher still where dispersed camping occurs in areas of degraded baselines, where impacts of activities cannot be completely mitigated, and where there are a higher percentage of impacts from activities on private lands. These areas would be less likely to improve over time.

Forest Plan Consistency

Alternative 1 allows cross-country travel and would not restrict motor vehicle use to designated system roads and trails, except in areas currently restricted. As a result, cross-country motor vehicle use could result in creation of new non-system routes where terrain is conducive to motorized traffic. Motorized use on non-system routes would be anticipated to increase under Alternative 1. Subwatersheds with high non-system route densities have a higher probability of impacts to water quality, riparian areas, and slope hydrology. Dispersed camping associated with motorized recreation and cross-county travel is not restricted by Alternative 1. Therefore, accessible riparian areas can in theory support more motorized recreation and dispersed camping. Impacts from surface erosion, route encroachments of stream channels and riparian areas, and slope hydrology from water interception would continue and may become worse in some areas. Collectively, these actions would increase risks and threats to hydrologic resources in areas with the greatest amount of motorized use and dispersed recreation.

Implementing Alternative 1 (essentially, continued no action) may make it more difficult to meet key Forest Plan direction. Specifically, the intent of SWST01, to maintain or restore water quality to fully support beneficial uses and native and desired non-native habitat for fish species, and SWST07 to ensure management activities within watersheds containing 303(d) listed water bodies improve or maintain overall progress toward beneficial use attainment for pollutants that led to the listing.

Finally, Alternative 1 will not met the intent of the watershed aquatic recovery strategy (WARS) because impacts will make it harder to secure the highest geomorphic and water quality integrities that support habitats and strong populations of wide ranging aquatic species; extend favorable conditions into adjacent subwatersheds to create a larger and more contiguous network of suitable and productive habitats; and make incremental improvements to water quality, fish habitat, and riparian conditions for aquatic and beneficial uses that will contribute to the de-listing of listed fish species and Clean Water Act 303(d) water quality limited waterbodies.

Additional discussion on Forest Plan consistency can be found in the route designation EA project record.

Cumulative Effects Common to Alternatives 2–4

As described previously, under of all the effects of Alternative 1, fine sediment has the greatest potential to move the furthest downstream. How far sediment moves depends on the intensity, frequency, and duration of use and the spatial location of designated routes and motorized dispersed camping in relationship to streams. All of the action alternatives reduce fine sediment impacts compared to Alternative 1.

Based on this information, the cumulative effects area would only include those subwatersheds where a proposed route designation change occurs.

All past, present, and reasonably foreseeable activities that could increase sediment to streams, impact riparian vegetation, stream channels, or alter slope hydrology were considered in the cumulative effects analysis. These activities include road construction, road and trail maintenance, vegetation management, grazing, developed and dispersed recreation, water diversions, riparian and stream restoration, minerals activities, and past wildfires.

Past and Present Activities

Ongoing activities on NFS, state and private lands would be similar to those described under Alternative 1. The only difference between the action alternatives and Alternative 1 is the legacy on user-created, non-system routes that would remain across the landscape. Although these routes already exist and have not been maintained, they will be available for non-motorized recreation (hiking, biking, horseback riding). Many non-system routes will slowly revegetate and close in over time as they will no longer receive motorized use. However, some non-system routes in sensitive locations (e.g., paralleling streams, multiple stream crossings, and erosive landtypes) may take longer to recover if the route captures overland flow and groundwater. This leads to elevated surface erosion and stream sedimentation, impacting riparian resources and water quality. Routes that receive non-motorized recreation would become narrower, but still have similar impacts because the route’s tread is retained. Any system road or trail that has drainage features in place and received routine maintenance in the past that is converted to a non-system route will be reviewed by the SNF within three years of the decision to determine what long-term stabilization measures are required to prevent erosion to streams and route failures.

Projected Effects of Reasonably Foreseeable Activities

Reasonably foreseeable activities include timber sales, prescribed fire treatments, and watershed restoration projects. Effects from these activities would be similar to the on-going activities described under Alternative 1.

On the Minidoka RD, 82.55 mi of spur and redundant roads have been identified for review and possible closure. The precise condition of each route is not known. However, closures should improve riparian conditions if needed stabilization measures are completed.

The Fairfield RD is proposing to consider an additional 8.77 mi of ATV trail under a separate, future NEPA analysis. Approximately 5 mi of the 8.77 mi occur on the Fairfield RD, while the rest occur on adjacent BLM and private lands. For the purposes of cumulative effects analysis for this route designation EA, this addition of designated ATV routes is a foreseeable future action and would increase the mileage of motorized trails. Several of the proposed routes would include existing non-system routes. This will improve riparian and aquatic conditions as these routes receive adequate maintenance.

Cumulative Effects Summary for Alternatives 2–4

Closing the SNF to motorized cross-country travel will reduce direct and indirect off-route interactions and impacts with other land uses. By default, this would reduce actual and potential cumulative impacts to nearly all riparian and aquatic resources. The reductions in mileage and open-use areas in and near channels, riparian areas, lakes and wetlands, and on sensitive soils consistently indicate that impacts to hydrologic functionality and aquatic values would be reduced under the action alternatives.

All action alternatives also reduce erosion from NFS lands because motorized routes and open-use areas within riparian areas and within the cumulative effects area would be reduced. The designation of non-system routes to system routes will improve overall conditions and reduce impacts to riparian and aquatic resources from inadequate drainage, surface erosion, and route encroachment on riparian areas and streams. Water quality would slowly improve over time where sediment inputs are reduced the most. Thus, all alternatives would be consistent with Clean Water Act requirements and would not result in further impairment of beneficial uses. However, some benefits from sediment reductions may be negated if remaining non-system routes continue to capture runoff and have elevated surface erosion.

Forest Plan Consistency

The action alternatives eliminate cross-country travel and potential for establishment of new motorized non-system routes, remove several system routes, and limit motorized use to designated routes only. These actions would help to reduce impacts from surface erosion, route encroachments of stream channels and riparian areas, and slope hydrology from water interception where current activities are decreased the most. Collectively, these actions would help reduce risks and threats to riparian and aquatic resources and help make small improvements to water quality and fish habitat (see Fisheries/Aquatics Resources section).

Reduced risks and threats to aquatic resources should also meet key Forest Plan direction. Specifically, the action alternatives will meet the intent of SWST01, by maintaining or restoring water quality to fully support beneficial uses and native and desired non-native fish species and their habitat, and SWST07, to ensure management activities within watersheds containing 303(d) listed water bodies improve or maintain overall progress toward beneficial use attainment for pollutants that led to the listing, and REGU07, facilities and practices causing degradation should be considered for relocation, closure, changes in management strategy, alteration, or discontinuance.

Finally, reduced risks and threats to aquatic resources implements the intent of WARS across all priority (low, moderate, and high) and restoration type (active and passive) subwatersheds within the route designation area by helping to secure the highest geomorphic and water quality integrities that support habitats and strong populations of wide ranging aquatic species, extend favorable conditions into adjacent subwatersheds to create a larger and more contiguous network of suitable and productive habitats, and make incremental improvements to water quality, fish habitat, and riparian conditions for aquatic and beneficial uses that will contribute to the de-listing of listed fish species and Clean Water Act 303(d) water quality limited waterbodies.

Additional discussion on Forest Plan consistency can be found in the project record.

Fisheries/Aquatics Resources

Introduction

The streams, rivers, and lakes within the route designation area on the SNF include habitat for several fish species. Changes in travel management could potentially affect fish habitat, and the species themselves, in various ways: sedimentation from travel routes could alter spawning and rearing habitats for aquatic organisms, and stream crossings can act as migration barriers.

The following section summarizes aquatic conditions according to the issue and indicators as described in Chapter 2. Data from subbasin and conservation assessments, monitoring, field surveys, and other sources are used to inform the overall condition of each indicator. This section is organized by subbasin and issue indicators assessed for each subwatershed that fall within the route designation area.

Issue: Aquatic Habitat

Travel routes can impact aquatic habitat when a route encroaches a stream by removing riparian vegetation and increasing streambank erosion and sedimentation. Loss of riparian vegetation and increased bank erosion can widen stream channels making aquatic habitat shallower. Erosion from travel routes can increase delivery to streams. Road and trail crossings can fragment aquatic habitats by creating migration barriers. All of these impacts can alter spawning and rearing habitats for aquatic organisms decreasing their numbers. Use of road and trail crossings can cause direct effects to aquatic organisms by displacing them downstream, altering behaviors, and/or crushing them.

Indicators:

- Number of subwatersheds where route density exceeds 1.7 mi/mi^2.
- Miles of system trails receiving maintenance
- Miles of system routes closed to motorized use
- Percent of RCAs open to motorized use and dispersed camping.

Forest Plan Direction

The following Forest Plan (USDA 2003a) management direction guides the analysis for evaluating the consistency of the proposed action and alternatives for protecting, maintaining, and restoring aquatic/fish habitat and includes desired conditions, goals, objectives, standards, and guidelines.

- "Management actions shall be designed in a manner that maintains or restores water quality to fully support beneficial uses and native and desired non-native fish species and their habitat, except as allowed under SWRA Standard 4." (SWST01, Forest Plan, p. III-21)
- "Within legal authorities, ensure the new proposed management activities within watersheds containing 303(d) listed water bodies improve or maintain overall progress toward beneficial use attainment for pollutants that led to the listing." (SWST07, Forest Plan, p. III-22)
- "Where recreation facilities or practices have been identified as potentially contributing to degradation of water quality, aquatic species, or occupied sensitive and watch plant habitat, facilities and practices causing degradation should be considered for relocation, closure, changes in management strategy, alteration, or discontinuance." (REGU07, Forest Plan, p. III-65).

Methodology

Non-System Routes

Total miles of non-system routes were calculated for each subwatershed that fell within the route designation area. Total miles of non-system routes within RCAs, by subwatershed, were also calculated by intersecting the RCA buffered areas with non-system routes.

Although non-system routes would no longer be open to motorized use under any of the action alternatives, many of these routes will remain on the landscape for an extended period of time and may be used for non-motorized recreation access. Non-system routes left on the landscape may continue to contribute to localized impacts to aquatic resources, however, not to the same degree as when they were open to motorized uses. Many non-system routes would also slowly revegetate and close in over time, reducing potential effects to aquatic resources.

System Roads and Trails

Total miles of system roads and trails were calculated for each subwatershed that fell within the route designation area. Total miles of system roads and trails were also calculated within RCAs by subwatershed. Intermittent streams were buffered by 150 ft and perennial streams 300 ft on either side of the channel. These buffered areas were then intersected with system roads and trails to determine mileage.

Dispersed Motorized Recreation

RCAs open to motorized use and associated dispersed camping were estimated by buffering existing system and non-system routes (roads and trails) for Alternative 1, and existing system and proposed changes (removals, additions) for the action alternatives (2–4). Roads were buffered by 300 ft and trails by 100 ft on either side of the route. These areas were then intersected with the RCA buffers to determine acres by subwatershed. It is recognized that these acre calculations are liberal estimates of the areas open to motorized use and associated dispersed camping. This is because many routes occur in areas that are difficult to establish a dispersed site due to uneven and steep terrain, large barriers such as rocks, and/or dense vegetation. Therefore, calculations should be viewed as a way of assessing relative risk of motorized recreation and dispersed camping near designated routes across the project area.

Affected Environment

Fairfield RD

As described in the Soils/Hydrologic Resources section of this chapter, the Fairfield RD falls within two subbasins, the South Fork Boise River subbasin and the Camas Creek subbasin.

Aquatic Species

Within the South Fork Boise River subbasin, algae, aquatic macroinvertebrates, amphibians, and fish characterize aquatic fauna. Headwater drainages generally are occupied by few fish species; consisting of bull trout, rainbow/redband trout, and sculpin (*Cottus bairdi*, *C. confusu*s). Many headwater lakes and streams have been stocked with hatchery rainbow trout. Downstream fish communities (mainstem rivers and reservoirs) are more diverse and include native mountain whitefish (*Prosopium williamsoni*), northern pike minnow (*Ptychocheilus oregonensis*), redside shiner (*Richardsonius balteatus*), several sucker species (*Catostomus spp*.), and daces (*Rhinichthys spp*.).

Native redband rainbow trout and Wood River sculpin are common in area streams where habitat is still favorable. Non-native brown, brook, and rainbow trout were stocked in USFS-managed streams in the past; brown trout may no longer be present, but rainbow trout have likely introgressed redband trout populations, while brook trout currently are the dominant salmonid in Soldier Creek and the lower portions of its tributaries.

Within the Camas Creek subbasin, the Upper Willow and Solider Creeks subwatersheds have been identified as important to maintaining or restoring strong populations of native redband trout and Wood River sculpin. Subwatersheds know to support Wood River sculpin within the route designation area include Upper Solider Creek (South Fork and North Fork Solider, Solider Creek), Phillips–Wardrop (Phillips Creek), and Upper Willow (Willow Creek).

Bull Trout/MIS

Bull trout are an MIS for the SNF. Direction for MIS comes from 36 CFR 219.19. Specifically, 36 CFR 219.19(a) (1) states that MIS shall be selected because their population changes are believed to indicate the effects of management activities. The South Fork Boise River subbasin is in the southwest Idaho bull trout recovery unit, in the Boise River subunit. Streams within the route designation area encompass the

Anderson Ranch core area (USFWS 2002). A core area represents the closest approximation of a biologically functioning unit upon which to gauge recovery within a recovery unit.

Bull trout occur in discrete habitat patches in the South Fork Boise River subbasin, but have been isolated from other subbasins by the Arrowrock and Anderson Ranch dams. Resident and migratory forms persist. Reservoir habitat created by the dams has allowed the expression of adfluvial forms.

Within the project area, bull trout are present in the mainstem South Fork Boise River, larger tributary mainstems (Big Smoky and Little Smoky creeks), and several tributary streams (e.g., Boardman and Deadwood creeks). The mainstem of the South Fork Boise River and larger tributaries (Big Smoky and Little Smoky creeks) harbor adult and advanced juvenile fluvial (i.e., large-river dwelling) bull trout year-around and serve as a migratory corridor for adult and advanced juvenile fluvial and adfluvial (lake-dwelling) bull trout during the spring and fall. The mainstem of the river and the lower reaches of many of the tributaries are not considered to be spawning or early (i.e., first year) rearing habitat.

Bull trout are also present in discrete tributary patches. A patch is defined for bull trout as the contiguous stream areas believed suitable for spawning and rearing (Rieman and McIntyre 1993). Bull trout are known to occupy two patches (Boardman Creek and Houseman–Beaver subwatersheds). The Boardman Creek patch has been identified as important to bull trout recovery and as a high-priority area for restoration.

In addition, some subadult fluvial and adfluvial bull trout (typically 175–300 mm, length) are known to “wander” into habitat that may not be suitable for spawning or early rearing (as opposed to migration to or from spawning and/or early rearing habitat) and may exist for short or long periods in streams reaches that otherwise would be unoccupied or used only as a migratory corridor (Rieman 2003). These wandering subadult fish occassionally have been found in Salt Creek, Little Smoky Creek below the Five Points Creek confluence, Little Smoky Creek near the mouth of Stovepipe Creek, and the lower few hundred meters of Carrie Creek. However, there does not appear to be any evidence that a reproducing bull trout population exists in the Little Smoky watershed.

Bull trout populations are FR in the subbasin due to the presence of brook trout, which increases the risk of hybridization; watershed/habitat impacts from roads, grazing, dispersed and developed recreation causing lower survival; and scarcity of strong local populations making the overall population less resilient to natural and managed disturbances.

Aquatic Habitat

A description of aquatic habitat conditions in the South Fork Boise River and Camas Creek subbasins can be found in Soils/Hydrologic Resources section of this chapter.

Ketchum RD

As described in the Soils/Hydrologic Resources section of this chapter, the Ketchum RD falls within two subbasins, the Big Wood River and the Little Wood subbasins.

Aquatic Species

In the Big Wood River subbasin there are introduced coastal rainbow trout, YCT, brown trout, and brook trout present. Local fishing pressure is heavy, particularly in the Big Wood River, which is in part a catch-and-release trophy fishery. Rainbow trout are the predominant game fish comprising an average of 85% of the trout. High alpine lakes have hatchery-stocked recreational fisheries, featuring species such as brook trout, golden trout, rainbow trout, and grayling.

The Wood River sculpin (Cottus leiopomus), a small narrowly endemic fish, is known to occur only in the Big and Little Wood River, and Camas Creek subbasins. Historically, the range of Wood River sculpin consisted of all permanent, interconnected waters from the falls on the Malad River upstream into the Little Wood and Big Wood rivers and their tributaries (Simpson and Wallace 1982). The Wood River sculpin was more widely distributed in the drainage historically than at present.

Past and present activities on SNF-administered public lands such as livestock grazing; mining, road building, and timber harvesting have adversely affected sculpin wherever sedimentation and water temperatures have been measurably increased above their natural ranges. Off-SNF impacts include sedimentation and dewatering, with irrigation diversions often isolating subpopulations to headwater streams. The Wood River sculpin is currently listed as a State of Idaho species of special concern and as a sensitive species by the USFS, Region 4.

Within the route designation area, the Warfield–West Fork Warm Springs subwatershed has been identified as important to maintaining or restoring strong populations of native species, including the Wood River sculpin. This subwatershed is a high-priority area for restoration. Other subwatersheds within the project area that support Wood River sculpin include Greenhorn, Wolftone–North Fork Deer (Deer Creek), and Upper Warm Springs Creek (Middle Fork and South Fork Warm Springs).

Within the route designation area, the Little Wood Subbasin, Baugh Creek supports Wood River sculpin, redband trout and introduced brook trout.

Aquatic Habitat

A description of aquatic habitat conditions in the Big Wood River and Little Wood River subbasins can be found in the Soils/Hydrologic Resources section of this chapter.

Minidoka RD

As previously described, the Minidoka RD comprises five distinct divisions, which occur within six subbasins, and all divisions overlap into two or more of the six subbasins. To reduce repetition of general information relative to aquatic species, a description of the aquatic species found within each subbasin is provided first. This is followed by a more specific description of the species found within each division.

Aquatic Species

Middle Snake Subbasin (HU 17040212)

Below the Shoshone Falls, redband, bull trout, and anadromous fish species existed wherever access was available, including Rock Creek. Following the construction of large hydroelectric facilities on the main-stem of the Snake River (i.e., Bliss Dam, Lower Salmon Falls Dam, Upper Salmon Falls Dam, and Shoshone Falls Dam), salmon, steelhead, and Pacific lamprey were extirpated from the region.

Redband, cutthroat and brook trout occupy portions of Rock, McMullen, and Cottonwood Creeks on the SNF. Strong local populations of redband trout are found in the Harrington Fork-Little-Rock Creek, Third Fork Rock Creek, and Fourth Fork Rock Creek subwatersheds, with McMullen Creek supporting an isolated population of redband trout.

YCT—Middle Snake

According to Behnke (1992), YCT did not historically occur below Shoshone Falls on the Snake River. Strong local populations of native YCT occur in the Cold Spring-Medley-Dry, East Fork Dry, and Middle and West Fork Dry Creek subwatersheds. The East Fork Dry Creek and Middle and West Fork Dry Creek subwatersheds have been identified as important to maintaining or restoring strong populations of native cutthroat trout. These subwatersheds are, therefore, high-priority areas for restoration.

Salmon Falls Creek (HU 17040213). According to Behnke (1992), YCT did not historically occur below Shoshone Falls on the Snake River. Below the Shoshone Falls on the Snake River, redband, bull trout, and anadromous fish species existed wherever access was available, which included Shoshone Basin. Redband trout can be found in the Upper Shoshone Basin, North Fork Shoshone–Hooper, Cottonwood, Upper Shoshone, and South Fork Shoshone Creek subwatersheds. Redside shiner (*Richardsonius balteatus*), spotted dace (*Rhinichthys osculus*), and bridgelip suckers (*Catostomus columbihuus*) have been found in North Fork Shoshone–Hooper, Cottonwood, Upper Shoshone, Big Creek, and South Fork Shoshone Creek subwatersheds. Brown trout were stocked in the past but have been extirpated as a result of extensive stream dewatering for irrigation.

Goose Creek Subbasin (HU 17040211). Area streams provide local fisheries consisting of YCT, rainbow, and brook trout. YCT populations occur primarily in headwater areas that are isolated for most of the year from water diversions or dewatering. Fish in lower Goose Creek include Longnose dace *(Rhinichthys cataractae),* spotted dace *(Rhinichthys osculus),* redside shiner *(Richardsonius balteatus),* bluehead sucker *(Catostomus discobolus),* sculpin *(Cottus bairdi),* and yellow perch *(Perca flavescens)*. Most of these fish are moderately intolerant to organic sediment and thermal pollution (IDEQ 2003.). This may indicate that the water quality in the lower reach is moderately impaired.

YCT—Goose Creek

YCT occupy 70% of their former range and habitat conditions are FR over much of the subbasin, potentially decreasing survival. Non-native salmonids (brook and rainbow trout) are present in the drainage and considered a threat to the long-term persistence of YCT populations. Several populations are isolated and may not be able to recover as quickly from disturbances as non-isolated populations. These factors combined may make these populations less resilient to disturbances if they occurred.

Lake Walcott Subbasin (HU 17040209). Waters within the Lake Walcott subbasin were historically occupied by YCT. Currently, rainbow and brook trout are the dominant salmonids in the drainage. Two fish-bearing subwatersheds (Upper Marsh and Howell Creek) occur in the route designation area. IDEQ found only brook trout during a 1997 survey in Howell Creek. In Marsh Creek, IDEQ found only brook trout and Paiute sculpin during a 1994 survey. Lake Cleveland is stocked with rainbow trout.

Raft River Subbasin (HU 17040210). Historically, salmonid spawning existed in the Raft River from the Malta area to the Snake River. The river acted as a migration corridor for YCT, mountain whitefish, sculpin, dace, and suckers (IDFG 2001a). Currently, fish do not exist in this stretch of the Raft River. Sediment, channelization, irrigation diversions, and low to nonexistent summer flows are limiting factors to any potential fish populations.

The Raft River from the Idaho/Utah border to Malta has a small fishery with limited spawning in some areas above the narrows area. In higher flow periods there may be limited spawning with a small resident population of YCT and rainbows along with some non-game species (IDFG 2001a).

YCT—Raft River

YCT occupy 73% of their former range and habitat conditions are FUR over much of the subbasin, potentially decreasing survival. Brook trout are found in many tributaries within the subbasin. Competition and hybridization from rainbow trout is also a concern. IDFG supplement the Sublett Reservoir with hatchery rainbow. Several other subwatersheds have rainbow trout or hybrids. Most of these are isolated from each other as a result of downstream habitat conditions. These factors combined may make these populations less resilient to disturbances if they occurred.

Curlew Valley Subbasin (HU 17040309). The subwatershed drains east into the Curlew Valley subbasin and then south into the Great Salt Lake Basin. There is no fish habitat in the subwatershed as a result of the ephemeral nature and small size of area streams.

Minidoka RD—Albion Division

As described in the Soils/Hydrologic Resources section of this chapter, the route designation area on the Albion Division falls within three subbasins, the Goose Creek subbasin, the Lake Walcott subbasin and the Raft River subbasin. Within the Albion Division, Almo Creek and Upper Cassia subwatersheds support important YCT populations in New Canyon, Flat Canyon, Cold Spring and Stinson creeks. In 2006, the USFS sampled the Cassia Creek headwaters of these creeks and documented sympatric YCT and brook trout populations.

Lower Cassia Creek, through Malta to the confluence with Raft River, supports brook, rainbow and YCT. Fish habitat is limited, however, because irrigation diversions dewater the stream in most years. Grape Creek is also known to support a small population of YCT. The Upper Cassia Creek and Mid-Cassia Creek subwatersheds have been identified as high-priority restoration areas for YCT.

A description of aquatic habitat conditions for the Albion Division can be found in the Soils/Hydrologic Resources section of this chapter.

Minidoka RD—Black Pine Division

The route designation area on the Raft River Division falls within the Raft River and Curlew Valley subbasins. Eightmile Creek is known to support a population of pure strain of YCT (*Oncorhynchus clarki bouveri*) as identified by Robert Behnke in 1986. Sixmile Creek supports a hybridized YCT population (Partridge, Warren, and Frank 2002). Fish habitat is non-existent elsewhere as a result of the intermittent nature and small size of area streams. The West Dry-Eightmile-Fisher subwatershed (Eightmile Creek) has been identified as important to maintaining or restoring strong populations of YCT. Therefore, this subwatershed is a high-priority area for restoration.

A description of aquatic habitat conditions for the Black Pine Division can be found in the Soils/Hydrologic Resources section of this chapter.

Minidoka RD—Cassia Division

The route designation area on the Cassia Division of the Minidoka RD falls within three subbasins, the Middle Snake (HU 17040212), Salmon Falls Creek (HU 17040213), and Goose Creek (HU 17040211).

Salmonid populations are severely impacted by lack of spawning habitat as a result of sediment from grazing and poor land-use practices in lower Goose Creek. Additional impacts from irrigation withdrawals were also observed by Meyer and others (Meyer and Lamansky 2002). IDEQ personnel collected hatchery rainbow trout that had immigrated to Goose Creek from the Lower Goose Creek reservoir.

IDFG surveys in the Upper Goose Creek and Piney–Goose subwatersheds indicate that the trout population consists of wild cutthroat trout and brook trout (Meyer and Lamansky 2002). Density estimates from sampling efforts in 1999 ranged from 3.9–20.4 cutthroat per 100 m^2 and 1.4 brook trout per 100 m^2. However, in recent years, brook trout numbers and distribution have increased in some areas. Fishery surveys completed by IDFG in Piney Creek in 2005 did not find any cutthroat trout. In 2006, the IDEQ surveyed fish populations in upper Goose, Little Goose, Little Piney, and Thoroughbred creeks and reported average salmonid densities of 0.23, 0.00, 0.33, 0.21 fish/m^2, respectively. Piney–Goose and

Upper Goose Creek subwatersheds have been identified as important to maintaining or restoring strong populations of YCT.

The IDFG surveyed Beaverdam Creek in 1987 and found only leatherside chubs, speckled dace, redside shiners, and an unknown sucker species. Several small cutthroat trout were seen in the upper section of Beaverdam Creek by IDEQ in 2001.

Big Cottonwood Creek subwatershed supports a strong local population of pure-strain YCT and has been identified by IDFG as a core population. At least two small tributaries (Sawmill and Ecklund creeks) at the upper end of the drainage also contain YCT, for a total of about 36 km of stream containing YCT. The abundance estimate for YCT in lower Big Cottonwood Creek was 1.7 fish per 100 m^2. In the upper reaches, abundance estimates were much higher (28–70 cutthroat trout per 100 m^2). The entire YCT population is estimated at 20,000 fish.

Big Cottonwood Creek is diverted for irrigation and is dewatered below the diversion structure on private land. The diversion structure is also an upstream migration barrier to the fish population located in the reach. Any fish that moves downstream below the diversion is lost from the population, increasing the mortality for fishes in the lower reach.

The IDFG has surveyed the fishery in Little Cottonwood Creek twice, once in 1999 and again in 2001. In 1999, rainbow trout were found in the upper portions of the system (Warren 2000), but there were not any fish found during the 2001 surveys because of dry stream channels. It is unknown if the conditions between 1999 and 2001 changed to exclude fish from the system. However, it is likely that during the drought years between 1999 and 2001, Little Cottonwood Creek went dry removing the fishery from the system.

IDFG conducted fish collections on Trapper Creek in 1979. The data indicate that the trout population consists of hatchery rainbow trout with some naturalized or wild rainbows present. Four locations were also sampled on Trapper Creek in 1994 by Brigham Young University. All sites detected only rainbow trout. IDFG stocking records indicate that catchable (> 6 in.) rainbow trout have been released into Trapper Creek on a semiannual basis since at least 1995. In addition, it is likely that some of the reservoir-stocked fish would migrate upstream into the creek as well.

Trout Creek has been surveyed by IDFG several times. Genetic tests show that Trout Creek has a hybridized population of YCT on the Idaho side of the creek. Rainbow trout are the dominate species in the headwaters. Trout Creek has been identified by IDFG as a conservation population. Fishery surveys were completed by IDFG in 2005 where average YCT densities were found to be 0.12 fish/m^2.

A description of aquatic habitat conditions for the Cassia Division can be found in the Soils/Hydrologic Resources section of this chapter.

Minidoka RD—Raft River Division

The route designation area on the Raft River Division falls within the Raft River and Curlew Valley subbasins (HU 17040309). Utah Division of Wildlife Resources (UDWR) completed extensive surveys in 2001 and 2006 in the Raft River drainage in Utah. YCT were found in Onemile below Sawmill Canyon, Sawmill Canyon, Clear, George, Johnson, Browns Canyon, Wildcat, Basin, and Mahogany creeks. Highest densities were found in upper Johnson (Left Hand Fork) and George creeks.

Rainbow and brook trout are present in Wildcat, George, Clear, and Onemile creeks, and in the Left Hand and Right Hand Forks of Johnson Creek. In other drainages, fish habitat is limited and fragmented by the small size and intermittent nature of most area streams.

A description of aquatic habitat conditions for the Raft River Division can be found in the Soils/Hydrologic Resources section of this chapter.

Minidoka RD—Sublett Division

The route designation area within the Sublett Division falls within the Lake Walcott and the Raft River subbasins. In the Sublett Creek division, fish habitat is limited because of the small size and intermittent nature of most streams. Rainbow trout and YCT are present in Sublett Creek, Lake Fork, the North and South Forks of Sublett Creek, and in Sublett Reservoir. These area streams have been identified as important to maintaining or restoring strong populations of YCT and are a high priority for restoration.

Brown trout and kokanee salmon have been introduced to Sublett Reservoir and migrate up the aforementioned streams to spawn. IDFG indicate with their survey results, that brown trout successfully move upstream at least 3 kilometers (km) from Sublett Reservoir for spawning and early rearing (Warren 2000). The Sublett Reservoir also has YCT and rainbow trout. Sublett Creek does not support fish below Sublett Reservoir as a result of non-SNF irrigation diversions and dewatering. Native cutthroat populations are at risk because of the presence of introduced fish species.

A description of aquatic habitat conditions for the Sublett Division can be found in the Soils/Hydrologic Resources section of this chapter.

Environmental Consequences—Aquatic Habitat

Effects Common to Alternative 1

Route Density

Motorized use of system and non-system routes is anticipated to increase as demand for recreation increases. Subwatersheds with a high overall route density have a higher probability of impacts from motorized recreation to streams, riparian areas, and fish habitat. Effects associated with motorized access also reach beyond direct effects to hydrologic functions and increased sediment delivery to streams (Quigley and Arbelbide 1997). Motorized access and the activities which accompany this access can magnify negative effects on aquatic systems beyond the routes themselves. Increased access typically results in more developed and dispersed recreation, firewood cutting in riparian areas, and human-caused wildfires. Subwatersheds with route densities higher than 1.7 mi/mi^2 are considered more likely to impact aquatic resources. Quigley and Arbelbide (1997) found that increasing road density correlated with declining aquatic habitat conditions and aquatic integrity. Native fish species (YCT, westslope cutthroat trout, and bull trout) are less likely to use highly roaded areas for spawning and rearing, and are typically absent in areas with road densities higher than 1.7 mi/mi^2 (Quigley and Arbelbide 1997).

Sediment

Non-system routes can have greater impacts to aquatic resources because they are not properly designed nor are they maintained. Poorly maintained routes have a higher potential to directly and indirectly affect streams (Belt, O'Laughlin, and Merrill 1992). User-created trails usually have no features for proper drainage or erosion control. Water and sediment can concentrate on routes during runoff or periods of intense rain and be delivered to streams. Routes that receive regular maintenance generally have sufficient drainage, so water and sediment is diverted off the route, filtered through forest vegetation, and not routed to streams (Furniss, Roelofs, and Yee 1991). As such, well maintained travel routes can generally be designed to mitigate sediment delivery concerns.

Non-system routes have a higher propensity for stream fords. Routes with multiple stream crossings increase sediment from surface erosion and users crossing the stream. Brown (1994) in a study of Australian river fords found that recreational vehicles were responsible for adding significant amounts of sediment to rivers. The amount of sediment deposited was related to length of the ford, frequency of use, and vehicle backwash that undercut streambanks. Studies of stream fords on the Fishlake NF in Utah found that crossings caused an increase in fine sediment (< 2 mm) deposition below the crossing and exceedance of state water quality turbidity criteria for cold water fish (Deiter 2005). Factors that influenced the size and duration of turbidity increases are related to the substrate size, number of crossings, and number of vehicles using each crossing.

Sediment Effects to Fish and Fish Habitat

Sediment effects to trout vary according to life-stage specific habitat requirements, and habitat quality and quantity (Hogan and Ward 1997; Hicks et al. 1991; Bjornn and Reiser 1991; Everest et al. 1987). This is because fish in different life stages utilize different habitats. Adults typically prefer pool habitats, while juveniles use pools, runs, and riffle habitats. Sediment effects on adult and juvenile trout occur when sediment concentrations exceed the channel’s capacity to fill pools and riffles.

Adverse effects to young trout (egg through fry life stages) occur when fine sediment concentrations increase in spawning gravels (Waters 1995; Bjornn and Reiser 1991; Hicks et al. 1991). The natural maintenance of good spawning gravel requires that the stream’s normal sediment supply contains low amounts of fine material, and that stream-flows are high enough to transport fines downstream (Kondolf 2000; Waters 1995; Bjornn and Reiser 1991). If inputs exceed the stream’s sediment transport capacity, then concentrations can increase in spawning gravels and affect survival of incubating eggs and swim-up fry. Tappel and Bjornn (1983) demonstrated that increased fine sediment in spawning gravels resulted in decreased survival and emergence of salmonid eggs and alevin. Kondolf (2000) also found that when fines (<6.4 mm) exceeded 30% of spawning gravels, salmonid emergence and survival was reduced by 50%.

Increased sediment from roads and trails can change the amount and quality of juvenile and adult pool habitat if sediment increases are sufficient to alter channel morphology by filling in pools and increasing width/depth ratios. This is especially true for lower-gradient channels where excessive sediment loading can reduce pool depth and quality important to juvenile and adult salmonids (Hogan and Ward 1997; Rosgen 1996).

Habitat Fragmentation

Non-system routes have more improperly designed stream crossings, creating upstream barriers for fish and amphibians (Maxell 2000; Furniss, Roelofs, and Yee 1991). Improperly designed fords create wider and shallower stream profiles causing insufficient water depth at low flows for aquatic organisms to pass. This reduces the viability of fish and amphibian populations as they become more isolated (Rieman and McIntyre 1993).

Disturbance

Use of road and trail crossings can cause direct effects to aquatic organisms by displacing them downstream, altering behaviors, and/or crushing them. Displacement of organisms could result in physical and behavioral responses including adverse changes in feeding, metabolic rates, osmoregulatory processes, avoidance behavior, and immune system functions and disease (Price and Schreck 2003; Barton 2002; Kelsey et al. 2002; Sigismond and Weber 1988). Stress-induced behavior changes in fish may also lead to a higher risk of predation. Those subwatersheds with higher non-system route densities are more likely to have more stream fords and disturbance to aquatic organisms.

Stream Channel and Riparian Impacts

Non-system routes near streams can collapse streambanks, causing increased erosion, bank instability, and degraded fish habitat (Edwards and Burns 1986; Wilshire 1983; Harrison 1980). Riparian vegetation modification may directly remove fish security cover and reduce stream shading. Removal of riparian vegetation may indirectly result in reduced streambank stability and sediment filtering capacity of vegetation, both of which can result in increased sediment delivery rates (Thornton, Abt, and Clary 1997).

Forest Plan Direction

Under Alternative 1, the contribution of motorized travel on system and non-system routes to the FR and FUR determinations would continue. Continued use of non-system routes, the potential for new non-system routes associated with cross-country travel, and its associated dispersed recreation, in riparian areas will make it harder to maintain or improve aquatic habitat. Given this, Alternative 1 may not be consistent with Forest Plan direction (e.g., SWST01, SWST04).

Alternative 1—No Action

Many of the indicators and effects to aquatic habitat are similar to those described in the Soils/Hydrologic Resources section of this chapter. As such, data and additional supporting information for the statements and conclusions made herein can be viewed in their original, detailed form in the Soils/Hydrology Resource Specialist Report found in the project record for the route designation EA.

Alternative 1 would not restrict motor vehicle use to designated system roads and trails, except in areas currently restricted. As a result, cross-country motor vehicle use could add new non-system routes where terrain is conducive to motorized traffic. Technological advances continue to provide more powerful vehicles that allow motorized users to travel further into the backcountry. With no cross-country travel restrictions, new motorized travel routes are likely to be created near streams and riparian areas. These new routes may lead to many of the previously mentioned effects and cause more severe impacts to aquatic habitat.

Fairfield RD

Aquatic Habitat

On the Fairfield RD, 11 subwatersheds within the route designation area have route densities that exceed 1.7 mi/mi^2 and are located in areas with high or very high surface erosion potential, which increases the risk of sedimentation to streams and aquatic habitat. Many of the routes within these subwatersheds also include numerous stream crossings and fords making it more likely for surface erosion to enter the stream. Most subwatersheds with high densities already have habitat concerns from cattle grazing, historic mining, and dispersed recreation in riparian areas. As previously described, the majority of subwatersheds also have FR or FUR habitat and riparian conditions. High route densities are most likely a contributing factor to this impaired condition.

Under Alternative 1, motorized travel on non-system routes is likely to continue to cause localized impacts to aquatic habitat as additional user-created routes become established through unregulated cross-country travel. Continued use of non-system routes and the potential for new non-system routes associated with cross-country travel may also increase sediment and channel impacts, degrading aquatic habitat as these routes are not maintained.

Dispersed camping associated with motorized recreation and cross-county travel is not restricted by Alternative 1. Route densities within RCAs are expected to remain the same or increase under Alternative 1. Approximately 13,251 acres of riparian habitat adjacent to existing system and non-system routes would continue to be used for motorized travel and dispersed camping. Eight of the subwatersheds on the Fairfield RD have more than half of their riparian acres accessible by system or non-system routes. Abbot–Shake, Threemile Creek, Big Water–Virginia, Lick–Five Points, Red Rock–Carrie, Upper Little Smoky Creek, Basalt Creek, and South Fork Lime–Hearn have the highest amount of accessible riparian areas. These subwatersheds may be more prone to vegetation damage and soil erosion in riparian areas, and impacts to aquatic habitat that support resident redband populations and wandering bull trout subadults.

Many of these impacts may be more pronounced in those subwatersheds that already have high route densities and a high percentage of their riparian areas accessible. Several of these subwatersheds support key fish populations such as Upper Willow and Boardman creeks. The Upper Willow supports one of the few Wood River sculpin populations in the Camas Creek subbasin, which is genetically unique from other populations in the Big and Little Wood River subbasins. Increased sedimentation and stream channel impacts may reduce spawning and rearing habitat resulting in lower sculpin densities.

Under Alternative 1, the contribution of motorized travel on system and non-system routes to the FR and FUR determinations would continue. Continued use of non-system routes and the potential for new non-system routes associated with cross-country travel in riparian areas, and associated dispersed recreation, will make it harder to maintain or improve aquatic habitat. Given this, Alternative 1 may not be consistent with Forest Plan direction (e.g., SWST01, SWST04).

MIS

As previously discussed, bull trout only occur in the South Fork Boise River subbasin within the project area. Alternative 1 would allow cross-country travel and would not restrict motor vehicle use to designated system roads and trails, except in areas currently restricted. As a result, cross-country motor vehicle use could add new non-system routes where terrain is conducive to motorized traffic in the South Fork Boise River subbasin. This may increase sediment sources and impacts to stream channels and riparian areas from route encroachments in streams that support bull trout (Deadwood and Boardman creeks), and streams that support wandering subadult bull trout (Salt Creek and Little Smoky drainage).

Motorized use on non-system routes is anticipated to increase as recreation demand increases. Subwatersheds with high non-system route densities have a higher probability of impacts to streams, riparian areas, and fish habitat as those previously described. Motorized travel will continue damaging riparian vegetation, compacting soils, and contributing sediment in select areas. Subwatersheds that have high non-system route densities and support wandering subadult bull trout include Miller-Bowns-Salt, Lick–Five Points, Worswick–Grindstone, Upper Little Smoky Creek, and Basalt Creek. Continued use of non-system routes in these subwatersheds will make it harder to maintain and improve water quality and fish habitat.

Finally, dispersed camping associated with motorized recreation and cross-county travel is not restricted by Alternative 1. Therefore, accessible riparian areas can in theory support more motorized recreation and dispersed camping. Currently, Abbot–Shake, Big Water–Virginia, Lick–Five Points, Upper Little Smoky Creek, and Basalt Creek subwatersheds have the highest amount of accessible riparian areas. Several of these subwatersheds support habitat for wandering subadult bull trout

Implementation of Alternative 1 would have localized effects to habitat, water quality and riparian areas in several subwatersheds currently occupied by local bull trout populations and wandering subadults. The overall trend of bull trout may decline slightly if impacts from motorized use and dispersed recreation become severe enough to change habitat conditions in subwatersheds that support local populations (Deadwood and Boardman Creeks). The majority of the route designation area occurs in subwatersheds that currently support only occasional wandering subadults or in areas where bull trout are not present. Continued or increased impacts in these areas would make habitat conditions less attractive to supporting subadults. This would make it harder for the establishment of new local bull trout populations. However, the overall influence on bull trout populations in the South Fork Boise River would be minor because the majority of streams that maintain the population occur outside of the project area.

Table 3-47 visually depicts the summary of indicators, by alternative, by division, for the Fairfield RD. The summary was derived in part from a more detailed analysis that is found in the Soils/Hydrology Resource Specialist Report found in the project record for the route designation EA.

Table 3-47. Summary of indicators by alternative for the Fairfield RD.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Number of subwatersheds where route density exceeds 1.7 mi/mi^2	11	5	7	3
Miles of motorized system trails	204	225	268	202
Miles of system routes closed to motorized use	0	18.11	12.47	34.94
Percent of Riparian Conservation Areas open to motorized use and dispersed camping[a]	40	27	28	27

a. Percentage based on total acres within RCAs adjacent to open or designated motorized routes.

Ketchum RD

Aquatic Habitat

On the Ketchum RD, Greenhorn Creek has a high route density (above 1.7 mi/mi^2). As previously described, all subwatersheds except Upper Deer Creek were found to be FR or FUR for habitat or riparian conditions. Route densities are most likely a contributing factor to this impaired condition. Under Alternative 1, motorized travel on non-system routes is likely to continue to cause localized impacts to aquatic habitat as additional user-created routes are established as a result of unregulated cross-country travel. Continued use of non-system routes and the potential for new non-system routes associated with cross-country travel may also increase sediment and channel impacts, degrading aquatic habitat as these routes are not maintained.

Dispersed camping associated with motorized recreation and cross-county travel is only restricted in the Deer Creek drainage along roads 70097 and 70103 under Alternative 1. Route densities within RCAs are expected to remain the same or increase under Alternative 1. Approximately 4,342 acres of riparian habitat associated with motorized recreation and cross-county travel could be used for dispersed camping on the Ketchum RD. Fifty percent (50%) of the subwatersheds have more than half of their riparian acres accessible by system or non-system routes. Wolftone–North Fork Deer, Warfield–West Fork Warm Springs, and Baugh Creek have the highest amount of accessible riparian areas. These subwatersheds may be more prone to vegetation damage and soil erosion in riparian areas and impacts to aquatic habitat from motorized use and dispersed recreation.

Many of these impacts may be more pronounced in those subwatersheds that already have high route densities and a high percentage of their riparian areas accessible. These subwatersheds support Wood River sculpin, redband trout, and introduced brook trout populations. Increased sedimentation and stream channel impacts may reduce spawning and rearing habitat resulting in lower sculpin and salmonid densities.

Alternative 1 may not be consistent with Forest Plan direction (i.e., SWST01, SWST04) for the Greenhorn Creek subwatershed where route densities exceed 1.7 mi/mi^2.

Table 3-48 visually depicts the summary of indicators, by alternative, for the Ketchum RD. The summary was derived in part from a more detailed analysis that is found in the Soils/Hydrology Resource Specialist Report found in the project record for the route designation EA.

Table 3-48. Summary of indicators by alternative for the Ketchum RD.

Indicator	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Number of subwatersheds where route density exceeds 1.7 mi/mi^2	1	0	0	0
Miles of motorized system trails	95	105	111	94
Miles of system routes closed to motorized use	0	0.80	0.80	1.47
Percent of Riparian Conservation Areas open to motorized use and dispersed camping[a]	49	34	36	33

a. Percentage based on total acres within RCAs adjacent to open or designated motorized routes.

Minidoka RD—Albion Division

Aquatic Habitat

With the exception of the Upper Cassia Creek subwatershed, total route densities on the Albion Division are relatively low (below 1.7 mi/mi^2). As previously described, all subwatersheds for which data was available were found to have FR or FUR habitat and riparian conditions. Route densities are most likely a contributing factor to this impaired condition. Under Alternative 1, motorized travel on non-system routes is likely to continue to cause localized impacts to aquatic habitat as additional user-created routes are established as a result of unregulated cross-country travel. Continued use of non-system routes and the potential for new non-system routes associated with cross-country travel may also increase sediment and channel impacts, degrading aquatic habitat as these routes are not maintained.

Dispersed camping associated with motorized recreation and cross-county travel is not restricted by Alternative 1. Route densities within RCAs are expected to remain the same or increase under Alternative 1. Approximately 1,811 acres of riparian habitat currently associated with motorized recreation and cross-county travel could be used for dispersed camping on the Albion Division. Of the total acres in RCAs, 38% are currently accessible by some type of system or non-system motorized routes. Subwatersheds with the highest amount of accessible riparian areas occur in the Upper Cassia Creek, Howell Creek, and Blacksmith Creek subwatersheds. These subwatersheds may be more prone to vegetation damage and soil erosion in riparian areas, and impacts to aquatic habitat from motorized use and dispersed recreation.

Many of these impacts may be more pronounced in those subwatersheds that already have high route densities and a high percentage of their riparian areas accessible. The Upper Cassia Creek subwatershed supports one of the last YCT populations in this division. Increased sedimentation and stream channel impacts may reduce spawning and rearing habitat resulting in lower salmonid survival and densities. This population also is already at risk due to cattle impacts, diversions, and culvert barriers.

Minidoka RD—Black Pine Division

Route densities on the Black Pine Division are relatively low (below 1.7 mi/mi^2). As previously described, all subwatersheds for which data was available were found to have habitat and riparian conditions to be FR or FUR. Route densities are most likely a contributing factor to this impaired condition. Under Alternative 1, motorized travel on non-system routes is likely to continue to cause localized impacts to aquatic habitat as additional user-created routes are established as a result of unregulated cross-country travel. Continued use of non-system routes and the potential for new non-system routes associated with cross-country travel may also increase sediment and channel impacts, degrading aquatic habitat as these routes are not maintained.

Dispersed camping associated with motorized recreation and cross-county travel is not restricted by Alternative 1. Route densities within RCAs are expected to remain the same or increase under Alternative 1. Approximately 4,269 acres of riparian habitat associated with motorized recreation and cross-county travel could be used for dispersed camping on the Black Pine Division. Subwatersheds with extensive system and non-system routes have a higher potential for dispersed camping. Approximately 55% of the total acres in RCAs within the Black Pine Division currently are accessible by some type of system or non-system motorized routes. Subwatersheds with the highest amount of accessible riparian areas occur in Sixmile–Kelsaw, Sweetzer Canyon–Meadow, and Pole Canyon Creek subwatersheds. These subwatersheds may be more prone to vegetation damage, soil compaction, and soil erosion in riparian areas from motorized use and dispersed recreation.

Subwatershed route densities are relatively low in this division. The overall risk to fish habitat is also low because aquatic habitat is limited in most subwatersheds because of the small size and intermittent nature of area streams. However, the potential exists for additional routes on the flatter terraces in key perennial streams. Several of these subwatersheds already have moderate to high amounts of riparian acres accessible from system roads and a few non-system routes. The West Dry-Eightmile-Fisher subwatershed (Eightmile Creek) supports a critical YCT population and Sixmile–Kelsaw subwatershed (Sixmile Creek), a hybridized YCT population. Increased sedimentation and stream channel impacts in these streams may reduce spawning and rearing habitat resulting in lower salmonid survival and densities. These populations are already at risk because of cattle impacts, diversions, and limited spring feed habitat.

Minidoka RD—Cassia Division

On the Cassia Division, many subwatersheds have high overall route densities in large part due to more open and accessible terrain and close proximity to large cities (i.e., Burley, Twin Falls). High route densities (above 1.7 mi/mi^2) occur in the majority of subwatersheds in the Cassia Division. Several of these subwatersheds (Upper South Fork Rock, McMullen, and Dry Cottonwood creeks) are also in areas with high or very high surface erosion potential, increasing the risk of sedimentation to streams.

With the exception of East Fork Dry Creek, all subwatersheds have FR or FUR habitat and riparian conditions. Under Alternative 1, motorized travel on non-system routes is likely to continue to cause localized impacts to aquatic habitat as additional user-created routes are established as a result of unregulated cross-country travel. Continued use of non-system routes and the potential for new non-system routes associated with cross-country travel may also increase sediment and channel impacts, degrading aquatic habitat as these routes are not maintained.

Dispersed camping associated with motorized recreation and cross-county travel is not restricted by Alternative 1. Route densities within RCAs are expected to remain the same or increase under Alternative 1. Approximately 16,390 acres of riparian habitat associated with motorized recreation and cross-county travel could be used for dispersed camping on the Cassia Division. Subwatersheds with extensive system and non-system routes have a higher potential for dispersed camping. Approximately 60% of the total acres within RCAs within the Cassia Division currently are accessible by some type of system or non-system motorized routes. Subwatersheds with the highest amount of accessible riparian areas occur in Lone Cedar Canyon Creek, Fall Creek, Big Cedar Canyon Creek, Little Cedar–Buckhorn, Fourth Fork Rock Creek, North Cottonwood Creek, Horse Creek, North Fork Shoshone–Hopper, and South Fork Shoshone Creek subwatersheds. These subwatersheds may be more prone to vegetation damage, soil compaction, and soil erosion in riparian areas from motorized use and dispersed recreation.

Many of these impacts may be more pronounced in those subwatersheds that already have high route densities and a high percentage of their riparian areas accessible. Many high route density subwatersheds have or are near streams that support important YCT populations (Upper Goose Creek, Upper Cassia Creek, and Piney–Goose). Continued use of non-system routes and the potential for new non-system routes associated with cross-country travel may also increase sediment and channel impacts, degrading aquatic habitat as these routes are not maintained.

Alternative 1 may not be consistent with Forest Plan direction (e.g., SWST01, SWST04), especially in those subwatersheds with high route densities.

Minidoka RD—Raft River Division

Total route densities on the Raft River Division are relatively low (below 1.7 mi/mi^2). All subwatersheds for which data was available were found to have FR or FUR habitat and riparian conditions. Under Alternative 1, the contribution of motorized travel on system and non-system routes to the FR and FUR determinations would continue as additional user-created routes are established as a result of unregulated cross-country travel. Continued use of non-system routes and the potential for new non-system routes associated with cross-country travel may also increase sediment and channel impacts, degrading aquatic habitat as these routes are not maintained.

Dispersed camping associated with motorized recreation and cross-county travel is not restricted by Alternative 1. Route densities within RCAs are expected to remain the same or increase under Alternative 1. Approximately 3,359 acres of riparian habitat associated with motorized recreation and cross-county travel could be used for dispersed camping on the Raft River Division. Subwatersheds with extensive system and non-system routes have a higher potential for dispersed camping. Approximately 53% of the total acres within RCAs within the Raft River Division currently are accessible by some type of system or non-system motorized routes. Subwatersheds with the highest amount of accessible riparian areas occur in Onemile Creek and East Bally Mountain subwatersheds. These subwatersheds may be more prone to damage of vegetation and soil erosion in riparian areas and impacts to aquatic habitat from motorized use and dispersed recreation.

Subwatershed route densities are relatively low in this division. However, the potential exists for additional routes on the flatter terrain in key perennial streams. Several of these subwatersheds already have moderate to high amounts of riparian acres accessible from system roads and a few non-system routes. YCT were found in Onemile Creek, Johnson Creek, Wildcat Creek subwatersheds. Increased sedimentation and stream channel impacts in these streams may reduce spawning and rearing habitat resulting in lower salmonid survival and densities. These populations are already at risk due to cattle impacts, diversions, dispersed recreation, and roads.

Minidoka RD—Sublett Division

Total route densities on the Sublett Division are relatively low (< 1.7 mi/mi^2). All subwatersheds for which data was available were found to have FR or FUR habitat and riparian conditions. Route densities are most likely a contributing factor to this impaired condition. Under Alternative 1, motorized travel on non-system routes is likely to continue to cause localized impacts to aquatic habitat as additional user-created routes are established as a result of unregulated cross-country travel. Continued use of non-system routes and the potential for new non-system routes associated with cross-country travel may also increase sediment and channel impacts, degrading aquatic habitat as these routes are not maintained.

Dispersed camping associated with motorized recreation and cross-county travel is not restricted by Alternative 1. Route densities within RCAs are expected to remain the same or increase under Alternative 1. Approximately 5,500 acres of riparian habitat associated with motorized recreation and cross-county travel could be used for dispersed camping on the Sublett Division. Subwatersheds with extensive system and non-system routes have a higher potential for dispersed camping. Approximately 86% of the total acres within RCAs within the Sublett Division currently are accessible by some type of system or non-system motorized routes. Subwatersheds with the highest amount of accessible riparian areas occur in Upper South Fork Rock Creek, North Heglar Canyon Creek, and Upper Sublett Creek subwatersheds. These subwatersheds may be more prone to vegetation damage and soil erosion in riparian areas, and impacts to aquatic habitat from motorized use and dispersed recreation.

Subwatershed route densities are relatively low in this division. The overall risk to fish habitat is also low because aquatic habitat is limited in most subwatersheds as a result of the small size and intermittent nature of area streams. However, the potential exists for additional routes on the flatter terrain in key perennial streams. Several of these subwatersheds already have moderate to high amounts of riparian acres accessible from system roads and a few non-system routes. YCT are present in Upper Sublett Creek and Lake Fork Creek subwatersheds. These areas' streams have been identified as important to maintaining or restoring strong populations of YCT and are a high priority for restoration. Increased sedimentation and stream channel impacts may reduce spawning and rearing habitat resulting in lower salmonid survival and densities. This population also is already at risk due to cattle impacts, diversions, dispersed recreation, roads, and culvert barriers.

Table 3-49 visually depicts the summary of indicators, by alternative, by division, for the Minidoka RD. The summary was derived in part from a more detailed analysis that is found in the Soils/Hydrology Resource Specialist Report found in the project record for the route designation EA.

Table 3-49. Summary of indicators by alternative, by division, for the Minidoka RD.

Indicators	Alternative 1 No Action Baseline	Alternative 2 Proposed Action	Alternative 3	Alternative 4
Number of subwatersheds where route density exceeds 1.7 mi/mi^2	Albion: 1 Black Pine: 0 Cassia: 21 Raft River: 0 Sublett: 0	Albion: 1 Black Pine: 0 Cassia: 9 Raft River: 0 Sublett: 0	Albion: 1 Black Pine: 0 Cassia: 11 Raft River: 0 Sublett: 0	Albion: 1 Black Pine: 0 Cassia: 9 Raft River: 0 Sublett: 0
Miles of motorized system trails	Albion: 20 Black Pine: 4 Cassia: 88 Raft River: 9 Sublett: 12	Albion: 27 Black Pine: 6 Cassia: 150 Raft River: 14 Sublett: 18	Albion: 33 Black Pine: 6 Cassia: 180 Raft River: 14 Sublett: 19	Albion: 27 Black Pine: 4 Cassia: 134 Raft River: 14 Sublett: 18
Miles of system routes closed to motorized use	Albion: 0 Black Pine: 0 Cassia: 0 Raft River: 0 Sublett: 0	Albion: 0 Black Pine: 0 Cassia: 1.46 Raft River 0 Sublett: 0	Albion: 0 Black Pine: 0 Cassia: 0.63 Raft River: 0 Sublett: 0	Albion: 1.64 Black Pine: 0 Cassia: 4.99 Raft River: 0 Sublett: 0
Percent of Riparian Conservation Areas open to motorized use and dispersed camping[a]	Albion: 38 Black Pine: 55 Cassia: 59 Raft River: 53 Sublett: 86	Albion: 29 Black Pine: 27 Cassia: 28 Raft River: 22 Sublett: 37	Albion: 36 Black Pine: 27 Cassia: 28 Raft River: 23 Sublett: 37	Albion: 28 Black Pine: 27 Cassia: 27 Raft River: 22 Sublett: 37

a. Percentage based on total acres within RCAs adjacent to open or designated motorized routes.

Forest Plan Consistency

Desired future aquatic conditions are described in the Forest Plan (USDA 2003a). These desired conditions include the maintenance or expansion of native and desired non-native fish and other aquatic species, and the maintenance or improvements of habitat conditions to prevent further listing of species. Management actions should result in no long-term degradation of aquatic resource conditions (Forest Plan p. III-18). Impacts from Alternative 1 may make it more difficult to achieve or move toward desired conditions where current impacts from motorized use are the greatest.

Impacts from Alternative 1 may make it more difficult to meet key Forest Plan direction. Specifically, the intent of SWST01 to maintain or restore water quality to fully support beneficial uses and native and desired non-native fish species and their habitat, and SWST07 to ensure management activities within watersheds containing 303(d) listed water bodies improve or maintain overall progress toward beneficial use attainment for pollutants that led to the listing.Finally, Alternative 1 will not met the intent of WARS because impacts will make it harder to secure the highest geomorphic and water quality integrities for habitats that support strong populations of wide ranging aquatic species, and extend favorable conditions into adjacent subwatersheds to create a larger and more contiguous network of suitable and productive habitats; and make incremental improvements to water quality, fish habitat, and riparian conditions for aquatic and beneficial uses that will contribute to the de-listing of listed fish species and Clean Water Act 303(d) water quality limited waterbodies.

Effects Common to Alternatives 2–4

Many of the indicators and effects to aquatic habitat are similar to those described in the Soils/Hydrologic Resources section of this chapter. As such, data and additional supporting information for the statements and conclusions made herein can be viewed in their original, detailed form in the Soils/Hydrology Resource Specialist Report found in the project record for the route designation EA.

Cross-Country Travel

Action alternatives would not allow cross-country travel except in designated open-use areas. Motor vehicle use would be restricted to designated system roads and trails. As a result new, motorized non-system routes would not be established and effects to aquatic habitat would be greatly diminished compared to those described in Alternative 1. Specifically, risks associated with surface erosion, channel and riparian impacts from route encroachments, and fish barriers from new stream fords should all be reduced. The net result will be a beneficial effect for riparian areas, aquatic organisms, and their habitat.

Route Density

The density of motorized routes would decrease in almost all subwatersheds under each action alterative compared to Alternative 1. Non-system routes that are not converted into a system road or trail would no longer be available for motorized recreation. As motorized route densities decrease, so should impacts to streams, riparian areas, and aquatic habitat. This is because motorized vehicles will not be eroding route surfaces or changing ground cover/compacted soils on routes that are not maintained. Tracks created by motorized vehicles can concentrate water runoff increasing its power and exacerbating erosion impacts (Hinckley, Iverson, and Hallet 1983). OHV tracks, especially on erosion-sensitive soil surfaces, can form continuous rills and channels that can become gullies (Heede 1983).

Subwatersheds with higher non-system route densities are more likely to have more stream fords and disturbance to aquatic organisms. As the density of motorized routes decrease, so should the number of stream crossings being used. As described in Alternative 1, recreational use of stream crossings can cause direct effects to aquatic organisms by displacing them downstream, altering behaviors, and/or crushing them. Fewer stream crossings should result in less direct disturbance to aquatic organisms.

Associated effects (i.e., developed and dispersed recreation, firewood cutting in riparian areas) from motorized access should also decline in most subwatersheds across the route designation area as motorized access decreases. As described previously, motorized access and associated activities can magnify negative effects on aquatic systems. Subwatersheds with route densities higher than 1.7 mi/mi^2 are considered more likely to impact aquatic resources (Quigley and Arbelbide 1997).

Route Maintenance

Each action alternative converts a portion of the user-created, non-system routes into system trails or roads. Currently many non-system routes have no features for proper drainage or erosion control. Water and sediment can concentrate on these travel routes during spring snowmelt or periods of intense rain, and be delivered to streams. Poorly designed or maintained travel routes have a higher potential to directly and indirectly impact streams (Belt, O'Laughlin, and Merrill 1992). Many user-created routes are located next to streams and wetlands or through erosive soils, increasing the risk of impacts to aquatic habitat and riparian vegetation.

A system route designation means non-system routes will receive tread, drainage (culverts, waterbars, ditchlines), and trailway (brushing, removing fallen obsticles, etc.) maintenance they require to maintain tread and hillslope integrity. System routes that receive adequate maintenance generally have sufficient drainage, so water and sediment can be diverted off the route and not routed to streams (Furniss, Roelofs, and Yee 1991). System routes can also be relocated or realigned from locations (poorly drained soils, wetlands or high erosive soils) that can not be adequately maintained.

Use of Non-System Routes

Motorized use on existing user-created, non-system routes would not be allowed under any action alternative. Non-system routes would only be available for non-motorized recreation. The level of non-motorized use that remaining routes would receive is unknown. However, impacts to riparian areas and aquatic habitat would be less than those described previously under Alternative 1. Motorized travel on non-system routes would no longer occur in areas with high or very high surface erosion potential nor through riparian areas where travel can damage riparian vegetation and stream banks. Furthermore, not all remaining non-system routes would be used for non-motorized recreation. Routes used by mountain bikers and equestrians could see only localized surface erosion and impacts to vegetation depending on the frequency and intensity of use. Weaver and Dale (1978) found that horses caused greater soil compaction and increased trail widths compared to hikers, because horses apply a greater force to the routes surface than hikers or off-road bicyclists.

Changes to Motorized Use in System Routes

The action alternatives would change the type of motorized use of existing system roads and trails. For example, some system roads that currently allow all types of motorized use would only allow motorcycles. In other cases, motorized use on system trails would change from all types of vehicles to motorized vehicles up to 50 in. wide.

All system trails would receive the appropriate maintenance for their designated use including sufficient drainage and erosion control. Therefore, effects to water quality, riparian areas, and slope hydrology from these use-type changes would be no different than what is occurring now.

Proposed System Road Full Size

Several non-system routes in the Big Water Virginia subwatershed (Kelley Flats area) and one system trail in the Upper Little Smoky Creek subwatershed will be converted to full system roads on the Fairfield RD. Alternatives 2 and 3 would designate 2.32 mi, while Alternative 4 would designate 0.79 mi. These routes already exist and are currently used by motorized vehicles. No road construction is required with the proposed system roads. Routes will be brought up to standard where needed. This should improve drainage and reduce surface erosion and sediment to aquatic habitat in Upper Little Smoky Creek and South Fork Boise River.

Fairfield RD

Aquatic Habitat

Subwatersheds exceeding 1.7 mi/mi^2

With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease in most subwatersheds from Alternative 1. Of the 11 subwatersheds that exceeded the 1.7 mi/mi^2 route density under Alternative 1, four no longer exceed that density under any of the action alternatives. Alternative 3 has the highest number of subwatersheds exceeding the 1.7 mi/mi^2 route density with seven subwatersheds exceeding the threshold, followed by Alternative 2 with five subwatersheds, and Alternative 4 with three subwatersheds exceeding the 1.7 mi/mi^2 route density. The elimination of cross-country travel and the conversion of non-system routes to system routes should reduce impacts to aquatic habitat as stream crossings and improperly designed and maintained routes are no longer available for motorized use. Less erosion and stream bank impacts should result in better aquatic habitat depending on other natural and management influences occurring in each subwatershed.

Route Maintenance

Most subwatersheds under Alternative 3 would see system trail increases as non-system routes are converted to system routes. The largest system trails increase would occur in the Phillips–Wardrop, Upper Willow Creek (Camas Creek subbasin), Big Water–Virginia, and Little Smoky drainage (Worswick–Grindstone, Red Rock Carrie, Upper Little Smoky Creek and Basalt Creek (South Fork Boise River subbasin). Aquatic habitat impacts associated with 66 mi of the existing non-system routes would be reduced or eliminated under Alternative 3 as these routes (65 mi of trail and 1 mi of road) are converted to system roads or trails and receive maintenance. Alternative 2 would see a reduction in impacts associated with 14 mi of non-system routes (13 mi of trail and 1 mi of road) and Alternative 4 would see a reduction in impacts associated with 10 mi of non-system routes as routes are converted to system roads or trails and receive maintenance.

Alternatives 2 and 4 would see more moderate system trail increases in many of the same subwatersheds as Alternative 3. However, these alternatives decrease more system trails in Upper Willow Creek, House–Beaver, and Miller-Bowns-Salt than Alternative 3, as system trails are closed to motorized use. Finally, Alternative 4 would convert fewer non-system routes to system trails than Alternatives 2 and 3. The largest differences are in Big Water–Virginia, Upper Little Smoky Creek, and Basalt Creek subwatersheds. These subwatersheds are in areas with high or very high surface erosion potential. Leaving non-system routes in these subwatersheds may cause localized impacts to aquatic habitat. However, impacts would not be as great as those portrayed in Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time reducing surface erosion to streams. Thus, the action alternatives should help to slowly improve aquatic habitat. Upgrading non-system routes to system routes and elimination of cross-country travel should also reduce sediment sources and result in localized improvements to aquatic habitat.

System Route Closure to Motorized Use

The Fairfield RD would close approximately 12.48 mi of system routes in Elk–Fricke and Upper Willow Creek, Abbot–Shake, Big Water–Virginia, Upper Little Smoky Creek, and Basalt Creek subwatersheds in all alternatives. Alternative 2 would close an additional 6.02 mi of system routes in Upper Soldier Creek, Houseman–Beaver, and Miller-Bowns-Salt subwatersheds. Finally, Alternative 4 would close an additional 12.68 mi in Upper Willow Creek, Lick–Five Points and Worswick–Grindstone subwatersheds. Routes in Upper Soldier Creek, Lick–Five Points, Abbot–Shake, and Upper Willow Creek parallel riparian areas and streams for some or all of their distance. All subwatersheds have high or very high surface erosion potential increasing the risk of sedimentation to streams and impacting aquatic habitat if not properly stabilized when routes are removed from the system.

Closed routes would no longer receive annual maintenance, but would remain open to non-motorized recreation. Many of these system routes currently have ditchlines, stream culverts, and other drainage features to safely route water downstream and keep treads intact. These drainage features can plug, causing increased surface erosion or structure failure. To prevent these problems, any system road or trail that has drainage features in place and received routine maintenance in the past that is converted to a non-system route will be reviewed by the SNF within three years of the decision to determine what long-term stabilization measures are required to prevent erosion to streams and route failures.

Riparian Recreational Use

The acres open for dispersed camping from motorized recreation and cross-county travel decrease under each action alternative. Accessible RCA acres are reduced by 31% in Alternative 3 (9,138 acres), 32% in Alternative 2 (8,953 acres) and 33% in Alternative 4 (8,810 acres) as compared to Alternative 1 across the route designation area. At the subwatershed scale, differences among alternatives are minor. Alternative 4 reduces accessible areas in RCAs the most in Upper Willow Creek and Lick–Five Points, Worswick–Grindstone, and Upper Little Smoky Creek by removal of system routes and by not designating as many non-system routes for motorized use.

Designation of select non-system routes would have minor influence on motorized use and dispersed camping within subwatersheds, because the majority of proposed system routes on the Fairfield RD occur on ridgetops or steeper mid-slope areas. The few routes that are located in riparian areas occur in narrow, headwater valley bottoms where dispersed recreation is less conducive.

Summary

Collectively, eliminating cross-country travel and motorized use of non-system routes, converting non-system routes to system routes, closing select system routes to motorized travel, and decreasing the number of riparian acres available from motorized dispersed recreation would help minimize existing and new impacts to aquatic habitat. For example, several subwatersheds (Willow and Boardman creeks) that support key fish populations currently have high route densities and a high percentage of their riparian areas accessible under Alternative 1. In Upper Willow Creek route densities would decrease by 0.49 mi/mi^2 in Alternative 3 to 0.98 mi/mi^2 in Alternatives 2 and 4; and 1.65 mi of system roads and trails (Alternative 3) to 6.63 mi (Alternatives 2 and 4) of system roads and trails would be closed. In Boardman Creek, route densities would decrease by 0.67 in Alternative 3 to 0.75 mi/mi^2 in Alternatives 2 and 4. Fewer motorized routes and accessible acres should help to minimize sediment sources, fish barriers from stream fords, and riparian streambank damage in these subwatersheds. Closure of system routes to motorized use will benefit aquatic conditions by reducing sediment sources as stabilization measures are implemented. These actions should help reduce risks and threats to aquatic habitat and key fish populations.

MIS

Bull trout only occur in the South Fork Boise River subbasin within the project area. The action alternatives would not allow cross-country travel and would restrict motor vehicle use to designated system roads and trails in the South Fork Boise River subbasin. This will reduce sediment sources and impacts to stream channels and riparian areas from route encroachments in streams that support bull trout (Deadwood and Boardman creeks) and streams that support wandering subadult bull trout (Salt Creek and Little Smoky drainage).

The action alternatives convert a portion of the user-created, non-system routes into system trails. A system route designation means non-system routes will receive the maintenance they require to maintain tread and hillslope integrity. System routes may also be relocated or realigned from locations (poorly drained soils, wetlands or high erosive soils) that can not be adequately maintained. As such, well maintained travel routes will reduce sediment sources to fish habitat used by wandering subadult bull trout in the Miller-Bowns-Salt subwatershed and the Little Smoky drainage.

Several non-system routes in the Big Water Virginia subwatershed (Kelley Flats area) and one system trail in the Upper Little Smoky Creek subwatershed will be converted to full system roads. These routes already exist and are currently used by motorized vehicles. Routes will be brought up to standard where needed, improving drainage and reducing surface erosion and sediment to Upper Little Smoky Creek and South Fork Boise River.

The action alternatives close system routes in Abbot–Shake, Big Water–Virginia, Houseman–Beaver, Miller-Bowns-Salt, Lick–Five Points, Worswick–Grindstone, Upper Little Smoky Creek, and Basalt Creek subwatersheds. Routes in Lick–Five Points and Abbot–Shake subwatersheds parallel riparian areas and streams for some or all of their distance. They also occur in areas with high or very high surface erosion potential, increasing the risk of sedimentation to streams if not properly stabilized when routes become non-system trails. Conversion of system routes to non-system routes would benefit aquatic resources by removing motorized routes near streams and riparian areas. Motorized routes encourage additional stream crossings and dispersed campsites in areas where terrain is conducive for such activities. Conversions also benefit aquatic conditions by reducing sediment sources and restoring natural slope hydrology as stabilization measures are implemented.

Implementation of the action alternatives would have a beneficial affect to habitat in several subwatersheds currently occupied by bull trout and wandering subadult bull trout. Project effects would slowly improve habitat conditions where non-system routes are converted to system roads or trails, existing non-system routes are no longer used by motorized vehicles, and where cross-country travel decreases (open terrain). However, the overall abundance or trend of bull trout is not likely to change because habitat improvements are most likely to occur in areas that only occasionally support wandering subadults or in areas where bull trout are not currently present. The project should have minor influences on the overall bull trout metapopulation (i.e., collection of patches) in the South Fork Boise River.

Ketchum RD

Subwatersheds exceeding 1.7 mi/mi^2

With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease in most subwatersheds from Alternative 1. No subwatersheds would have route densities higher than 1.7 mi/mi^2. The elimination of cross-country travel and the conversion of non-system routes to system routes should reduce impacts to aquatic habitat as stream crossings and improperly designed and maintained routes are no longer available for motorized use. Less erosion and stream bank impacts should result in better aquatic habitat depending on other natural and management influences occurring in each subwatershed. Continued use of system routes in these subwatersheds is not expected to impact aquatic habitat because all routes will be maintained.

Route Maintenance

The largest increases in system trails are in the Upper Warm Springs Creek, Warfield–West Fork Warm Spring, Greenhorn Creek, and Cove Creek (Big Wood River subbasin) and Baugh Creek (Little Wood River subbasin) subwatersheds under Alternative 3. Aquatic habitat impacts associated with 25 mi of the existing non-system routes would be reduced or eliminated under Alternative 3 as these routes are converted to system roads (2 mi) and trails (23 mi) and receive maintenance. Similarly, Alternative 2 would see a reduction in impacts associated with 18 mi of non-system routes and Alternative 4 would see a reduction in impacts associated with 7 mi of non-system routes as routes are converted to system trails and receive maintenance.

Alternative 2 would see fewer non-system route impacts addressed through conversion to system trails in the Cove Creek subwatershed as compared to Alternative 3. Alternative 4 would see fewer non-system route impacts addressed through conversion to system trails in Greenhorn Creek, Warfield–West Fork Warm Spring, and Cove Creek subwatersheds as compared to Alternative 3. Several of the non-system routes parallel streams or have multiple stream crossings in Greenhorn Creek, Warfield–West Fork Warm Spring, and Cove Creek subwatersheds. The Warfield–West Fork Warm Spring subwatershed also has a high to very high surface erosion potential. These subwatersheds under Alternative 4 would not see as great a reduction of localized effects as the other 2 alternatives because these non-system routes would not be converted to system routes and maintained. Localized effects to aquatic habitat may persist from non-system routes until they recover vegetatively.

System Route Closure to Motorized Use

The Ketchum RD would close a segment of a system road in the Wolftone–North Fork Deer subwatershed (Big Wood River subbasin) in all alternatives. It would also close a system road in Greenhorn Creek subwatershed in Alternative 4. Both routes parallel riparian areas and streams for most of their distance. The Wolftone–North Fork Deer subwatershed also has high or very high surface erosion potential, increasing the risk of sedimentation to streams and impacting aquatic habitat if not properly stabilized when routes become non-system trails.

Closed routes would no longer receive annual maintenance, but would remain open to non-motorized recreation. Many of these system routes currently have ditchlines, stream culverts, and other drainage features to safely route water downstream and keep treads intact. These drainage features can plug, causing increased surface erosion or structure failure. To prevent these problems, any system road or trail that has drainage features in place and received routine maintenance in the past that is converted to a non-system route will be reviewed by the SNF within three years of the decision to determine what long-term stabilization measures are required to prevent erosion to streams and route failures.

Riparian Recreational Use

The acres open for dispersed camping from motorized recreation and cross-county travel decrease under each action alternative. Open acres are reduced by more than 30% from Alternative 1 across the route designation area. Acres are reduced from 4,342 (Alternative 1) to approximately 3,196 (Alternative 3) to 3,056 (Alternative 2) to 2,919 (Alternative 4). At the subwatershed scale, differences among alternatives for accessible acres are minor. Alternative 4 reduces accessible areas in RCAs the most in Greenhorn, Cove, and Baugh creeks due to removal of system routes and not designating as many non-system routes for motorized use.

Designation of select non-system routes would have a minor influence on motorized use and dispersed camping within most subwatersheds, because the majority of proposed system routes on the Ketchum RD are on steeper mid-slope areas or narrow, headwater valley bottoms where dispersed recreation is less conducive. One exception is Cove Creek where Alternative 3 would designate 2.25 mi of non-system routes (open to vehicles < 50 in. wide) along riparian areas in the Finley Gulch and Big Witch Creek drainages. Motorized recreation and dispersed camping is allowed 100 ft off the designated route. This may cause trampling of riparian vegetation and stream banks in sensitive areas, increasing sedimentation to streams and downstream Wood River sculpin populations. If use becomes excessive, the SNF can take administrative actions to mitigate or close the area before serious resource damage occurs.

Summary

Collectively, eliminating cross-country travel and motorized use of non-system routes, converting non-system routes to system routes, closing select system routes to motorized travel, and decreasing the number of riparian acres available from motorized dispersed recreation would help minimize existing and new impacts to aquatic habitat. Average route densities would decrease from 1.33 to 0.81 (Alternative 4) to 0.92 mi/mi^2 (Alternative 3) across the project area. Accessible riparian acres would also decrease. These reductions should help to minimize sediment sources, fish barriers from stream fords, and riparian streambank damage in subwatersheds supporting Wood River sculpin, redband trout and introduced brook trout populations. Closure of system routes to motorized use in the Wolftone–North Fork Deer subwatershed would also benefit aquatic conditions by reducing sediment sources as stabilization measures are implemented.

Minidoka RD—Albion Division

Subwatersheds exceeding 1.7 mi/mi^2

With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease slightly in most subwatersheds from Alternative 1. Only the Upper Cassia subwatershed would have route densities higher than 1.7 mi/mi^2 under all action alternatives. The elimination of cross-country travel and the conversion of select non-system routes in this subwatershed should reduce impacts to aquatic habitats. As these routes are maintained, impacts to aquatic habitat from erosion should be limited as problem locations are addressed over time. Still, better access is more likely to enable other activities (i.e., dispersed recreation, firewood cutting in riparian areas) that may impact aquatic habitat. This subwatershed should be periodically reviewed to ensure these activities do not pose a risk to aquatic habitat. If they do the SNF can take administrative actions before serious resource damage occurs.

The elimination of cross-country travel and the conversion of non-system routes to system routes should reduce impacts to aquatic habitat as stream crossings and improperly designed and maintained routes are no longer available for motorized use. Less erosion and stream bank impacts should result in better aquatic habitat depending on other natural and management influences occurring in each subwatershed. Continued use of system routes in these subwatersheds is not expected to impact aquatic habitat because all routes will be maintained.

Route Maintenance

In the Albion Division, aquatic habitat impacts associated with 3 mi of non-system routes would be reduced or eliminated under all action alternatives as these routes are converted to system trails and receive maintenance. Two of the three non-system routes converted to system trails in these alternatives occur near streams (Brim Canyon in Upper Marsh Creek and Dry Creek in Mid-Cassia). These subwatersheds could potentially see the greatest reduction of non-system route impacts to aquatic habitat as problem areas are addressed through maintenance and poor route locations are eventually relocated.

Non-system routes will remain in portions of Upper Cassia, Mill Creek, Birch Creek, and Almo Creek subwatersheds. The precise condition of these routes is unknown as these routes have never been maintained, but several parallel headwater streams or have multiple stream crossings. Leaving non-system routes in these subwatersheds may cause localized impacts to aquatic habitat. However, impacts would not be as great as those portrayed under Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time reducing surface erosion to streams. Thus, the action alternatives should help to slowly improve aquatic habitat.

System Route Closure to Motorized Use

Alternatives 2 and 3 would not close any system routes on the Albion Division, while Alternative 4 would close 1.64 mi. Alternative 4 would close a system trail in Upper Marsh Creek that parallels the headwaters of Marsh Creek for some its distance.

Closed routes would no longer receive annual maintenance, but would remain open to non-motorized recreation. Many of these system routes currently have ditchlines, stream culverts, and other drainage features to safely route water downstream and keep treads intact. These drainage features can plug, causing increased surface erosion or structure failure. To prevent these problems, any system road or trail that has drainage features in place and received routine maintenance in the past that is converted to a non-system route will be reviewed by the SNF within three years of the decision to determine what long-term stabilization measures are required to prevent erosion to streams and route failures.

Riparian Recreational Use

The acres open for dispersed camping from motorized recreation and cross-county travel decrease under each action alternative. On the Albion Division, accessible acres are reduced by more than 28% from Alternative 1 across the route designation area. Acres are reduced from 1,811 (Alternative 1) to approximately 1,712 (Alternative 3) to 1,382 (Alternative 2) to 1,364 (Alternative 4).

Overall, establishment of new dispersed camp sites from motorized recreation would decrease with all action alternatives because cross-country travel will not be allowed and many non-system routes will not be designated for motorized use. At the subwatershed scale, differences among alternatives for accessible acres are minor. Alternative 4 reduces accessible areas in RCAs slightly more in Upper Marsh Creek and Big Rocky-Smith-Willow subwatersheds due to removal of system routes and not designating as many non-system routes for motorized use.

Designation of select non-system routes in the Albion Division should have a minor influence on motorized use and dispersed camping within most subwatersheds because the majority of the proposed system routes occur on steeper mid-slope areas or narrower, headwater valley bottoms where dispersed recreation is less conducive.

Summary

Collectively, eliminating cross-country travel and motorized use of non-system routes, converting non-system routes to system routes, closing select system routes to motorized travel, and decreasing the number of riparian acres available from motorized dispersed recreation would help minimize existing and new impacts to aquatic habitat. Average route densities would decrease slightly from 0.61 to 0.44 mi/mi^2 (Alternatives 2–4) across the project area. Accessible riparian acres would also decrease. These reductions should help to minimize sediment sources, fish barriers from stream fords, and riparian streambank damage in subwatersheds supporting YCT and introduced brook trout populations. However, recreation use associated with high route densities in a key YCT subwatershed (Upper Cassia Creek) should be carefully monitored over time. Closure of system routes to motorized use in Upper Marsh Creek subwatershed in Alternative 4 would also benefit aquatic conditions by reducing sediment sources as stabilization measures are implemented.

Minidoka RD—Black Pine Division

Subwatersheds exceeding 1.7 mi/mi^2

With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease slightly in most subwatersheds from Alternative 1. No subwatersheds would have route densities higher than 1.7 mi/mi^2 under any of the action alternatives. The elimination of cross-country travel and the conversion of non-system routes to system routes should reduce impacts to aquatic habitat as stream crossings and improperly designed and maintained routes are no longer available for motorized use. Less erosion and stream bank impacts should result in better aquatic habitat depending on other natural and management influences occurring in each subwatershed. Continued use of system routes in these subwatersheds is not expected to impact aquatic habitat because all routes will be maintained.

Route Maintenance

In the Black Pine Division, aquatic habitat impacts associated with 2 mi of non-system routes will be reduced or eliminated under Alternatives 2 and 3 as these routes are converted to system trails and receive maintenance. Alternative 4 does not convert any non-system routes to system trails.

Non-system routes will remain in portions of several subwatersheds in this division (e.g., East Dry–Burnt Basin, Sixmile–Kelsaw, and Rice Canyon Creek). The precise condition of these routes is unknown as these routes have never been maintained, but several parallel headwater streams or have multiple stream crossings. Leaving non-system routes in these subwatersheds may cause localized impacts to aquatic habitat. However, impacts would not be as great as those portrayed under Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time helping to recover routes hydrologically. Finally, most streams on the Curlew Valley side of this division go subsurface, so the possibility of transporting sediment to a perennial or intermittent stream is very low.

System Route Closure to Motorized Use

In the Black Pine Division, there are no system routes that will be closed to motorized use.

Riparian Recreational Use

The acres accessible for dispersed camping from motorized recreation and cross-county travel decrease under each action alternative. Acres are reduced from 4,269 (Alternative 1) to approximately 2,059 (Alternatives 2 and 3) to 2,037 (Alternative 4).

Overall, the potential for establishment of new dispersed camp sites from motorized recreation would decrease with all action alternatives because cross-country travel will not be allowed and many non-system routes will not be designated for motorized use. At the subwatershed scale, differences among alternatives for accessible acres are minor. Alternative 4 reduces accessible areas in RCAs slightly more in Sweetzer Canyon–Meadow subwatershed due to not designating as many non-system routes for motorized use.

Designation of select non-system routes in the Black Pine Division should have a minor influence on motorized use and dispersed camping within most subwatersheds because the majority of the proposed system routes occur on steeper mid-slope areas or narrower, headwater valley bottoms where dispersed recreation is less conducive.

Summary

Collectively, eliminating cross-country travel and motorized use of non-system routes and decreasing the number of riparian acres available from motorized dispersed recreation would help minimize existing and new impacts to aquatic habitat. Average route densities would decrease slightly from 0.57 to 0.37 mi/mi^2 (Alternatives 2–4) across the project area. Accessible riparian acres would also decrease. These reductions should help to minimize sediment sources, fish barriers from stream fords, and riparian streambank damage in subwatersheds supporting YCT populations.

Minidoka RD—Cassia Division

Subwatersheds exceeding 1.7 mi/mi^2

With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease in many subwatersheds from Alternative 1 densities. Decreases are especially pronounced in subwatersheds in the Middle Snake subbasin. Several of these subwatersheds (East Fork Dry Creek, Middle and West Fork Dry Creek) support key YCT populations or redband populations (McMullen Creek and Fourth Fork Rock Creek). The elimination of cross-country travel and the conversion of select non-system routes to system routes in these and other subwatersheds should reduce impacts to aquatic habitat as stream crossings and improperly designed and maintained routes are no longer available for motorized use. Less erosion and stream bank impacts should result in better aquatic habitat depending on other natural and management influences occurring in each subwatershed. Continued use of system routes in these subwatersheds is not expected to impact aquatic habitat because all routes will be maintained.

Upper Goose Creek, Upper Trapper Creek, Sawmill Creek, Upper Big Cottonwood Cr, Little Cedar–Buckhorn, Third Fork Rock Creek, North Fork Shoshone–Hopper, South Fork Shoshone Creek, and Big Creek subwatersheds would still retain route densities higher than 1.7 mi/mi^2 under all action alternatives. These high densities are from a combination of existing system roads and trails and conversion of non-system routes to system routes. Several subwatersheds with high route densities support important YCT populations (Upper Goose Creek, Upper Big Cottonwood Creek). Continued use of system routes in these subwatersheds is not expected to impact aquatic habitat because all routes will be maintained. Furthermore, not all system trails will support motorized recreation. Still, better access is more likely to enable other activities (i.e., dispersed recreation, firewood cutting in riparian areas) that may impact aquatic resources.

Route Maintenance

On the Minidoka RD, the largest increase in system trails occurs on the Cassia Division (Goose Creek, Rock Creek, and Salmon Falls Creek) with all action alternatives. Aquatic habitat impacts associated with 96 mi of non-system routes would be reduced or eliminated under Alternative 3 as these routes are converted to system routes and receive maintenance. Similarly, Alternative 2 would see a reduction in impacts associated with 67 mi of non-system routes and Alternative 4 would see a reduction of impacts associated with 58 mi of non-system routes as these routes are converted to system trails and receive maintenance. Trout Creek, Piney Goose, Upper Goose Creek, Fall Creek, Third Fork Rock Creek, and North Fork/South Fork Shoshone Creek subwatersheds would have the greatest number of non-system routes converted to system routes across all action alternatives. Other subwatersheds would see improvements as problem locations receive maintenance or are relocated over time.

Alternative 4 would convert fewer non-system routes to system trails than Alternative 2 in Beaverdam Creek, Cave Gulch, Upper Goose Creek, and Fifth Fork of Rock Creek. More non-system routes will remain in these subwatersheds, which will not receive maintenance. The precise condition of these routes is unknown, but several parallel streams for most of their distance and have multiple stream crossings in Beaverdam Creek, Upper Goose Creek, and Fifth Fork of Rock Creek. Given their location it is possible some routes would continue to intercept overland flow and cause erosion to streams. This may result in localized impacts to aquatic habitat. However, impacts would not be as great as those portrayed in Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time helping to recover routes hydrologically.

System Route Closure to Motorized Use

Each action alternative closes select system roads and trails to motorized use. Alternative 3 closes the fewest system miles on the Cassia Division, while Alternative 4 closes the most. A system road and trail would be closed to motorized vehicles in Upper Big Cottonwood Creek in all alternatives. Alternative 2 and 4 would close a system trail in Bear Hollow in Upper Goose Creek, while Alternative 4 would close system routes in the Big Hollow subwatershed. The Bear Hollow route parallels riparian areas and streams for some or all of its distance.

Closed routes would no longer receive annual maintenance, but would remain open to non-motorized recreation. Many of these system routes currently have ditchlines, stream culverts, and other drainage features to safely route water downstream and keep treads intact. These drainage features can plug, causing increased surface erosion or structure failure. To prevent these problems, any system road or trail that has drainage features in place and received routine maintenance in the past that is converted to a non-system route will be reviewed by the SNF within three years of the decision to determine what long-term stabilization measures are required to prevent erosion to streams and route failures.

Riparian Recreational Use

The acres accessible for dispersed camping from motorized recreation and cross-county travel decrease under each action alternative. On the Cassia Division, accessible acres are reduced by more than 27% from accessible acres under Alternative 1 across the route designation area. Acres are reduced from 16,390 (Alternative 1) to approximately 7,891 (Alternative 3) to 7,723 (Alternative 2) to 7,681 (Alternative 4).

Overall, establishment of new dispersed camp sites from motorized recreation would decrease with all action alternatives because cross-country travel will not be allowed and many non-system routes will not be designated for motorized use. At the subwatershed scale, differences among alternatives for accessible acres are minor. Alternative 4 reduces accessible areas in RCAs the most in Upper Goose, Cottonwood, and Big Creeks due to removal of system routes and not designating as many non-system routes for motorized use.

On the Cassia Division, all action alternatives propose routes that parallel riparian areas for extended distances: Swanty Creek, a tributary to Trout Creek (1.72 mi, proposed trail open to vehicles <50 in. wide); Pole Camp Creek a tributary to N.F. Shoshone Creek (1.07 mi, open to vehicles <50 in. wide); Cold Spring Canyon a tributary to Fall Creek (1.49 mi, proposed trail open to motorcycle, bike, horse, and foot traffic); and McMullen Creek (2.09 mi, proposed trail open to motorcycle, bike, horse, and foot traffic).

In addition to these routes, Alternative 2 would designate a non-system route (proposed trail open to motorcycle, bike, horse, and foot traffic) that parallels upper Goose Creek for 2.26 mi. Alternative 3 would designate a second non-system route that parallels the opposite side of the Upper Goose Creek for 2 mi. and would designate 2.46 mi of non-system routes in the Cottonwood Creek drainage of the Salmon Falls Creek subbasin. Finally, Alternative 4 would designate 1.96 mi of non-system routes in Little Piney Creek in Goose Creek.

Although all of these non-system routes already exist, motorized recreation and dispersed camping would be allowed 100 ft off these routes once designated. As these proposed system routes parallel riparian areas and streams for extended distances, there are greater risks of localized impacts to riparian vegetation, stream banks, and soils if use becomes excessive. These areas will be monitored periodically for excessive use, allowing the SNF to take administrative actions such as relocating or closing designated routes before serious resource damage occurs.

Summary

Collectively, eliminating cross-country travel and motorized use of non-system routes, converting select non-system routes to system routes, closing select system routes to motorized travel, and decreasing the number of riparian acres available from motorized dispersed recreation would help minimize existing and future impacts to aquatic habitat. Average route densities would decrease from 2.25 to 1.35 (Alternative 4) to 1.66 mi/mi^2 (Alternative 2) across the Cassia Division. These reductions should help to minimize sediment sources, fish barriers from stream fords, and riparian streambank damage in subwatersheds supporting YCT and redband populations.

However, several key YCT subwatersheds (Upper Goose and Upper Big Cottonwood creeks) would retain route densities higher than 1.7 mi/mi^2. Better access is more likely to enable other activities (i.e., dispersed recreation, firewood cutting in riparian areas) that may impact aquatic resources. Alternatives also propose routes that parallel riparian areas for extended distances in several subwatersheds (i.e., Trout Creek, McMullen Creek, Upper Goose Creek) where motorized recreation and dispersed camping would be allowed 100 ft off designated routes. These activities may cause localized impacts to riparian vegetation, stream banks, and aquatic habitat if use becomes excessive.

Minidoka RD—Raft River Division

Subwatersheds exceeding 1.7 mi/mi^2

With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease in most subwatersheds from Alternative 1 densities. There would not be any subwatersheds with route densities higher than 1.7 mi/mi^2 under any of the action alternatives. The elimination of cross-country travel and the conversion of non-system routes to system routes should reduce impacts to aquatic habitat as stream crossings and improperly designed and maintained routes are no longer available for motorized use. Less erosion and stream bank impacts should result in better aquatic habitat depending on other natural and management influences occurring in each subwatershed. Continued use of system routes in these subwatersheds is not expected to impact aquatic habitat because all routes will be maintained.

Route Maintenance

On the Raft River Division, the largest increase in system trails occurs in Upper Clear Creek, East Bally Mountain, and Wildcat Creek subwatersheds with all action alternatives. Aquatic habitat impacts associated with 7 mi of non-system routes (5 mi of trail and 2 mi of road) would be reduced or eliminated under Alternative 3 as these routes are converted to system roads or trails and receive maintenance. Similarly, aquatic resource impacts associated with 6 mi of non-system routes (5 mi of trails and 1 mi of road) would be reduced or eliminated under Alternatives 2 and 4 as these routes are converted to system roads or trails and receive maintenance.

Several non-system routes will remain in Johnson Creek, Onemile Creek, and Rice Creek subwatersheds. The precise condition of these routes is unknown, but several parallel streams for most of their distance and have multiple stream crossings. Given their location it is possible some routes would continue to intercept overland flow and cause erosion to streams. This may result in localized impacts to aquatic habitat. However, impacts would not be as great as those portrayed under Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time helping to recover routes hydrologically.

System Route Closure to Motorized Use

In the Raft River Division, there are no system routes that will be closed to motorized use.

Riparian Recreational Use
Approximately 3,359 acres of riparian habitat associated with motorized recreation and cross-county travel could be used for dispersed camping on the Raft River Division.

The acres accessible for dispersed camping from motorized recreation and cross-county travel decrease under each action alternative. On the Raft River Division, accessible acres are reduced by more than 20% from accessible acres under Alternative 1 across the route designation area. Acres are reduced from 3,359 (Alternative 1) to approximately 1,462 (Alternative 3) to 1,361 (Alternatives 2 and 4).

Overall, establishment of new dispersed camp sites from motorized recreation would decrease with all action alternatives because cross-country travel will not be allowed and many non-system routes will not be designated for motorized use. At the subwatershed scale, differences among alternatives for accessible acres are minor in most subwatersheds.

Summary
Collectively, eliminating cross-country travel and motorized use of non-system routes, converting select non-system routes to system routes, and decreasing the number of riparian acres available from motorized dispersed recreation would help minimize existing and new impacts to aquatic habitat. Average route densities would decrease slightly from 1.03 to 0.50 mi/mi^2 (Alternatives 2–4) across the project area. Accessible riparian acres would also decrease. These reductions should help to minimize sediment sources, fish barriers from stream fords, and riparian streambank damage in subwatersheds (Upper Clear, Upper George, Johnson, and Wildcat Creeks) supporting YCT populations.

Minidoka RD—Sublett Division

Subwatersheds exceeding 1.7 mi/mi^2
With the elimination of cross-country travel and motorized use of non-system routes, route densities decrease in most subwatersheds from densities under Alternative 1. There would not be any subwatersheds with route densities higher than 1.7 mi/mi^2 under any of the action alternatives. The elimination of cross-country travel and the conversion of non-system routes to system routes should reduce impacts to aquatic habitat as stream crossings and improperly designed and maintained routes are no longer available for motorized use. Less erosion and stream bank impacts should result in better aquatic habitat depending on other natural and management influences occurring in each subwatershed. Continued use of system routes in these subwatersheds is not expected to impact aquatic habitat because all routes will be maintained.

Route Maintenance
On the Sublett Division, aquatic habitat impacts associated with 6 mi of non-system routes would be reduced or eliminated under all the action alternatives as these routes are converted to system trails and receive maintenance. The largest increase in system trails occurs in the North Heglar Canyon Creek and South Heglar Canyon Creek subwatersheds. Lake Fork Creek and Upper Sublett Creek subwatersheds would also see improvements to non-system routes as problem locations receive maintenance or are relocated over time.

Several non-system routes will remain in North Heglar Canyon Creek, Lake Fork Creek and Upper Sublett Creek subwatersheds. The precise condition of these routes is unknown, but several parallel streams for most of their distance and have multiple stream crossings. Given their location it is possible some routes would continue to intercept overland flow and cause erosion to streams. This may result in localized impacts to aquatic habitat. However, impacts would not be as great as those portrayed under Alternative 1 because non-system routes would not be open to motorized vehicles. Routes subject to heavy motorized use are more likely to see greater erosion from soil compaction than non-motorized routes. Many non-system routes would also slowly revegetate and close in over time helping to recover routes hydrologically.

System Route Closure to Motorized Use

In the Sublett Division, there are no system routes that will be closed to motorized use.

Riparian Recreational Use

The acres accessible for dispersed camping from motorized recreation and cross-county travel decrease under each action alternative. On the Cassia Division accessible acres are reduced by more than 27% from accessible acres under Alternative 1 across the route designation area. Acres are reduced from approximately 5,500 under Alternative 1 to approximately 2,393 acres under all action alternatives.

Overall, establishment of new dispersed camp sites from motorized recreation would decrease with all action alternatives because cross-country travel will not be allowed and many non-system routes will not be designated for motorized use. There are no differences among alternatives for accessible acres in subwatersheds.

Summary

Collectively, eliminating cross-country travel and motorized use of non-system routes, converting select non-system routes to system routes, and decreasing the number of riparian acres available from motorized dispersed recreation would help minimize existing and new impacts to aquatic habitat. Average route densities would decrease slightly from 1.00 to 0.68 mi/mi^2 (Alternatives 2–4) across the project area. Accessible riparian acres would also decrease. These reductions should help to minimize sediment sources, fish barriers from stream fords, and riparian streambank damage in subwatersheds (Upper Sublett Creek and Lake Fork Creek) supporting YCT populations.

Cumulative Effects—Fisheries/Aquatic Resources

As described in the issues and indicators, motorized recreation and travel routes (system and non-system) can increase sediment to streams, impact riparian vegetation and stream channels, create fish barriers, and alter slope hydrology. All of these effects can impact fish habitat and water quality where the activities occur and downstream. Of all these effects, fine sediment has the greatest potential to move the furthest downstream and therefore poses the greatest risk to fish and aquatic habitat. A detailed description of the cumulative effects related to sedimentation is described in the Soils Cumulative Effects section of Chapter 3.

Wildlife Resources

Scope of the Analysis

Recreation use, both motorized and non-motorized, has the potential to affect wildlife. Some species of wildlife are sensitive to close-proximity, human activities during breeding, nesting and wintering phases of their life cycles. Human activities can increase stress to some species and may reduce reproductive success. The travel planning regulations at 36 CFR 212.55 (b) (36 CFR §212 Subpart B et seq. 2007), require the following:

"… in designating National Forest System trails and areas on National Forest System lands, the responsible official shall consider effects on the following, with the objective of minimizing:

1. Damage to soil, watershed, vegetation, and other forest resources;
2. Harassment of wildlife and significant disruption of wildlife habitats…"

To meet the requirements of 36 CFR 212.55, this analysis addresses disturbance effects to elk and deer - specifically security, during hunting seasons and calving/fawning time periods. Harassment and disruption are covered under the collective term "disturbance" throughout this analysis.

In addition to the 36 CFR 212.55 requirements, the SNF is required by law, regulation, and policy to address impacts to wildlife species of special designations. Disturbance effects from route density will be analyzed in light of the following designated species:

- Federally listed TEPCS wildlife species
- SNF MIS
- USFS, Region 4, sensitive wildlife species
- Existing big horn sheep populations and the effects to future potential re-introductions
- Migratory bird habitat.

Direct and indirect effects are analyzed from a geographic perspective for the areas proposed for route designation changes on the Ketchum and Fairfield RDs. Cumulative effects for Fairfield and Ketchum RDs are analyzed geographically to include the entire north end of the SNF (Fairfield and Ketchum RDs and SNRA). Cumulative effects analysis includes taking into account all past, present, and reasonably foreseeable future actions in addition to the effects of the proposed action. Cumulative effects are analyzed at the RD level, rather than the division level, for the Minidoka RD.

The Minidoka RD's five divisions are, from a wildlife perspective, separate mountain islands. In analyzing effects to wildlife, it is important to recognize that various scales can be used. A site-specific scale may be 20 acres in size whereas a fine-scale analysis may vary in size from a 6th-field hydrological unit (HU) to a combination of 5th-field HUs, approximately 10,000–100,000 acres. Some fine-scale analyses may not follow hydrologic boundaries when other boundaries are more appropriate to address fine-scale issues. What is most important is to select a scale where the effects of the proposed action and alternatives can be best displayed. For purposes of the wildlife analysis on the Minidoka RD, the direct and indirect effects for the majority of species addressed with regard to route designation were best measured at the RD level by habitat type. Exceptions were made for mule deer, elk, and bighorn sheep. The rationale for analyzing these three species by division, instead of at a district scale, was to be consistent with the boundaries of the big game management units (GMUs) that are used by IDFG to manage these specific populations.

Issue: Wildlife Disturbance

The issue for wildlife disturbance was defined as the following:

> The proposed action (amount of designated roads and trails) may cause disturbance to wildlife. Roads and trails can create habitat fragmentation, and human use of these roads and trails can cause disturbance to wildlife. The density of motorized routes and the amount and frequency of their use can impact wildlife by causing disturbance during critical stages, compromising security, and/or impacting habitat.

To measure the effects of disturbance to wildlife, three indicators have been developed.

- Acres open to cross-country motorized travel within habitat for the species addressed

- Road density within habitat for the species addressed (mi/mi^2)
- Motorized trail density within habitat for the species addressed (mi/mi^2).

These indicators (or measures) are used to describe the current condition and the effects of the alternatives on those conditions.

Affected Environment—Elk and Deer

Elk and deer species require security (cover) during hunting seasons and security (lack of disturbance) during critical life stages such as calving and fawning. As such, they are an excellent species to represent the issue of disturbance in regard to the effects of the alternatives.

Rocky Mountain elk (*Cervus elaphus*) and mule deer (*Odocoileus hemionus*) are known to occur within the route designation areas on the Ketchum, Fairfield, and Minidoka RDs. Both species utilize a variety of habitat on the RDs, including both forested and non-forested habitat, during the non-restricted summer and fall seasons as shown on the travel plan map (generally May 1–November 30).

Fairfield and Ketchum RDs

Elk occur on the Fairfield year-round while mule deer migrate south and southwest off the Fairfield District for the winter. Elk and mule deer occur on the Ketchum RD year-round. However, most mule deer also migrate south off the Ketchum RD for the winter, but some stay within the Ketchum RD and utilize south-facing slopes during this time. The entire route designation area for the Ketchum and Fairfield RDs is potential elk and deer habitat.

Elk within the Fairfield and Ketchum RDs are descendants from elk reintroduced into the Boise River drainage by IDFG in 1915 (IDFG 2001b). Due to over harvesting of elk in the late 1800s, the previous population of elk was thought to be extirpated. Throughout the 1920s and 1930s, elk increased in numbers and expanded in distribution.

Controlled hunting of elk was authorized starting in 1941. Since this population was reintroduced, the genetic pool of elk that likely migrated south out of the area for winter was lost. Concern regarding the lack of suitable winter range, overuse of south-facing slopes and riparian bottoms, and the high winter mortality of elk led to winter feeding. On the Fairfield RD, winter feeding occurred in the Featherville to Little Smoky Creek area starting, roughly, in 1943 and has continued since that time. On the Ketchum RD, wintertime elk feeding occurred in a few locations in the Warm Springs drainage (within the project area).

Mule deer were never extirpated from the Fairfield and Ketchum RDs' route designation areas. Because the genetic pool of deer that migrated out of the analysis area for winter remains, the historical migration patterns still occur. However, some changes to mule deer wintering has occurred due to the development of the Anderson Ranch Dam and Reservoir west of the Fairfield RD and from urban development in the Wood River Valley adjacent to the Ketchum RD. Deer were known to winter along the South Fork Boise River on the Fairfield RD throughout the early and mid-1900s. At some point in the late 1900s, deer began no longer wintering in the river corridor and migrated south and southwest off the Ketchum RD onto BLM and private lands. The reason for this change is unknown.

Minidoka RD

Elk and deer are known to occur on all five divisions of the Minidoka RD. Elk occur primarily on the Cassia and Sublett divisions, although there are small numbers of elk on the Albion, Black Pine, and Raft River divisions. Mule deer occur on all divisions. Elk and mule deer generally use the route designation area during the late spring, summer, and fall (April 1–November 30), migrating to lower elevations during the winter months. Habitat for elk and mule deer exists throughout the southern divisions from high to low elevation, in forested and non-forested areas.

Throughout the early 1900s, elk densities were low to non-existent on the Minidoka RD. In recent years (1980–90s), elk have slowly migrated into the area from expanding herds in Utah and Nevada. Small resident herds (less than 50 head on Albion, Black Pine, and Sublett, with 250 head on Cassia) have become established on four of the five divisions. There are currently no resident elk on the Raft River Division. Numbers of elk tend to vary seasonally because of movements between Idaho, Utah, and Nevada. Controlled hunting of elk is permitted on the four divisions with resident elk.

Mule deer numbers on the Minidoka RD are not as high as they were historically resulting from a variety of factors. Overstocking of livestock during the early 1900s, development of agricultural lands, and construction of interstate highways that have interrupted migration patterns have had influences on the mule deer population. In more recent years (20 yrs.), wildfire, primarily in winter range, and several years of drought has had impacts on the overall deer population in the area.

Hunting Disturbance—Overview

Factors in managing elk and deer populations includes balancing the number of deer and elk killed during hunting seasons, natural predation, foraging habitat quantity and quality, winter mortality, and security habitat quantity and quality. Security habitat is essentially 'hiding cover' from hunters during hunting seasons or from humans and predators during critical stages such as calving and fawning. Coniferous forest, aspen, willow/alder stands, and taller stands of mountain big sagebrush are important hiding cover components for deer and elk across the project area. Amount and frequency of human use of roads and trails along with road and trail density are key factors in security cover. In general, the greater the road and trail density in conjunction with frequency of human use of the roads and trails, the less the deer and elk security. There is a trade off between the number of hunting tags that can be sold, length of seasons, and security cover, particularly as it relates to open road density.

Within route designation areas, roads and trails that are open to full-sized vehicles during hunting season tend to pose the most influence to security issues for elk and deer from hunting in comparison to ATV, motorcycle, and non-motorized trails (and seasonally closed roads). Nearly 100% of all hunters arrive into the areas via a full-sized vehicle. Other transportation forms (ATV, horses, motorcycles, and walking) are often used for actual hunting although many hunters look for big game while driving in their full-sized vehicles. Deer and elk generally flee from vehicles as well as other forms of transportation. All these forms of transportation are important to consider in context of deer and elk security cover during the hunting season.

IDFG Big Game MUs—Fairfield

The Fairfield RD route designation area lies within the IDFG GMUs[2] 43 and 44. The northern half of the Fairfield RD's route designation area is within GMU 43, and the southern half is within GMU 44. The watershed divide between Camas Creek and the South Fork Boise River watersheds makes up the majority of the boundary between these two GMUs.

Hunting in GMUs 43 and 44 consists of a mixture of general hunts, which are available to anyone eligible to purchase a hunting license, and controlled hunts, which are sold on a lottery basis. In GMU 43, IDFG offers general-season archery (August 30–September 30), any-weapon deer hunts (October 10–31), and a controlled hunt for antlerless deer (October 10–31). GMU 43 consistently hosts over 3,000 hunters each

[2] GMUs are also commonly referred to as hunting units.

hunting season. Deer hunting in GMU 44 is limited to controlled hunts only, with hunts stretching between October 5–November 30. These hunts are among the most sought-after in the State, and drawing odds are quite low (< 10% for antlered deer hunts). GMU 44 hosts fewer hunters (800–1000), but offers hunters a longer season and the opportunity to pursue larger bucks. Success rates for harvesting deer in both GMUs tend to be comparable with statewide averages (Berkley 2007).

GMUs 43 and 44 are part of IDFG's Smoky Mountains Elk Zone, which offers general-season archery hunting in GMU 43 (August 30–September 30) and an "any-weapon spike-only" hunt in both GMUs (November 1–7). Both units offer controlled hunts for antlered elk stretching from September 25–November 9, and GMU 44 offers controlled hunts for antlerless elk (November 10–30). Drawing odds for early-season antlered elk hunts are quite low (< 6%), but are better for late-season or antlerless hunts. Similarly, harvest success rates for the early-season controlled hunts tend to be above the statewide average, while harvest success for late-season and antlerless hunts tend to be below the statewide average. GMUs 43 and 44 regularly host over 1000 elk hunters each fall (Berkley 2007).

Approximately 54 mi of road are seasonally closed (September 20–December 1) within the Fairfield RD's route designation area (107 mi across the entire Fairfield RD) to increase deer and elk security during the hunting season and improve the quality of hunting.

Populations for elk in GMU 43 are currently below IDFG management goals (Berkley 2007). Elk populations in GMU 43 may have been affected by an excessive number of tags sold in the late 1990s and early 2000s. Seasons and tags were based primarily on winter feeding counts until it was learned through radio-telemetry tracking that many of the elk feeding at the stations in the South Fork Boise River actually migrated down from the Stanley area. Increased wolf predation over the last several years may also have caused elk to move outside of GMU 43.

Population goals for elk in hunt GMU 44 are currently meeting IDFG management goals (Berkley 2007).

Although IDFG doesn't actually have population goals for mule deer in GMUs 43 and 44, because counts are conducted on wintering areas to the south in GMU 45, populations of summer and fall deer within these units are meeting IDFG management goals.

IDFG GMUs—Ketchum

The Ketchum RD's route designation area lies within the IDFG GMUs 48 and 49. The western portion of the Ketchum RD route designation area is within GMU 48, and the eastern portion is within GMU 49. Highway 75 running north and south within the Wood River Valley is the boundary between these two units. Elk numbers seemed to have increased in these units in the past few years and may be a result of elk moving in from GMU 43.

Deer and elk hunting seasons for GMUs 48 and 49 begin with archery season from August 30–September 30, and rifle season beginning in October and continuing through November. Both of these GMUs have general deer hunts for antlered deer from October 10–31 and controlled hunts (number of tags sold are limited on a lottery basis) for antlerless deer for the same dates. An additional controlled hunt for antlered deer runs November 10–24. All hunting for elk is done through controlled hunts, except in GMU 48 where archery and a spike-only hunt are offered. Controlled elk hunts for antlered and antlerless animals occur in these two units. Success rates for these GMUs are slightly below the State's average except for early season cow elk hunts, which is somewhat above the State's average controlled elk hunt success rate.

The Ketchum RD only has one seasonal road closure for hunting outside of the route designation area (East Fork Baker Creek). Populations for deer and elk in GMUs 48 and 49 are currently meeting IDFG management goals (Berkley 2007).

IDFG Game Management Units—Minidoka

The following paragraphs describe the existing condition and population objectives for elk and mule deer on the five divisions of the Minidoka RD. Currently, all IDFG GMUs, except GMU 56, are meeting their management objectives for both elk and mule deer.

Minidoka RD—Albion Division

The Albion Division is within IDFG GMU 55. The resident elk population is low but has been slowly increasing in recent years. Elk numbers within GMU 55 vary seasonally because of movements among Idaho, Utah, and Nevada. IDFG estimates that the resident elk herd in the Albion Division consists of approximately 30–50 animals. These estimates are similar to IDFG minimum population objectives for this area.

The IDFG mule deer management objective on the Albion Division is to provide ‘quality’ hunting opportunities. Quality is defined as the opportunity to hunt in an area with relatively low hunter densities with an increased probability of harvesting a mature buck. Permits to hunt in this unit are highly sought after with drawing odds of 33% for the October controlled buck hunt and 6% for the August–September controlled buck hunt. Mule deer population levels have varied in this unit, but in recent years have trended upward within the surveyed area. In 2006 and 2007, population levels exceeded the threshold for antlerless harvest (Smith 2007).

Minidoka RD—Black Pine Division

The Black Pine Division is within IDFG GMU 57. The resident elk population is low but has been slowly increasing in recent years. No population surveys have been conducted and data are limited to observations collected incidental to mule deer surveys and reports from field personnel and the public. IDFG estimates that the resident elk herd in the Black Pine Division consists of approximately 25–40 animals. These estimates are within the IDFG population objectives for this area (IDFG 2007).

Similar to the Albion Division, the IDFG mule deer management objective in GMU 57 is to provide quality hunting opportunities. The drawing odds for a permit to hunt in this unit are 34% for the October buck hunt and 4% for the November buck hunt. IDFG currently conducts periodic surveys for mule deer in a portion of GMU 57 to track population trends. Population levels have varied, but in recent years have trended downward within the surveyed area. Much of this downward trend results from the disruption of traditional migration routes between the Sublett and Black Pine areas by Interstate 84 (IDFG 2007). IDFG’s ability to meet its management objectives for quality hunting and healthy mule deer populations in this unit is heavily dependent on adequate security habitat (Smith 2007).

Minidoka RD—Cassia Division

The Cassia Division is within IDFG GMU 54. A resident elk population has slowly developed during the past 20 years from elk that have dispersed from populations in Utah and Nevada. No population surveys have been conducted and data are limited to observations made during mule deer surveys and reports from field personnel and the public. IDFG estimates a summer elk population of approximately 220–270, which exceeds the population objectives for this unit (IDFG 2007). The numbers of elk that use GMU 54 vary seasonally because of movements among Idaho, Utah, and Nevada. Elk are still expanding their distribution in GMU 54, with the highest densities occurring on Deadline Ridge. Many of these elk move south into Nevada to winter.

The IDFG mule deer management objective for GMU 54 on the Cassia Division also is to provide quality hunting opportunities. Demand for hunting in GMU 54 is high with drawing odds for a permit of 21% for the October antlered deer hunt and 3% for the November hunt. During the past 15 years, drought and fire have reduced the carrying capacity for deer in the Cassia Division. IDFG currently conducts annual population surveys for mule deer in a portion of GMU 54. These surveys are designed to monitor mule deer population trends and do not provide estimates of the total deer population. Population levels have varied, but in recent years have trended upward within the surveyed area. Currently, GMU 54 is meeting IDFG management objectives for mule deer (IDFG 2007). However, IDFG believes their continued ability to meet their management objectives for quality mule deer hunting opportunities is dependent on improving adequate security habitat or reducing permit levels (Smith 2007). Increasing road densities and lack of security cover also are likely having negative effects to both elk and mule deer on the Cassia Division.

Minidoka RD—Raft River Division

In the mid 1980s, nearly 1,000 head of elk had emigrated from Nevada and Idaho into the Grouse Creek Mountains (BLM-administered lands) and the Raft River Division. Based upon a local working group's recommendation and issues with elk wintering on private land, the population was lowered to less than 100 animals in the early 1990s. By the mid 1990s there were 30 head of elk that were transitory on the division in summer/fall. There have been no recent reported sightings of elk on the division. UDWR's current 2007 Elk Management Plan (UDWR 2007) calls for an objective of 100 wintering elk (essentially off the SNF). The elk must emigrate from other areas, most likely from Nevada, as UDWR will not authorize releases (Enright 2007).

The Raft River Division is within UDWR Subunit 1A, which encompasses all of Box Elder County west of a line from the Great Salt Lake north to the Utah/Idaho border. This is a large geographical area and the USFS portion of the mule deer population is not analyzed separately by UDWR. The population estimates are based on the entire subunit's fawn production and buck harvest. The mule deer population recently (2002) hit a low due to several years of drought and the corresponding low fawn production. The population is currently increasing slightly due to increased fawn production during 2002 and 2006. UDWR's goal is to maintain a minimum of 20 bucks per 100 does in the post-hunting season population. The 2004–2006 average was 18 bucks for every 100 does. The Subunit 1A population is summer range limited and appears to be tied to vegetative growth supported by winter and spring moisture (Enright 2007).

Minidoka RD—Sublett Division

The Sublett Division is part of GMU 56. Population objectives in this unit are to maintain a minimum population of 150–200 cows and bulls. IDFG estimates the resident elk herd in the Sublett Division to be approximately 200–300 animals and meeting population objectives (IDFG 2007). During summer, elk can be found in low densities throughout the Sublett Division. The elk population has been relatively stable during the past 10 years. Elk winter range is generally located on BLM and private lands adjacent to the Sublett Division.

The Sublett Division of GMU 56 is currently not meeting IDFG objectives for mule deer. Reasons cited for not meeting this objective are the increasing use of motorized vehicles by deer hunters and the proliferation of roads and trails resulting in poorer escapement of bucks. The IDFG management goal has been to maintain general deer hunting opportunity in GMU 56. Within the Sublett Division, deer numbers fluctuate widely and surveys in March 2007 suggest a population level that is similar to the 1994–2007 mean and below the threshold for antlerless harvest. A management goal is to maintain a minimum of 25 bucks/100 does in the post-hunting season population. In December 2005, the observed ratio was 22 bucks/100 does (IDFG 2007). Reaching this goal has become increasingly difficult in recent years as drought and fire have affected habitat quality and quantity and deer populations have been subject to these dramatic fluctuations. Habitat on the Sublett Division is relatively open and road densities are high resulting in high buck vulnerability during hunting seasons and increasing hunter conflicts. Easier access and hunter mobility in GMU 56 has contributed to an increase in hunter conflicts, a reduction in mature bucks, and a reduction in overall hunter satisfaction. Providing adequate security habitat during hunting seasons is key to increasing hunting opportunity and increasing numbers of mature bucks (Smith 2007). The IDFG motorized vehicle rule applicable to this unit, states that motorized vehicle used as an aid to hunting for wildlife is restricted to established roadways open to motorized vehicle traffic capable of travel by full-sized automobiles. This IDFG rule applies to all elk and mule deer hunts within the Sublett Division.

Disturbance and Roads/Trails—Overview

Both elk and mule deer are negatively affected by an increase in road and trail densities, particularly during the hunting season. Motorized road and trail use compromises the quality and quantity of security habitat (hiding cover) for both species and makes them more vulnerable to a variety of factors from natural predation to hunters. Road and off-road recreational activities appear to have a substantial effect, particularly on elk behavior (Wisdom et al. 2004). In general, the greater the road and trail density, combined with the amount and frequency of use by people, the more negative the effect to elk and deer security cover.

Big game animals will generally flee from humans depending on the perceived danger. Important variables related to perceived danger include distance from the human, mode of movement (transportation), and habituation to humans. Generally, within close distances, deer and elk seem to be even more afraid of humans on foot than humans using other forms of transportation. This is likely due to the potential for the deer or elk to be caught unaware of the human until within close range (if the people are not making much noise and moving into the wind). Also deer and elk seem to recognize humans on foot as potential predators. Because motorized vehicles are louder than non-motorized recreation, the distance at which big game animals may have a stress reaction (flee) is farther away from the road or trail than with non-motorized reaction.

It is difficult to determine if there is any difference in perceived danger and the specific form of transportation such as between full-sized vehicles, ATVs, and motorcycles. It is also difficult to determine how much effect the noise of motorized vehicles has on deer and elk and at what distance from the vehicles they may flee or have a stress reaction.

The amount of area of foraging habitat that is removed by the presence of roads and trails in the project area is relatively small as roads/trails are linear in nature. However frequent human use of roads and trails can have a disturbance effect on elk and deer, particularly during the hunting season and critical life-stages such as fawning and calving. Just how detrimental human presence (use of roads and trails) outside of these time periods are to deer and elk is questionable.

Other than anecdotal information on the frequency of use of certain more well-traveled roads and trails, good information on actual frequency of human use of roads and trails with different modes of transportation is lacking within the project area. Certainly the frequency of use is a very important factor when determining the actual effects of roads and trails on deer and elk. There is no current regulatory mechanism to limit the numbers of people using roads and trails in the analysis area during the summer/fall time period (generally May–November).

During the summer, after calving and fawning season is over and foraging resources are plentiful, the effect on deer and elk from the occasional fleeing from human presence is thought to be relatively minor. However, fleeing from even a non-hunting recreationist during the hunting season can lead to mortality to deer and elk, as fleeing animals are more likely to leave security cover and become vulnerable to hunters. Likewise, continued disturbance from humans during calving and fawning could potentially cause elk calves and deer fawns within their first week of life to be more vulnerable, forcing deer and elk to seek out more secure areas away from disturbance to have their young.

On the Fairfield and Ketchum RDs, cow elk have their calves sometime between the second week in May to the first week in June. Based on personal observations and reports of observations from USFS field personnel (1996–2007), the second and third week in May seems to be the key calving period. An elk migration and calving grounds study conducted by the IDFG and SNF on the Fairfield RD from 1973–1977 suggested that the last week in May and the first week in June was the peak elk calving season (Phillips 1978). Essentially, elk have their calves wherever they are in their migration route during the calving period, and their location varies primarily on remaining snow depth.

The 1973–1977 study indicated that on the Fairfield RD, heads of drainages that have forested habitat contiguous to sagebrush or meadow tend to be used the most for calving (Phillips 1978). Elk calves are born in many locations throughout the Fairfield RD route designation area and exact locations vary by year dependent on snow depth. This is likely true for the Ketchum RD as well. Some known areas within the project area that are used for elk calving based on personal observations and the 1973–1977 study include upper Phillips Creek, Wine Creek, Liberal Creek, head of Elk Creek, ridge between Redrock and Rosetta creeks, areas along the President's Trail in the North Fork Lime Creek (Ellis Gulch, Madison Creek, and Cold Springs Creek), head of Placer Creek, and head of Cooper Creek below Iron Mountain.

In the Fairfield and Ketchum RDs' route designation areas, doe mule deer generally have their fawns during the first and second weeks in June, based on personal observations and reports of observations from USFS field personnel. Mule deer tend to have their young in forested areas where they can remain hidden for several days following birth. These areas tend to be in ponderosa pine, Douglas-fir, aspen, sub-alpine fir, and thick willow/alder stands. Adult deer feed in adjacent openings to these stands.

It is unknown if current levels of motorized recreation are negatively affecting elk calving or deer fawning in the Fairfield or Ketchum RDs' route designation areas to a degree that population levels are being affected. It is assumed some level of effect is occurring and that reduced road and trail densities would have a positive effect on fawning and calving success.

In the Minidoka RD, cow elk would typically have their calves sometime between mid-May to the first week in June. However, as elk herds in this area are fairly transitory, it is likely cows deliver calves along spring migration routes from Nevada and Utah. IDFG has not conducted formal studies on elk migration and calving grounds within the Minidoka RD's route designation area, so specific routes and grounds have not been identified. The Big Creek area on the Cassia Division is likely used for elk calving based on personal observations (Santini 2007) and observations of IDFG personnel. Essentially elk have their calves wherever they are in their migration route during the calving period.

On the Minidoka RD, doe mule deer generally have their fawns during the first and second weeks in June (personal observations and reports of observations from IDFG personnel). Deer fawning areas tend to be located in lower elevation aspen and willow stands.

Road Densities

Road-associated factors may negatively affect habitat or populations of many wildlife species. Effects of roads and trails can be direct, such as habitat loss and fragmentation due to construction or maintenance. Effects can also be indirect, such as disturbance, displacement, or increased mortality of populations in areas near roads (and trails) in relation to motorized traffic and associated human activities. For this analysis, road densities are divided into the following three categories as suggested by Wisdom (2000):

- < 0.7 mi/mi^2 = low road density
- 0.7–1.7 mi/mi^2 = moderate road density
- > 1.7 mi/mi^2 = high road density

The current mileage and densities of roads and trails within the route designation areas can be found in Table 3-50. These numbers, most likely, underestimate actual road and trail densities when factoring in that many user-created routes likely have not been identified or mapped. In general, as previously presented, the greater the road and trail density, the poorer the elk and deer security.

Table 3-50. Current mileage and density of roads and trails by route designation area.

Indicator	Fairfield	Ketchum	Minidoka
System roads available to public (mi)	161	34	997
Unmaintained system roads available to public (mi)	17	1.6	70
Non-system roads available to public (either timber sale or user-created) (mi)	106	19.5	452
Jeep trails, motorized trails over 50 in. wide (mi)	0	4	0
Total mileage available to full-sized vehicles (mi)	284	59	1519
Total road density in analysis area (system and non-system) (mi/mi^2)	0.84	0.49	1.68
Seasonal road closures (hunting season) within the project area (mi)	54	0	33 mi (Fifth Fork)
Open-road density (density of roads open in hunting season) (mi/mi^2)	0.68	0.49	1.64
System trails (motorized) in project area (mi)	204	83	144
Non-system trails (user-created or historic) (mi)	204	62	282
Total motorized trail density in analysis area (system and non-system) (mi/mi^2)	1.2	1.2	.47

Currently, 203,913 acres of the Fairfield RD and 74,982 acres of the Ketchum RD are legally open to motorized cross-country travel. Although perhaps the majority of these acres are impossible to actually traverse off road/trail in any form of motorized vehicle due to topography and physical limitations, many acres have experienced this type of use. The advent of ATVs, their continually increased ability to cross difficult and steep terrain, and their continually increasing popularity on the SNF has lead to increased potential for disturbance to big game animals from ATVs (and other motorized vehicles) traveling cross country off of existing roads and trails. The establishment of user-created roads and trails from this cross-country travel has increased vulnerability of deer and elk in some areas of the wildlife analysis areas. Examples of areas where cross-country travel has lead to increased user-created trails and roads in the Fairfield RD include the Willow-Wine Creek area, Basalt Creek, Little Smoky Creek, Soldier Mountain Front Trail area, and many other areas. Examples of areas where cross-country travel has lead to increased user-created trails and roads in the Ketchum RD include the Cove Creek and Deer Creek areas.

Current road densities during the hunting season within the Fairfield RD (0.68 mi/mi^2) and Ketchum RD (0.49 mi/mi^2) route designation areas are perhaps low enough to not be of much concern in terms of deer and elk security. However, it is likely that road densities are underestimated as not all user-created roads have been mapped. Current motorized trail densities during the hunting season (1.2 mi/mi^2) for both the

Fairfield and Ketchum RDs are potentially high enough to be of management concern to deer and elk security. These densities are likely underestimated as not all non-system trails have been mapped.

Currently, 579,388 acres of the Minidoka RD are legally open to motorized cross-country travel. While the majority of these acres may not physically be accessible to any form of motorized vehicle due to topography and physical limitations, many acres on the Minidoka RD are in gentle sloping terrain and have experienced this type of use. ATV and other motorized vehicle use, as was also seen in the Fairfield and Ketchum RDs, has increased potential for disturbance to big game animals from cross-country travel off of existing roads and trails. During the past 20 years, the establishment of user-created roads and trails from motorized cross-country travel in the Minidoka RD has increased vulnerability of deer and elk in some areas, particularly on the Cassia Division. Examples of areas where cross-country travel has lead to increased user-created trails and roads include the FS Springs/FS Meadows and Rock Creek recreation area, as well as areas in the Bostetter to Coal Pit Butte area.

Current road density during the hunting season (1.64 mi/mi^2) within the entire Minidoka RD route designation area is considered moderate and is of concern to IDFG in terms of deer and elk security. Current motorized trail density during the hunting season (0.47 mi/mi^2) is considered to be low over the project area and is also likely underestimated. Any reduction in overall road density in the Minidoka RD, particularly on the Cassia and Sublett Divisions, would likely reduce disturbance to elk and mule deer during the hunting season and generally improve security cover.

Forest Plan Management Direction

The SNF Forest Plan (USDA 2003a) provides goals, objectives, standards, and guidelines that relate to wildlife within the route designation area. The following management direction applies to the route designation process for all wildlife environmental effects analysis:

- Reduce human-caused disturbances that cause undesirable effects to wildlife populations during critical stages (WIGO02).

- To address big game vulnerability to mortality, components of habitat security should be identified and managed during project planning and implementation. Management requirements or mitigation measures needed to maintain these components should be determined during site/project-level planning. Consider components such as big game wallows and licks, public access, wildlife travel routes, created openings, meadows, forested stringers, and winter/spring ranges (WIGU13).

Environmental Effects—Elk and Deer

Effects Common to All Action Alternatives

- There will be some acres open to off-road travel within 300 ft of designated roads for the purposes of dispersed camping only. This will have a very minor effect on disturbance to elk and deer.

- Motorized cross-country travel would no longer be allowed. Closure of motorized cross-country travel would prevent future increases in user-created motorized roads and trails. These changes improve deer and elk security within the project area, particularly during hunting season.

- Implementing any of the action alternatives would be fully consistent with the direction provided in the SNF Forest Plan for management of deer and elk and specifically WIGO02 and WIGU13.

- Implementation of Alternative 1 would not be fully consistent with Forest Plan Wildlife Goal 2 (WIGO02) or Guideline 13 (WIGU13).

Table 3-51 shows a comparison of the wildlife indicators for all three RDs.

Table 3-51. Comparison of indicators for the Fairfield, Ketchum, and Minidoka RDs.

Fairfield Route Designation Area				
Indicator	**Alternative 1 No Action Baseline**	**Alternative 2 Proposed Action**	**Alternative 3**	**Alternative 4**
Acres open to cross-country motorized travel within wildlife habitat	203,913	0[a]	0[a]	0[a]
Open-road[b] density within wildlife habitat (mi/mi^2)	0.68	0.42	0.42	0.37
Open[c] motorized trail density within wildlife habitat (mi/mi^2)	1.2	0.5	0.69	0.5
Ketchum Route Designation Area				
Indicator	**Alternative 1 No Action Baseline**	**Alternative 2 Proposed Action**	**Alternative 3**	**Alternative 4**
Acres open to cross-country motorized travel within wildlife habitat	74,982	0[a]	0[a]	0[a]
Open-road density within wildlife habitat (mi/mi^2)	0.54	0.32	0.38	0.27
Open motorized trail density within wildlife habitat (mi/mi^2)	1.2	0.84	0.84	0.78
Minidoka Route Designation Area				
Indicator	**Alternative 1 No Action Baseline**	**Alternative 2 Proposed Action**	**Alternative 3**	**Alternative 4**
Acres open to cross-country motorized travel within wildlife habitat	579,388	0	0	0
Open-road density within wildlife habitat (mi/mi^2)	1.68	1.05	1.05	0.99
Open motorized trail density within wildlife habitat (mi/mi^2)	0.47	0.56	0.60	0.56

a. Note there will be some acres open to off-road travel within 300 ft of designated roads for the purposes of dispersed camping only.

b. Open-road density refers to the density of roads (mi road/mi^2 habitat) that are open to motorized uses throughout the May 1–December 1 time period (roads closed during the hunting season are not part of this density).

c. Open-trail density refers to the density of trails (mi trail/mi^2 habitat) that are open to motorized uses throughout the May 1–December 1 time period (trails closed during the hunting season are not part of this density).

Alternative 1—No-Action—Direct and Indirect Effects

Under Alternative 1, no changes to the SNF Travel Plan Map (USDA 2002) would be made and existing conditions of elk and deer security in the routed designation areas would continue. The current mileage and density of roads and trails would remain and would likely increase as new user-created routes continue to be established (as cross-country travel throughout the project area would still occur). Disturbance to deer and elk from motorized cross-country travel would continue.

Under Alternative 1, populations of deer and elk on the Fairfield, Ketchum, and Minidoka RDs would likely remain similar to current levels. However, it is likely that fewer tags for hunting may be available in the future or season lengths would be shortened as hunter success rates increase due to increased motorized use of the analysis area over time.

Implementing Alternative 1 would not be fully consistent with Forest Plan Wildlife Goal 2 (WIGO02) or Guideline 13 (WIGU13).

Alternative 2—Modified Proposed Action—Direct and Indirect Effects

Fairfield RD

There would be a reduction of approximately 89 mi of road open during the hunting season (Table 3-52). This reduction in road miles occurs primarily on non-system, old timber road spurs. Implementation of Alternative 2 would result in a decrease of open-road density from 0.68 to 0.42 mi/mi^2 within the Fairfield RD routed designation area.

Also proposed under this alternative, 12.5 mi of motorized trail would be converted to non-motorized uses (North Fork Soldier, Salt, and Grindstone creeks). Seasonal closures of 26.5 mi of trail to motorized traffic during the hunting season (North Fork Lime, Middle Fork Lime, Roanhide, Cold Springs Ridge, and Worswick tails) would further increase deer and elk security. It is possible these changes in travel management could lead to conditions where deer and elk populations on the Fairfield RD could increase (if security cover is currently a limiting factor).

Ketchum RD

There would be a reduction of approximately 21 mi of road (Table 3-53). This reduction in road miles occurs primarily on non-system, old road spurs. Implementation of Alternative 2 would result in a decrease of open road density from 0.49 to 0.32 mi/mi^2 within the Ketchum RD route designation area.

Under Alternative 2, approximately 42 mi of user-created motorized trail would no longer be legally available, reducing the motorized trail density to 0.84 from 1.2 mi/mi^2. It is possible these changes in travel management could lead to conditions where deer and elk populations on the Ketchum RD could increase (if security cover is currently a limiting factor).

Minidoka RD

Under Alternative 2, a reduction of 579,388 acres of potential motorized cross-country travel would occur along with a reduction of 38 mi of road and trails open to motorized vehicle use during the hunting season (Table 3-54).

Implementation of Alternative 2 would result in a decrease of open-road density from 1.68 to 1.09 mi/mi^2 within the Minidoka RD. There is an additional reduction in road density from 1.64 to 1.05 mi/mi^2 during the hunting season. The Fifth Fork Rock Creek seasonal closure prohibits motorized hunting on an additional 19,108 acres. These changes could improve deer and elk security within the project area, particularly during hunting season.

Table 3-52. Fairfield RD project area comparison table.

Fairfield RD Project Area—217,789 acres	Alt 1	Alt 2	Alt 3	Alt 4
National Forest System land open to traveling cross-country travel (acres)	203,913	0[a]	0[a]	0[a]
System roads available to the public (designated roads) (mi)	161	162	163	149
Unmaintained system roads available to public (mi)	17	0	0	0
Non-system roads (timber or user-created) (mi)	106	0	0	0
Trails open to all vehicles (designated jeep trails) (mi)	0	29	30	12
Total roads available (system and non-system and jeep trails) (mi)	284	190	193	161
Total road density (mi/mi^2)	0.84	0.56	0.57	0.47
Seasonal road closure (hunting season September 30–December 1) (mi)	54	49[b]	49[b]	35[b]
Open-road density (roads open in hunting season, mi/mi^2)	0.68	0.42	0.42	0.37
Motorized system trails (designated trails) (mi)	204	196	238	190
Motorized non-system trails (user-created) (mi)	204	0	0	0
Total motorized trail density in project area (mi/mi^2)	1.2	0.58	0.7	0.56
Motorized trails seasonally closed to motorized use in hunting season (mi)	0	26.5	9	25
Density of motorized trails (open in hunting season, mi/mi^2)	1.2	0.5	0.69	0.49
Non-motorized designated trails (mi)	0	12.5	1	12.5
Total density of all trails (motorized + non-motorized, mi/mi^2)	1.2	0.61	0.7	0.61

Note: Jeep trails are combined with roads where applicable.

a. Note there will be some acres open to off-road travel within 300 ft of designated roads for the purposes of dispersed camping only.

b. Miles of road seasonally closed reduced under action alternatives because of elimination of some non-system road miles.

Table 3-53. Ketchum RD project area comparison table.

Ketchum RD Project Area—76,822 total acres	Alt 1	Alt 2	Alt 3	Alt 4
National Forest Service land open to cross-country travel (acres)	74,982	0[a]	0[a]	0[a]
System roads (designated roads) (mi)	34	34	36	33
Unmaintained system roads available to public (mi)	1.6	0	0	0
Non-system roads (timber or user-created) (mi)	19.5	0	0	0
Trails open to all vehicles (designated jeep trails) (mi)	4	4	10	0
Total roads (system and non-system and jeep trails) (mi)	59.1	38	46	33
Total road density (mi/mi^2)	0.49	0.32	0.38	0.27
Seasonal road closure (hunting season September 30–December 1) (mi)	0	0	0	0
Open-road density (roads open in hunting season, mi/mi^2)	0.49	0.32	0.38	0.2
Motorized system trails (designated trails) (mi)	83	101	101	94
Motorized non-system trails (user-created) (mi)	62	0	0	0
Total motorized trail density in project area (mi/mi^2)	1.2	0.84	0.84	0.78
Motorized trails seasonally closed to motorized use in hunting season (mi)	0	0	0	0
Density of motorized trails (open in hunting season, mi/mi^2)	1.2	0.84	0.84	0.78
Non-motorized designated trails (mi)	8	7.5	7	7.6

Note: Jeep trails are combined with roads where applicable.

a. Note there will be some acres open to off road travel within 300 ft of designated roads for the purposes of dispersed camping only.

Table 3-54. Minidoka RD project area comparison table.

Minidoka RD Project Area—611,175 acres	Alt 1	Alt 2	Alt 3	Alt 4
National Forest System land open to cross-country travel (mi)	579,388	0[a]	0[a]	0[a]
System roads (designated) available to the public (mi)	997	987	988	983
Unmaintained system roads unavailable to the public (mi)	70	0	0	0
Non-system roads (mi)	452	0	0	0
Total road density in analysis (mi/mi^2)	1.68	1.09	1.09	1.09
Seasonal road closure (hunting season) in project area (October 1–October 31) (mi)	33	38	38	87
Open-road density (density of roads open in hunting season)	1.64	1.05	1.05	.99
System trails (motorized) in project area (mi)	144	214	251	200
Non system trails (mi)	282	0	0	0
Motorized trail density in project area (mi/mi^2)	0.47	0.55	0.59	0.53
Motorized trails closed to motorized use in hunting season (mi)	33	33	33	33
Density of open motorized trails (hunting season)	0.42	0.51	0.55	0.50
Non-motorized designated trails (mi)	19	15	14	22
Total density of all trails (motorized and non-motorized, mi/mi^2)	0.47	0.56	0.60	0.56

a. Note there will be some acres open to off road travel within 300 ft of designated roads for the purposes of dispersed camping only.

Alternative 3—Direct and Indirect Effects

Fairfield RD

There would be a reduction of approximately 86 mi of road open during the hunting season. The reduction in road miles occurs primarily on non-system, old timber road spurs. Implementation of Alternative 3 would result in a decrease of open-road density from 0.68 to 0.42 mi/mi^2 within the Fairfield RD route designation area.

Also proposed under Alternative 3 is 1.0 mi of motorized trail would be converted to non-motorized uses (Grindstone Creek) and 9 mi of trail would be seasonally closed to motorized traffic during the hunting season (Worswick ATV Trail). Motorized system trail miles would actually increase (Table 3-52) as several user-created or historic routes that are not currently system trails would be added (i.e., Elk Ridge, Devils Dive, Grindstone/Carrie Ridge, Deer Mountain, Cold Springs Ridge). However, this alternative still represents an overall reduction of current available motorized trail miles when considering current non-system trails and the many miles of unmapped, user-created routes that would no longer be legally available. Although this alternative does not benefit deer and elk to the same degree as Alternatives 2 or 4, a benefit over Alternative 1 would occur.

Ketchum RD

There would be a reduction of approximately 13 mi of road open during the hunting season. The reduction in road miles occurs primarily on non-system, old road spurs. Implementation of Alternative 3 would result in a decrease of open-road density from 0.49 to 0.38 mi/mi^2 within the Ketchum RD route designation area.

Under Alternative 3, motorized system trail miles would actually increase over current (Table 3-53) through the addition of 18 mi of non-system routes. However, this alternative still represents an overall reduction of current available motorized trail miles (reduction of 44 mi) when considering current non-system trails and the many miles of unmapped, user-developed routes that would no longer be legally available. Although this alternative does not benefit deer and elk to the same degree as Alternative 2 or 4, a benefit over Alternative 1 would occur.

Minidoka RD

Under Alternative 3, a reduction of 573,388 acres of potential motorized cross-country travel would occur along with a reduction of 38 mi of road and trails open to motorized vehicle during the hunting season. Implementation of Alternative 3 would result in a decrease of open-road density from 1.68 to 1.09 mi/mi^2 within the Minidoka RD. There is an additional reduction in road density from 1.64 to 1.05 mi/mi^2 during the hunting season. The Fifth Fork Rock Creek seasonal closure prohibits motorized hunting on an additional 19,108 acres. These changes could improve deer and elk security within the analysis area, particularly during hunting season.

Alternative 4—Direct and Indirect Effects

Fairfield RD

This alternative represents the greatest improvement in deer and elk security over Alternative 1 (Table 3-52). There would be a reduction of approximately 104 mi of road open during the hunting season. Implementation of Alternative 4 would result in a decrease of open-road density from 0.68 to 0.37 mi/mi^2 within the Fairfield RD route designation area. The primary difference between this alternative and Alternative 2 is an additional 29 mi of non-system, old logging road spurs that would no longer be available for motorized uses.

Also proposed under this alternative, 12.5 mi of motorized trail would be converted to non-motorized uses (North Fork Soldier, Salt, and Grindstone creeks). Seasonal closures of 25 mi of trail to motorized traffic during the hunting season (North Fork Lime, Middle Fork Lime, Roanhide, and Worswick trails) would further increase deer and elk security. These changes would improve deer and elk security within the project area, particularly during hunting seasons and critical life-stages such as fawning and calving. It is possible these changes in travel management could lead to conditions where deer and elk populations on the Fairfield RD could increase (if security cover is currently a limiting factor).

Ketchum RD

This alternative represents the greatest improvement in deer and elk security over current conditions (Table 3-53). There would be a reduction of 26 mi of road open during the hunting season.

Implementation of Alternative 4 would result in a decrease of open-road density from 0.49 to 0.27 mi/mi^2 within the Ketchum RD route designation area. The primary difference between this alternative and Alternative 2 is an additional reduction of 5 mi of non-system road and 7 mi of non-system trail that would no longer be available for motorized uses. It is possible these changes in travel management could lead to conditions where deer and elk populations on the Ketchum RD could increase (if security cover is currently a limiting factor).

Minidoka RD

Alternative 4 represents the greatest improvement in deer and elk security cover over current conditions. Under Alternative 4, a reduction of 579,388 acres of potential motorized cross-country travel would occur along with a reduction of 88 mi of road and trails open to motorized vehicles during the hunting season. Implementation of Alternative 4 would result in a decrease of open-road density from 1.68 to 1.09 mi/mi^2 within the Minidoka RD. There is an additional reduction in road density from 1.64 to 0.99 mi/mi^2 during the hunting season. These changes could improve deer and elk security within the analysis area, particularly during hunting season.

Cumulative Effects—Elk and Deer

Fairfield and Ketchum RDs

Generally speaking, past and current livestock grazing, past mining, past timber harvest and road building, invasive weeds, and increases in motorized recreation have affected elk and deer habitat in the project area. These, along with current winter recreation, have also affected elk winter range.

Historic sheep grazing and driveways and historic mining on south-facing slopes have affected vegetation and foraging habitat for deer and elk, particularly elk winter range. Invasive weeds, primarily leafy spurge, have further impacted deer and elk foraging habitat and elk winter range in certain areas (e.g., South Fork Boise River—Fairfield).

Winter recreation has disturbed wintering elk in some locations but wintertime motorized closures has prevented some of the disturbance in critical locations. Permits given to private landowners/recreation residence owners to snowmobile through winter closures add cumulatively to disturbance of elk during this critical time period (particularly critical during heavy snow years).

Urban expansion in the Wood River Valley has reduced available elk and deer winter range on or near the Ketchum RD.

Over the past two decades, increases in motorized recreation and establishment of user-created routes has likely added to cumulative effects to deer and elk by increasing disturbance and reducing security during hunting seasons and calving/fawning. Implementing Alternative 1 would continue these cumulative effects. Implementing any of the action alternatives (Alternatives 2–4) proposed in this EA would help reduce some of these cumulative effects.

The Fairfield RD is proposing to consider an additional 8.7 mi of ATV trail under a separate, future analysis. Approximately 5 mi occurs on the Fairfield RD, while the rest occur on adjacent BLM and private lands. For the purposes of the cumulative effects analysis, this addition of designated ATV routes is a foreseeable future action and would increase the mileage of motorized trails within the Fairfield RD. This increase does add to cumulative effects to deer and elk, but still is lower than the current mileage and density of motorized trails on the north end of the SNF, particularly when considering the acreage currently open to motorized cross-country travel.

Minidoka RD

Throughout their range south of the Snake River, mule deer, in particular, have been negatively affected by large-scale wildfire. There have been several large wildfires in mule deer habitat on the Minidoka RD in the past 7 years, removing several hundred acres of brush habitat. This affects foraging habitat and some wintering habitat (particularly at lower elevations) until these areas recover. While some cheatgrass and noxious weeds have developed in these areas, likely effecting forage, most of the occurrences are along roads and SNF access points (noxious weed and invasive specie infestations likely come from a variety of sources including recreation activities and livestock grazing). As drier weather conditions prevail, we can expect additional wildfires resulting in additional negative affects to mule deer.

In July, 2007, approximately 33,481 acres of NFS land was burned in the Black Pine 2 Fire on the Black Pine Division. Plant communities affected to some degree by the Black Pine 2 Fire are primarily sagebrush/grass, mountain brush, juniper, mountain mahogany, aspen and Douglas–fir. All of these communities provide some habitat elements (fawning/calving, foraging and cover) for mule deer and elk. Over the entire affected area of the burn, the fire produced patches of burned and unburned vegetation of low (72% of acreage) to moderate (27% of acreage) intensity. The identified ‘key’ deer winter range on the west side of the division was unaffected by the fire and will continue to provide quality thermal cover for mule deer. Overall, the burned area will have negative effects to both mule deer and elk in the short to mid-term due to reduced security and thermal cover. Mule deer forage will be negatively affected by lack of shrubs until those communities recover (5–10 years). The increase of perennial grasses and herbaceous cover that is expected immediately (1–2 years) after fire will likely benefit both elk and mule deer in the short to mid-term. In the long term (10–25+ years), both species will benefit as aspen, juniper, mountain mahogany, and Douglas-fir grow to the point of providing quality cover.

Past timber harvest, firewood cutting, and road construction have reduced security cover for both elk and mule deer and increased disturbance to them, particularly during hunting season. Over the past two decades, motorized recreation and establishment of user-created routes on the Minidoka RD has likely added to the disturbance of deer and elk and their security cover.

In the foreseeable future, timber sales are proposed. There is generally less than one mile of road re-opening or construction associated with these proposals. There will be some reduction in security cover for deer and elk with any future timber activities. Prescribed fire activities may take place but the majority of these will be proposed to enhance wildlife habitat. Prescribed fire would have short-term negative effects but long-term beneficial effects to the habitat. Typically, no road construction occurs with prescribed fire. Up to 2.5 mi of road construction associated with rock quarries may be opened if plans to operation are approved in the future. These roads are required to be reclaimed once quarrying activities cease and, thus, would have minor disturbance effects.

On the Minidoka RD, under a separate NEPA action, 82.55 mi of spur and redundant roads have been identified for review and possible closure. These closures, if executed, will be an improvement to elk and deer habitat as well as lowering the disturbance factor.

TEPCS Terrestrial Species

This section analyzes the current condition and effects of the proposed alternatives upon federally listed TEPCS terrestrial wildlife species. Direct and indirect effects for these species are analyzed at the scope of the areas of proposed route designation changes on the Fairfield and Ketchum RDs, respectively, and cumulative effects for those two RDs are analyzed at the scope of the entire north end of the SNF. The Minidoka RD analyzes direct, indirect, and cumulative effects as previously described under the Scope of the Analysis section. BAs for each of the three RDs have been completed for the effects of the proposed action alternative on TEPCS terrestrial wildlife species. These analyses can be found in the route designation EA project record. Table 3-55 shows the potential habitat for the TEPCS species presented in this EA.

Affected Environment—Gray Wolf

Habitat for the wolf has been defined as any place with an adequate supply of ungulate prey and freedom from excessive human persecution (Fritts, Bangs, and Gore 1993). Wolves prey mainly on ungulates year-round (Mech 1970). The basis of a wolf population is the pack, which Mech defined as a cohesive group of two or more individual wolves traveling, hunting, and resting together throughout the year. Packs generally consist of two breeding adults, pups, yearlings, and/or extra adults. Wolf packs generally require large home ranges. Actual size of a pack's home range depends mainly on pack size, weather, and prey abundance and distribution. Territories of 80 mi^2 have been reported in Minnesota to over 660 mi^2 in Alberta (USFWS 1994).

In accordance with the Gray Wolf Recovery Plan (USFWS 1987) and the Nonessential Experimental Population Rule (50 CFR 17, 1994), as long as six or more wolf packs are maintained within central Idaho, lethal control of wolves by USDA–Animal and Plant Health Inspection Service/Wildlife Services in response to livestock depredation may occur in the analysis area. With the delisting of wolves by the

USFWS, the state of Idaho is planning to open a legal harvest of wolves. Roads, trails, and motorized cross-country travel will influence the hunter success rate of harvesting wolves, similar to the relationship between roads and deer/elk harvest discussed previously.

Table 3-55. Terrestrial TEPCS species potential habitat in analysis area.

Species[a]	Status[b]	Probability of Occurrence
Gray wolf (*Canis lupus*)	Endangered Species Act (ESA) XN – experimental/non-essential, proposed for delisting	High, observed in area Ketchum, Fairfield
Bald eagle (*Haliaeetus leucocephalus*)	ESA threatened	High, observed in area Ketchum, Fairfield, Minidoka (Raft River Division)
Canada lynx (*Lynx canadensis*)	ESA threatened	Low, historical occurrences Ketchum, Fairfield, Minidoka (Raft River Division)
Yellow-billed cuckoo (*Coccyzus americanus*)	ESA candidate	Low Ketchum, Fairfield, Minidoka (Raft River Division)

a. The Utah Field Office of Fish and Wildlife Service provided a species list dated December, 2006, indicating that these same species could potentially occur on the Raft River Division, the portion of the RD located in Utah.

b. The information in this table if from USFWS. 2007. 90-Day Species List 2007-SL-0303, U.S. Department of Interior. Fish and Wildlife Service, March 15.

Wolves are occasionally injured or killed in collisions with motorized vehicles. This is more common along highways but could occur on NFS roads. Human use of roads, trails, and cross-country travel poses a potential threat and indirect effect to wolves in the form of legal or illegal killing of wolves (shooting, poisoning, or trapping). This is likely the largest threat to individual wolves in the analysis area.

Reproduction of wolves can potentially be negatively affected by human disturbance. Human use of roads, trails, and motorized cross-country travel can potentially disturb wolves during denning, if a den site is in close enough proximity to such activity.

The Fairfield and Ketchum RDs are adjacent to the Idaho Gray Wolf Recovery Area. Confirmed breeding of wolves (Soldier Mountain pack) occurred on the Fairfield RD in 2000 and 2003–2006. The denning area for this pack is within 1.5 mi of the Fairfield RD route designation area. Confirmed breeding of wolves (five pups) also occurred approximately 1 mi north of the analysis area in 2006 (Big Water Pack). The alpha male and female of the Big Water pack were killed by the U.S. Department of Agriculture's Wildlife Services department as a result of sheep depredation. Observations of wolves and wolf tracks have been made in many locations within the Fairfield RD route designation area (2000–2007).

Wolf activity was reported in many locations throughout the Ketchum RD during the 2002–2007 period, including within the route designation area. Confirmed breeding of wolves (Hyndman Pack) occurred on the Ketchum RD during 2005, approximately 4 mi north of the east portion of the route designation area. The alpha female of the Hyndman pack was killed by Wildlife Services in 2005 in response to sheep depredation. It is unknown if breeding occurred in 2006 or 2007, but confirmed reproduction of wolves has occurred on adjacent RDs.

The analysis area within the Ketchum and Fairfield RDs provides year-round habitat for wolves and is within the known home ranges of the previously mentioned wolf packs, particularly during the winter. Spring, summer, and fall range for mule deer and year-round habitat for elk occurs in the analysis area, both of which provide a food source for wolves. The entire analysis area is suitable habitat for wolves.

Currently, on the Fairfield RD there are 284 mi of road (system and non-system) and 408 mi of motorized trail (system and non-system) within the route designation area. This is likely an underestimate as not all user-created routes are mapped. This equates to a road density of 0.84 mi/mi^2 and a motorized trail density of 1.2 mi/mi^2. Also, motorized cross-country travel is allowed on 203,913 acres of potential wolf habitat in the route designation area.

Currently, on the Ketchum RD there are 59 mi of road (system and non-system road), 4 mi of jeep trail, 8 mi of non-motorized trail, and 145 mi of motorized trail (83 mi system trail and 62 mi non-system trail) within the route designation area. This is likely an underestimate as not all user-created roads and trails (non-system routes) are mapped. This equates to a road density of 0.57 mi/mi^2 and a motorized trail density of 1.2 mi/mi^2. Motorized cross-country travel is currently allowed on 74,982 acres of potential wolf habitat in the route designation area.

Environmental Effects—Gray Wolf

Alternative 1—Direct and Indirect Effects

Under Alternative 1, no changes to the SNF Travel Plan Map (USDA 2002) would occur and existing conditions would continue. The current mileage and density of roads and trails in wolf habitat would remain and would likely increase as new user-created routes continue to be established (as cross-country travel would still occur). Current conditions of roads, trails, and motorized cross-country travel and their influence on potential legal and illegal killing of wolves or disturbance to den sites would continue. Implementing Alternative 1 would not be fully consistent with SNF Forest Plan Threatened and Endangered Objective 3, “Identify and reduce road-related effects on TEPCS species and their habitat” (Forest Plan, p. III-8).

Alternatives 2, 3, and 4—Direct and Indirect Effects

Implementing any of the action alternatives would be fully consistent with the direction provided in the SNF Forest Plan for management of threatened and endangered species. Alternative 2 would likely benefit wolves in the route designation area by improving their security from potential disturbance and human-induced mortality (although slightly less than Alternative 4). Alternative 3 would also likely benefit wolves for the same reasons although slightly less than Alternative 2 or 4. Alternative 4 represents the greatest reduction of potential threat to wolves.

Cumulative Effects to Gray Wolf

Fairfield and Ketchum RDs

On the north end of the SNF, the key threats to wolves include legal and illegal killing of wolves, mortality resulting from collisions with vehicles, and potential disturbance to wolves at den sites. Each of the action alternatives (Alternatives 2–4) would reduce cumulative effects to wolves from these potential threats. Implementing Alternative 1 would, however, continue these potential cumulative effects at current levels.

A foreseeable future action within the Fairfield RD is future construction of 8.66 mi of new ATV trails, of which approximately 5 mi would be on the SNF and the remainder on BLM and private lands. This action will be handled under a new, separate NEPA analysis. Although this addition would add to potential cumulative effects to wolves as described above, it is still less than under current conditions (Alternative 1).

Affected Environment—Bald Eagle

Nesting requirements of bald eagles include suitable nest substrate (mainly tall, large diameter trees) with access to water nearby. Winter habitat is variable, but generally requires open water for foraging or a reliable source of carrion with adequate perch trees nearby. Eagles need freedom from human disturbances year round (Stalmaster 1987).

Fairfield RD

The Fairfield RD provides breeding and wintering habitat for bald eagles, primarily along the South Fork Boise River. The river is just outside of the route designation area to the north. Bald eagles have been observed wintering along the South Fork Boise River, Big Smoky Creek, and Little Smoky Creek. There is one known bald eagle nest a few hundred feet north of the route designation area on the south side of the South Fork Boise River. There is another active bald eagle nest within 2 mi west of the route designation area on the Boise NF. Bald eagle wintering, nesting, and roosting habitat occurs along the north boundary of the analysis area (along the South Fork Boise River) and along other main streams in the project area (Little Smoky, Boardman Creek, etc.).

Threats to bald eagles and their habitat on the Fairfield RD include potential harassment or human-induced mortality, loss of suitable nest and roost trees, reduction of prey and foraging habitat. Human disturbance at nest sites, such as the one on the South Fork Boise River, has the potential to negatively affect eagle reproduction. This nest has been known to be active (2005–2007), with one eaglet in 2005 and two in 2006 even though there was recreational activity occurring in the immediate vicinity. The Kelley Creek to Virginia Gulch Connector Trail (7038) lies a few hundred feet uphill (to the south) of this nest. This trail is included in this analysis. The trail is regularly used by recreationists from June through Labor Day. It is legally accessible May 1, but snow often blocks this trail until mid-June.

Eagles at the South Fork Boise River nest start incubating eggs in April, chicks hatch in May, and eaglets fledge in July. By July, trail 7038 is used quite regularly, mostly by motorcyclists, but also occasionally by hikers, mountain bikers, and equestrians. Kelley Flat dispersed camping area occurs 0.4 mi to the east of the nest and is a very popular camping area for people who ride motorcycles on the surrounding trails. In addition, a lesser used dispersed camping site exists across the river to the northeast of the nest. Although the potential for disruption of breeding activities at the nest site exists, to date it appears the eagles have successfully nested in spite of heavy recreation use. Based on personal observation, people riding motorcycles on this trail tend to just drive by the nest without noticing it. Hikers likely have a greater potential to disturb adult eagles at this nest (Skinner 2007a). No trail restrictions have been put in place to date, but may be considered in the future if disruption to successful reproduction occurs.

Presence of roads and trails as well as motorized cross-country travel presents a potential disturbance threat to bald eagles particularly at nest sites from recreational activities. Along the South Fork Boise River (the primary bald eagle nesting habitat on the RD) and within the analysis area, there are currently 8 trailheads, 3 campgrounds, 1 major designated dispersed camping area (Kelley Flat), approximately 1.5 mi of road (between Baumgartner Campground and Kelley Creek Trailhead), and approximately 2 mi of trail (7038). Some of these are very heavily used, particularly on holiday weekends.

Presence of roads in potential bald eagle nesting habitat also leads to the indirect threat of loss of potential bald eagle roost and nest trees through firewood cutting and hazard tree removal. Large snags are commonly used by eagles for nesting and roosting and may be cut by firewood gatherers. Presence of camping areas (dispersed or developed) as well as roads and trails can lead to loss of potential roost or nest trees as a result of SNF hazard tree removal programs. This does occur most years in Baumgartner Campground and in dispersed campsites along USFS Road 227. Hazard trees are dead or leaning trees with a higher probability of falling over during the camping season and potentially injuring humans or blocking roads. In some cases, explosives are used by SNF personnel to drop hazard trees where they are too dangerous to cut down with chainsaws. This occurred in May 2006 and 2007 along the South Fork Boise River on the Fairfield RD. Although a biologist is consulted to make sure explosive work would be at least one mile from any known bald eagle nest, it is possible that disturbance to bald eagles still occurs with use of explosives during the nesting season.

Ketchum RD

The Ketchum RD provides suitable nesting and wintering habitat for bald eagles, primarily along the Big Wood River; however, no bald eagles are known to nest on the district. The route designation area does not provide breeding habitat for bald eagles because of the lack of large streams. As no bald eagles are known to nest within the analysis area nor does breeding habitat for the species occur, it is unlikely that motorized cross-country travel or current road and trail densities have any effect on bald eagles. None of the four alternatives are expected to have any measurable effect to bald eagles on the Ketchum RD route designation area and, as such, will not be discussed further with regard to environmental effects.

Minidoka RD

The Minidoka RD route designation area does not currently provide occupied breeding, nesting, or wintering habitat for the bald eagle. The nearest known nest territories are 30 mi northwest of the RD along the Snake River. The Big Cottonwood Wildlife Management Unit, managed by IDFG, provides potential wintering habitat on the northeast corner of the Cassia Division; however, no wintering bald eagles have been observed (Todd 2007). None of the four alternatives are expected to have any measurable effect to bald eagles on the Minidoka RD and, as such, will not be discussed further with regard to environmental effects.

Environmental Effects—Bald Eagle

Alternative 1—Direct and Indirect Effects

Fairfield RD

Under Alternative 1, no changes to the SNF Travel Plan Map (USDA 2002) would occur and existing conditions would continue. The current mileage and density of roads and trails in bald eagle habitat would remain. Current conditions of roads, trails, and motorized cross-country travel and their influence on potential disturbance, harassment, or killing of bald eagles would continue. Implementing Alternative 1 would not be fully consistent with SNF Forest Plan Threatened and Endangered Objective 3, “Identify and reduce road-related effects on TEPCS species and their habitats…” (Forest Plan, p. III-8).

Alternatives 2, 3, and 4—Direct and Indirect Effects

Implementing any of the action alternatives would be consistent with the direction provided in the SNF Forest Plan for management of threatened and endangered species.

Under any of the action alternatives, nearly identical conditions for bald eagle habitat along the South Fork Boise River to current conditions (Alternative 1) would remain. Under Alternative 2, one trailhead would be closed (Beaver Creek) but would be replaced by another (Gardner Gulch). Under each of the action alternatives, existing, old logging roads south of Kelley Flat would be converted to motorized trails not open to vehicles greater than 50 in. wide. This would reduce losses of dead, standing trees (potential roost and nesting trees for bald eagles) to firewood cutters because the old logging roads would no longer be available to full-sized vehicles. The presence of the trails still makes these trees susceptible to removal by SNF personnel as hazard trees.

Cumulative Effects to Bald Eagle

Fairfield RD

Potential cumulative effects to bald eagles across the north end of the SNF include potential disturbance, loss of roost and nest trees to firewood cutting and hazard tree removal, potential effects from chemical application (particularly on adjacent privately-owned agricultural lands), and loss of habitat from urban/suburban expansion in adjacent lands. Implementation of any of the action alternatives (Alternatives 2–4) would slightly reduce potential cumulative effects to bald eagles over current conditions by slightly reducing miles of road within bald eagle habitat along the South Fork Boise River as previously presented.

None of the alternatives would completely satisfy Threatened and Endangered Objective 15, “Maintain or restore forest structural conditions for nesting and roosting areas near water bodies used by bald eagles” (Forest Plan, p. III-9) because of hazard tree removal in campgrounds, dispersed camp sites, and along roads and trails within the analysis area along the South Fork Boise River. However, hazard tree removal is not part of the proposed action or any alternative for the route designation project and, as such, is outside of the scope of this EA.

Implementing Alternative 1 would continue potential cumulative effects, as described, at current levels.

Construction of approximately 8.66 mi of new ATV routes is a foreseeable future action within or adjacent to the Fairfield RD route designation area, but will be analyzed separately in a future NEPA assessment. None of the new ATV routes would occur within bald eagle nesting habitat, but may indirectly increase ATV use in the Kelley Flat area on the Fairfield RD. By creating “loop” opportunities for people using ATVs in association with camping in Kelley Flats, human use of the area could increase. The proposed West Fork Kelley Creek ATV Trail would not increase use of trail 7038 above the existing bald eagle nest because trail 7038 would remain closed to ATVs. However, the creation of the new ATV route in West Fork Kelley Creek could add to potential cumulative effects of increasing human use in the general Kelley Flat area.

Affected Environment—Canada Lynx

Fairfield and Ketchum RDs

Canada lynx are not currently known to occupy habitat on the Fairfield or Ketchum RDs however, extensive surveys have not been conducted. Potential lynx foraging and denning habitat does occur in the route designation areas for both RDs, and an historical account of a lynx observation within the area exists (IDCDC 2002). In July 1916, a confirmed female lynx specimen was collected along the Blue Ridge Trail (048) in the Fairfield RD route designation area. An interview with a past conservation officer conducted by Lewis and Wenger (1998) reported that lynx observations, road kills, and trapping incidents were fairly common in the Hailey area in the early 1970s. Another Lewis and Wenger interviewee (1998) reported a Canada lynx being killed along the highway near Bellevue in the early 1970s. Based on these anecdotal reports, it is likely that the area likely supported lynx at one time.

Lynx were listed as threatened under the ESA in March 2000. In 2003, the SNF completed BAs on the effects of all ongoing activities occurring on the north end of the SNF (Fairfield, Wood River Watershed Canada Lynx BA and Salmon River Watershed Canada Lynx BA). These analyses included discussion of the effects of the current travel plan map to lynx. The determination of effect was “No Effect” for the existing travel plan map in the Fairfield RD and “Not Likely to Adversely Affect” for dispersed summer recreation (including motorcycling and camping). For the Ketchum RD, the determination of effect for the existing travel plan map for summertime dispersed recreation on lynx was determined to be "May Affect, But Not Likely to Adversely Affect." The USFWS concurred with these determinations in a biological opinion in July 2003 (USFWS 2003b,c).

As directed by the Canada Lynx Conservation Assessment and Strategy 2000 (Ruediger et al. 2000), the SNF developed lynx analysis units (LAUs) across the three RDs on the north end of the SNF and defined lynx foraging and denning habitat within each LAU. LAUs were derived by aggregating 6th-level HUs, and lynx habitat was derived using vegetation layers from satellite imagery and GIS mapping techniques. The Fairfield RD route designation area overlaps portions of four LAUs (Willow-Abbot-Big-Water-Kelly LAU, Beaver-Boardman-Miller LAU, Little Smoky-Soldier-Willow LAU, and Bluff-Big Peak-Skillern LAU) and encompasses the entire Lime LAU. The Ketchum RD route designation area overlaps with portions of three LAUs (Upper Warm Springs-Castle LAU, Lower Warm Springs-Greenhorn-Deer LAU, and East Fork Big Wood-Little Wood LAU).

Within the Fairfield RD route designation area, there are approximately 69,253 acres of mapped potential lynx foraging habitat and 17,724 acres of mapped potential lynx denning habitat, based on GIS mapping conducted by SNF personnel. Within the Ketchum RD route designation area, there are approximately 22,706 acres of mapped potential lynx foraging habitat and 9,361 acres of mapped potential lynx denning habitat, also based on SNF GIS mapping. The current density of roads and trails occurring within mapped lynx habitat in the Fairfield and Ketchum RDs route designation areas is shown in Table 3-56.

Table 3-56. Road and trail density within lynx habitat in the Fairfield and Ketchum RDs' route designation areas.

Measure	Fairfield	Ketchum
Lynx foraging habitat in analysis area (acres)	69,253	22,706
Area open to off-road travel within lynx foraging habitat (acres)	69,253	22,706
Roads (system and non-system) within lynx foraging habitat (mi)	100.06	17.73
Road density in lynx foraging habitat (mi/mi^2)	0.92	0.5
Motorized trails in lynx foraging habitat (mi)	133.87	41
Motorized trail density in lynx foraging habitat (mi/mi^2)	1.24	1.15
Non-motorized only trails in lynx foraging habitat (mi)	0.00	3.5
Lynx denning habitat in analysis area (acres)	17,724	9,361
Roads (system and non-system) within lynx denning habitat (mi)	16.70	3
Road density in lynx denning habitat (mi/mi^2)	0.6	0.21
Motorized trails (system and non-system) in lynx denning habitat (mi)	24.01	12.5
Motorized trail density in lynx denning habitat (mi/mi^2)	0.87	0.85
Non-motorized trails in lynx denning habitat (mi)	0	1.88
Total trail density (motorized and non-motorized) (mi/mi^2)	0.87	1.25

According to the *Canada Lynx Conservation Assessment and Strategy 2000*, preliminary information suggests that lynx may not avoid forest roads except at high traffic volumes (Ruediger et al. 2000). However, under programmatic planning guidelines, the document suggests determining where road densities are greater than 2 mi/mi^2 within lynx habitat and consider seasonal restrictions or reclamation inthose areas. As shown in Table 3-56, overall average road density (including system and non-system roads) within lynx habitat in the Fairfield and Ketchum RD route designation areas is less than 2 mi/mi^2. In the programmatic planning section, the lynx conservation strategy also suggests limiting public use on temporary roads constructed for timber sales and designing these roads for effective closure after timber sale activities are completed. Many such old timber sale roads have remained open to public use. Some of these have essentially closed themselves by washing out or completely brushing in.

Potential indirect effects of human use of motorized cross-country travel, roads, or trails upon lynx include accidental or intentional shooting or trapping of lynx. Trapping and hunting for other species such as coyotes and bobcats does occur in the project area; therefore, unintentional trapping or shooting of lynx may happen. The Canada Lynx Conservation Assessment and Strategy (Ruediger et al. 2000) states that in 1991, two lynx were incidentally trapped by bobcat trappers in Idaho. Currently, there is no legal trapping or hunting season on lynx in Idaho.

Minidoka RD

Canada lynx is not listed on the USFWS 90-Day Species List 2007 (Table 3-55) for the Minidoka RD and will not be discussed further with regard to environmental effects for this RD.

Environmental Effects—Canada Lynx

Alternative 1—Direct and Indirect Effects

Under Alternative 1, no changes to the SNF Travel Plan Map (USDA 2002) would occur and existing conditions on the Fairfield and Ketchum RDs would continue (Table 3-57). The current mileage and density of roads and trails in lynx habitat would remain and would likely increase as new user-created routes continue to be established (as cross-country travel throughout the project area would still occur). Current conditions of roads, trails, and motorized cross-country travel and their influence on potential incidental trapping or shooting of lynx or disturbance would continue. Implementing Alternative 1 would not be fully consistent with SNF Forest Plan Threatened and Endangered Objective TEOB03, "Identify and reduce road-related effects on TEPCS species and their habitats" (Forest Plan, p. III-8).

Alternatives 2, 3, and 4—Direct and Indirect Effects

Under all action alternatives, by varying degrees, the elimination of motorized cross-country travel combined with the reduction of motorized trail in lynx foraging habitat and in lynx denning habitat, would likely benefit lynx potentially occurring in the route designation area by improving their security from disturbance and human induced mortality (Table 3-57). Alternative 4 represents the greatest reduction of potential threat to lynx.

Implementing any of the action alternatives would be fully consistent with the direction provided in the SNF Forest Plan for management of threatened and endangered species.

Cumulative Effects to Canada Lynx

Past timber harvest, road building, fire suppression, mining, livestock grazing, urbanization, and trapping/hunting have affected lynx and lynx habitat across the north end of the SNF. In particular, the subdividing and building of homes and cabins within private land inholdings of the SNF and adjacent private lands has reduced potential lynx foraging habitat from historic times and increased potential disturbance and mortality to individuals of the species. This urbanization is continuing to occur within private inholdings, adjacent private lands, and upon patented mining claim areas within the boundaries of the SNF.

Past timber harvest (clear cutting) has reduced potential denning habitat in certain areas of the north end of the SNF, but may have increased foraging habitat in those same locations by increasing early seral, brushy areas often used by snowshoe hare (lynx prey). Road building into lynx habitat increased potential disturbance and mortality to lynx as does current road and motorized trail use. Livestock grazing, particularly high historic grazing levels, has likely affected the capacity of some areas as foraging habitat for lynx. Fire suppression and livestock grazing has affected aspen habitat that can also be important foraging habitat for lynx.

Table 3-57. Travel routes within lynx habitat in the route designation areas.

Travel Routes	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
	Fairfield	Ketchum	Fairfield	Ketchum	Fairfield	Ketchum	Fairfield	Ketchum
Area open to off-road travel within lynx foraging habitat (acres)	69,253	22,706	0	0	0	0	0	0
Roads (system and non-system) in lynx foraging habitat (mi)	100	18	62	8	66	12	50	5
Road density in lynx foraging habitat (mi/mi^2)	0.92	0.5	0.60	0.23	0.61	0.34	0.46	0.15
Motorized trails (system and non-system) in lynx foraging habitat (mi)	134	41	70	28	88	26	68	27
Motorized trail density in lynx foraging habitat (mi/mi^2)	1.24	1.15	0.65	0.8	0.81	0.73	0.63	0.76
Non-motorized only trails in lynx foraging habitat (mi)	0	3.5	5	3.5	0.10	3.5	5	3.5
Total density of all trails (motorized and non-motorized) in lynx foraging habitat (mi/mi^2)	1.24	1.25	0.70	1.0	0.81	0.83	0.68	0.86
Roads (system and non-system) in lynx denning habitat (mi)	17	3	10	1	10	2	8	0.44
Road density in lynx denning habitat (mi/mi^2)	0.6	0.21	0.37	0.09	0.38	0.12	0.28	0.03
Motorized trails (system and non-system) in lynx denning habitat (mi)	24	12.5	12	7	15	7.5	12	7
Motorized trail density in lynx denning habitat (mi/mi^2)	0.87	0.85	0.43	0.5	0.54	0.51	0.42	0.46
Non-motorized trails in lynx denning habitat (mi)	0	2	1	2	0.05	2	1	2
Total density of all trails (motorized and non-motorized) in lynx denning habitat (mi/mi^2)	0.87	0.98	0.47	0.63	0.54	0.64	0.46	0.64
Note: miles rounded to nearest whole mile unless < 1.								

Trapping and hunting of lynx in the 1950–70s, particularly on what is now the SNRA and SNF Wilderness Area may have nearly eliminated lynx on the north end of the SNF. This conclusion is based on interviews with trappers/hunters conducted and documented by Lewis and Wenger (1998), and the numbers of lynx observed in the 1960s that are not observed today. Incidental shooting and trapping of lynx could potentially still occur and is influenced highly by road and trail density and use levels.

Current and future activities on the north end of the SNF that may influence lynx habitat include fuels reduction projects, (e.g., Fairfield RD, Soldier Mountain Hazardous Fuels Reduction Project, Barker Marsh Hazardous Fuels Reduction Project, and the proposed Salt Log and Liberal Creek Hazardous Fuels Reduction Projects). While these projects will likely have long-term benefits to lynx prey species and foraging habitat, they may have some temporary, short-term negative effects to foraging habitat.

A foreseeable future action on the Fairfield RD includes 8.66 mi of proposed future ATV trail. While this takes away slightly from the benefits to lynx, the addition of 8.66 mi still results in trail densities below current levels with the implementation of an action alternative. The proposed routes for this mileage actually impacts only 0.43 mi of mapped potential lynx foraging habitat.

Affected Environment—Yellow-billed Cuckoo

The yellow-billed cuckoo preferentially selects moderately dense thickets and deciduous trees near water. They may require large (100–200 acres), contiguous tracts of riparian habitat for breeding and typically nest 4–8 ft off of the ground. Nesting habitat has been described as dense lowland riparian with a dense sub-canopy or shrub layer (regenerating canopy trees, willows, or other riparian shrubs) within approximately 335 ft of water. Overstory in these habitats usually comprises closed-canopy stands of large or developing cottonwoods. Nesting habitats have been reported between 2,500–6,000 ft elevation in Utah (Parrish, Howe and Norvell 2002.). Very few distributional records of this species in the Rocky Mountain region are at elevations above 6,600 ft (USFWS 2001). Diet of the yellow-billed cuckoo consists mainly of insects although they will feed on some fruit and an occasional frog or lizard.

Fairfield and Ketchum RD

It is unknown if yellow-billed cuckoos occur on the Fairfield or Ketchum RDs. Portions of both RDs contain potentially suitable habitat for the western subspecies of the yellow-billed cuckoo within riparian woodlands along streams and rivers. Very little of this habitat occurs within the Fairfield RD route designation area. The nearest known sighting of a yellow-billed cuckoo to the Fairfield RD occurred at the headquarters of the IDFG Centennial Marsh approximately 7 mi to the south in June 1996. On the Ketchum RD, Deer Creek and Greenhorn Gulch in the project area could potentially be used occasionally by yellow-billed cuckoos, otherwise very little of the project area has potential habitat. Private land along the Big Wood River adjacent to the analysis area has potential habitat for the species.

It is unlikely that current travel activities have any measurable effect on yellow-billed cuckoos or their habitat as neither individuals of the species nor adequate habitat likely occurs in the area.

Minidoka RD

It is unlikely that this species exists on the Minidoka RD due to the lack of large tracks of cottonwood-willow habitat.

Environmental Effects—Yellow-billed Cuckoo

Implementing any of the alternatives would be fully consistent with the direction provided in the SNF Forest Plan for yellow-billed cuckoo species.

As neither individuals of the species nor adequate habitat likely occurs in the project areas on any of the RDs, there are no direct, indirect, or cumulative effects.

MIS

MIS are used to assess effects of management activities on groups of species with similar habitat requirements. The Forest Plan identifies the following terrestrial wildlife species as SNF MIS (USDA 2003a):

- Pileated woodpecker (*Dryocopus pileatus*), which is found on the Ketchum and Fairfield RDs. Pileated woodpeckers represent species requiring forest habitat with large diameter trees.

- Greater sage-grouse (*Centrocercus urophasianus*), which is found on the Fairfield, Ketchum, and Minidoka RDs. Greater sage-grouse represent species requiring sagebrush-steppe habitat.

Affected Environment—Pileated Woodpecker

Pileated woodpecker habitat and individuals have been documented to occur within the route designation areas on the Fairfield and Ketchum RDs. Pileated woodpeckers likely occur in most drainages within the Fairfield and Ketchum RDs.

Pileated woodpeckers need large diameter snags (>20 in.) in relatively closed-canopied (>50%) forests for nesting (Bull, Peterson, and Thomas 1986) and dense canopy cover (>60%) for roosting (Bull, Holthausen, and Henjum 1992). They also require large diameter (>20 in.) trees for foraging and will forage frequently on insects found in downed logs greater than 10 in. in diameter. Pileated woodpeckers feed on insects, which inhabit trees, both live and dead. Carpenter ants and bark beetles are commonly found in their diets (Bull, Peterson, and Thomas 1986).

Based on observations by the wildlife biologist for the Fairfield and Ketchum RDs, the most accurate model of potential habitat for pileated woodpeckers for this analysis is the SNF's GIS model depicting potential Canada lynx denning habitat. The mature conifer potential vegetation groups (PVGs) included in the lynx denning model are the same as those used for nesting by pileated woodpeckers. In addition, aspen is a common seral species included in these same PVGs, and large aspen trees within mature conifer stands are known to be used for nesting by pileated woodpeckers on the north end of the SNF. Therefore, the lynx denning habitat model was used as a proxy for potential pileated woodpecker habitat. The current density of roads and trails occurring within this potential pileated woodpecker habitat in the Fairfield and Ketchum RDs is shown in Table 3-58.

Table 3-58. Density of roads and trails within potential pileated woodpecker habitat in the Fairfield and Ketchum RDs route designation area.

Measure	Fairfield	Ketchum
Potential pileated woodpecker habitat in analysis area (acres)	17,724	9,361
Roads (system and non-system) within potential pileated wookpecker habitat (mi)	16.70	3
Road density in potential pileated habitat (mi/mi^2)	0.6	0.21
Motorized trails (system and non-system) in potential pileated woodpecker habitat (mi)	24.01	12.5
Motorized trail density in potential pileated woodpecker habitat (mi/mi^2)	0.87	0.85
Non-motorized trails in potential pileated habitat (mi)	0	1.88
Total trail density (motorized and non-motorized) mi/mi^2	0.87	1.25

Populations and population trends for pileated woodpecker for both the Fairfield and Ketchum RDs are unknown, but thought to be stable. A study designed to monitor pileated woodpecker population trends on the SNF was initiated in 2004. Ten survey routes, five of which are within the route designation area have been conducted annually on the Fairfield RD since the study began. Nine survey routes, two of which are within the project area, have been conducted annually on the Ketchum RD since the study began. Survey results for each transect route that fall within the project area shown in Table 3-59. It should be noted that population trend for the project area cannot be determined with this data to any statistical accuracy.

Table 3-59. Number of pileated woodpeckers heard on point count transects.

Fairfield RD					
Survey Route	**2004**	**2005**	**2006**	**2007**	**Total**
Presidents Trail	0	0	1	2	3
Boardman Creek	0	0	0	0	0
S. Fork Soldier	0	1	1	0	2
Worswick Creek	0	1	0	1	2
Williams/Rosetta	0	3	0	5	8
Total	0	5	2	8	15
Ketchum RD					
Survey Route	**2004**	**2005**	**2006**	**–**	**Total**
Red Warrior Creek	0	0	0	–	0
Greenhorn Gulch	0	0	0	–	0
Total	0	0	0	–	0

Population trend for pileated woodpeckers across Idaho from the U.S. Geological Survey (USGS), North American Bird Breeding Survey 1966 to 2003, shows a slight increase in trend (Sauer, Hines, and Fallon 2004). As noted on the USGS website, there are important deficiencies in their data, likely due to low sample size.

Firewood gathering is the primary indirect effect to pileated woodpecker habitat related to travel management on the Fairfield and Ketchum RDs. The cutting of snags by firewood gatherers removes potential nest trees and foraging substrate where open roads occur within pileated woodpecker habitat. As most pileated foraging occurs on standing dead trees and downed logs, removal of snags by firewood cutting can reduce foraging habitat within 100 ft of open roads.

Human use of roads and trails can potentially disturb pileated woodpeckers. This disturbance is likely short term and has little effect on the woodpeckers unless the duration and frequency of human use is great. There are examples of areas of high human use and successful pileated woodpecker nesting occurring in close proximity such as in a dispersed camping area in Corral Creek on the Ketchum RD and near the Murdock Corrals on the SNRA. The majority of use of trails occurs after the pileated woodpecker nesting season.

The overall key threat to pileated woodpeckers in the Fairfield and Ketchum RDs is the possibility of stand-replacing wildfire, which can eliminate pileated woodpecker nesting habitat. Other threats to pileated woodpecker habitat include the continued reduction of aspen stands. Aspen stands are known to be used by pileated woodpeckers for nesting, roosting, and foraging on the north end of the SNF. Aspen stands have been declining over time on the SNF due to fire exclusion, drought, livestock grazing, and other factors. Vegetation management actions such as timber harvest and prescribed fire also have the potential to affect pileated woodpecker habitat in the project area.

Environmental Effects—Pileated Woodpecker

Alternative 1—Direct and Indirect Effects

For both the Ketchum and Fairfield RDs, pileated woodpecker habitat would be maintained at the current condition as no changes in travel management would occur. However, road densities within pileated woodpecker habitat would likely increase in areas where firewood gatherers are pioneering new roads (such as in the Basalt Creek area on the Fairfield RD). Increasing road densities particularly for firewood gathering negatively affects pileated woodpecker habitat.

Implementing Alternative 1 would not be fully consistent with SNF Forest Plan Wildlife Goal 2, “Reduce human-caused disturbances that cause undesirable effects to wildlife populations during critical stages” (Forest Plan, p.III-25).

Alternatives 2, 3, and 4—Direct and Indirect Effects

The removal of cross-country travel, reduction of roads and trails open to full-sized vehicles, and the designation of roads and trails as planned under all action alternatives would benefit pileated woodpecker by reducing human-caused disturbance and pioneering into pileated woodpecker habitat by firewood gatherers. The degree of benefits varies by alternative. Alternative 4 would have the most beneficial effects while Alternative 3 would have the smallest amount of beneficial effects.

Implementing any of the action alternatives would be fully consistent with the direction provided in the SNF Forest Plan for management of MIS species.

Cumulative Effects—Pileated Woodpecker

Past timber harvest, road building, fire suppression, mining, livestock grazing, and firewood gathering have affected pileated woodpecker habitat on the north end of the SNF.

Timber harvest has reduced large trees available to pileated woodpeckers in many areas on the Fairfield RD, particularly where clear cutting occurred in the 1960s and 70s. Examples include clear cuts along the Salt-Bounds Road, Worswick Road, Marsh Creek Road, Grouse Creek Road, and Paradise Creek Road. Salvage timber sales on the Fairfield RD, including the North Fork Lime Creek and South Fork Boise River Salvage Timber Sales, were implemented in the early 1990s and focused on salvaging dead and dying trees, primarily of larger diameter, from ridgetops. Timber harvest has reduced large trees available to pileated woodpeckers in some areas of the Ketchum RD, such as Neal Canyon, Barr Gulch, and Bald Mountain.

Fire suppression over the past 100 years is thought to have contributed to conifer encroachment of aspen stands, which are important as nesting trees for pileated woodpeckers on the north end of the SNF. Fire suppression, in combination with grazing, has had negative effects on aspen regeneration. Old forest habitat (large trees of open spacing) has also been reduced by fire suppression in combination with past logging. Fire suppression across the north end of the SNF has resulted in many stands that are heavily stocked with younger trees. Older, large trees have been selectively logged in the past in some areas and many existing large trees are being encroached upon by younger trees that are competing for sunlight, water, and nutrients. There is also a risk of stand-replacing fire, which could burn down large trees that might otherwise be able to withstand frequent ground fires. All of these factors have affected pileated woodpecker habitat across the north end of the SNF.

Each of the proposed action alternatives (Alternatives 2–4) represents a reduction in cumulative effects to pileated woodpeckers on the north end of the SNF by eliminating cross-country travel and reducing the indirect effect of pioneering new roads into pileated woodpecker habitat for firewood gathering. Implementing Alternative 1 would continue these cumulative effects and increase them over time as new routes for firewood cutting are pioneered.

The Fairfield RD will be proposing 8.66 mi of future ATV routes, of which 5 mi are located within the project area. This proposal will be analyzed under a separate, future analysis. For the purposes of cumulative effects analysis for this EA, the addition of designated ATV routes is a foreseeable future action and would increase the mileage of motorized trails within pileated woodpecker habitat by 0.28 mi within the Fairfield RD. This increase does add slightly to potential cumulative effects of human disturbance to pileated woodpeckers, but trail densities would still be lower than current levels with the implementation of an action alternative, particularly when considering the acreage currently open to motorized cross-country travel.

Affected Environment—Greater Sage-Grouse

Fairfield and Ketchum RDs

The importance of sagebrush (*Artemisia spp*.) as habitat for sage-grouse is well documented by researchers such as Patterson (1952), Connelly and others (2000). Sage-grouse nesting success, early-brood rearing, and wintering are all tied to sagebrush. During late brood-rearing, sage-grouse can be found in grasslands, agricultural fields, and even along alpine ridges, but are generally within a mile of sagebrush habitat. Sage-grouse can be migratory or non-migratory (Connelly et al. 2000). Individuals on the Fairfield and Ketchum RDs are considered migratory and nest, raise young broods (ages 0–6 weeks old), and winter to the south of the RDs on BLM and private lands. Forb abundance is an important habitat factor for nesting and brood rearing habitat and insect availability is also a key component for brood rearing habitat. Wet meadows and riparian areas provide critical brood rearing habitat because of the presence of forbs and insects (Wambolt et al. 2002; Connelly et al. 2000).

Year-round habitat for greater sage-grouse does not occur on the Fairfield or Ketchum RDs. Sage-grouse are known to occur in certain areas of the both RDs intermittently during the late brood-rearing time period (July–October). The potential for some breeding and early brood rearing (March–June) does occur on the southern part of both RDs within the route designation area during low snow years, but no records of sage-grouse nesting on either RD exists. Sage-grouse are known to nest and winter in sagebrush habitats to the south of the Fairfield and Ketchum RDs on BLM and private lands.

A few sage-grouse leks have been recorded within 2 mi to the south of the Fairfield RD, but none actually occur on the RD. As sage-grouse will travel up to 5 mi from the lek (male strutting grounds) for nesting, it is possible some sage-grouse nesting does occur in sagebrush habitats on the southern portion of the RD within the analysis area. Several sage-grouse leks occur within 5 mi of the southern boundary of the RD in the High Prairie and Hill City areas, but the majority of the leks for the sage-grouse population occurring on the Camas Prairie occur on the south side of the prairie in sagebrush habitats on BLM and private land, approximately 12–15 mi to the south of the project area. Sage-grouse do not winter on the Camas Prairie but move further south onto BLM lands in the Bennet Hills and north of Gooding and Shoshone.

A few sage-grouse leks have been recorded within 3 mi to the south of the west portion of the Ketchum RD, but these have been inactive in recent years. Most active leks nearest the western portion of the project area are over 10 mi to the south. There are a few active leks within 5 mi to the south of the eastern portion of the Ketchum RD, over 7 mi to the southeast of the eastern portion of the route designation area. It is unlikely that sage-grouse nesting is occurring in the Ketchum RD due to the distance from any known leks. Sage-grouse are known to winter more than 22 mi to the south from the Ketchum RD primarily on BLM lands. Only one known sighting of sage-grouse has occurred within the Ketchum RD route designation area, within the Cove Creek area (eastern portion of the project area) by SNF personnel (Whitaker 2003). However, an abundance of potential habitat exists in many areas of the Ketchum RD, and sage-grouse likely use several locations during the late-brood rearing period.

The Fairfield RD contains approximately 34,875 acres and the Ketchum RD contains approximately 19,636 acres of sage-grouse habitat, based on GIS modeling for the Southwest Idaho Ecogroup (Boise and Payette NFs, and SNF) by Nutt and Miller (2006a). Although all sagebrush areas are considered potential habitat for sage-grouse, not all areas of sagebrush on the two RDs are habitat for sage-grouse. Connectivity to larger blocks of habitat to the south on private and BLM lands appears to be the main limitation. The current density of roads and trails occurring within the modeled sage-grouse habitat in the Fairfield and Ketchum RDs is shown in Table 3-60.

Declines in sage-grouse populations have been documented range-wide, as high as 45–80% since the 1950s (Braun 1998). Reasons for this decline are thought to be from cumulative factors, particularly the reduction of sagebrush habitat resulting from wildfire, changes in natural fire frequencies related to annual exotic grass invasions, agricultural and urban development, and mining. Other factors include habitat degradation from overgrazing, hydrological alterations affecting brood rearing habitat, fences, powerlines, and wind turbines (Wambolt et al. 2002, Connelly et al. 2000, Braun 1998).

Local populations of sage-grouse on or around the Camas Prairie (south of the Fairfield RD) are thought to have stabilized since the 1980s and increases in numbers were observed 2002–2006 (Skinner 2007b). Counts conducted at the largest known lek on the Camas Prairie recorded 25 strutting males in 1999, 25 in 2000, 24 in 2001, 50 in 2004, 53 in 2006, but back down to 26 in 2007 (Skinner 2007b). Other leks in the area also showed similar increases 2004–2006, but reduced numbers in 2007. IDFG has conducted lek count routes since the 1950s.

The Fairfield RD is just to the north of the West Magic Valley and Mountain Home sage-grouse planning areas (SGPA) as shown in the 2006 Conservation Plan for the Greater Sage-grouse in Idaho (Idaho Sage-Grouse Advisory Committee [SAC] 2006). Figure 3-1 shows the average number of male sage-grouse per lek counted on three IDFG lek routes in the West Magic Valley SGPA 1974–2004.

The Ketchum RD is to the north of the East Magic Valley and West Magic Valley SGPAs as shown in the 2006 Conservation Plan for the Greater Sage-grouse in Idaho (Idaho SAC 2006). Figure 3-2 shows the average number of male sage-grouse per lek counted on four IDFG lek routes in the East Magic Valley SGPA 1979–2005.

Table 3-60. Density of roads and trails within sage grouse habitat in the project area.

	Fairfield	Ketchum
Sage-grouse habitat (polygons) in analysis area (acres)	34,875 (54.5 mi^2)	19,636 (30.8 mi^2)
Area open to off-road travel within sage-grouse habitat (acres)	34,875	19,636
Roads (system and nonsystem) within sage-grouse habitat (mi)	43.78	15
Road density in sage-grouse habitat (mi/mi^2)	0.8	0.49
Motorized trails (system and nonsystem) in sage-grouse habitat (mi)	54.43	38.85
Motorized trail density in sage-grouse habitat (mi/mi^2)	1.0	1.27
Non-motorized trails in sage-grouse habitat (mi)	0	2.6
Total density of all trails (motorized and non-motorized) in sage-grouse habitat (mi/mi^2)	1.0	1.35
Table information from Nutt and Miller (2006).		

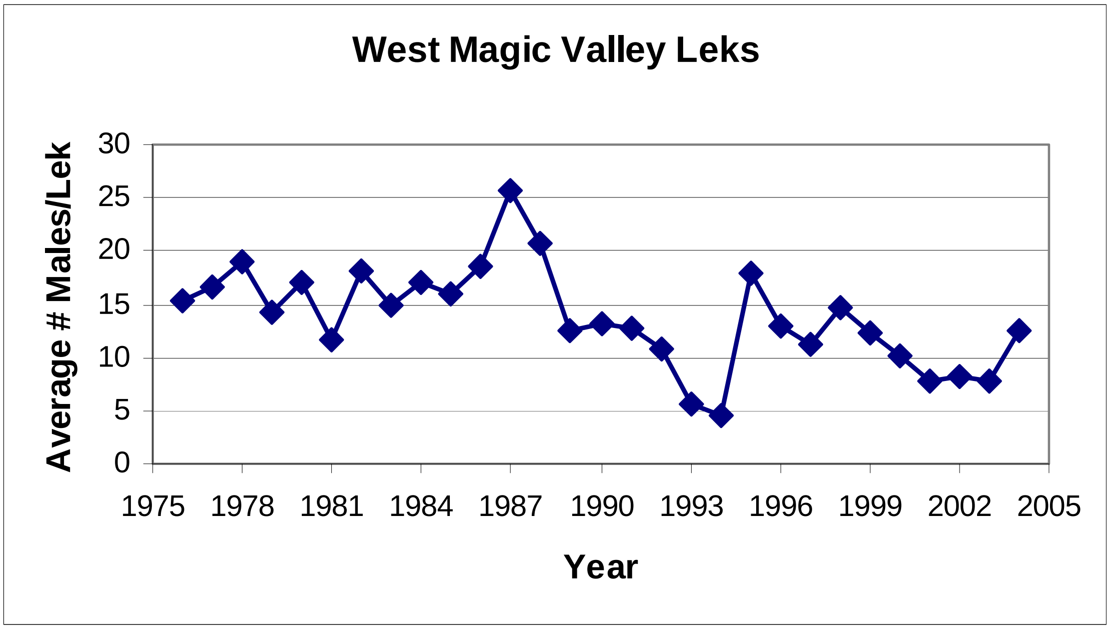

Figure 3-1. Greater sage-grouse population trend West Magic Valley sage-grouse planning area (Idaho SAC 2006).

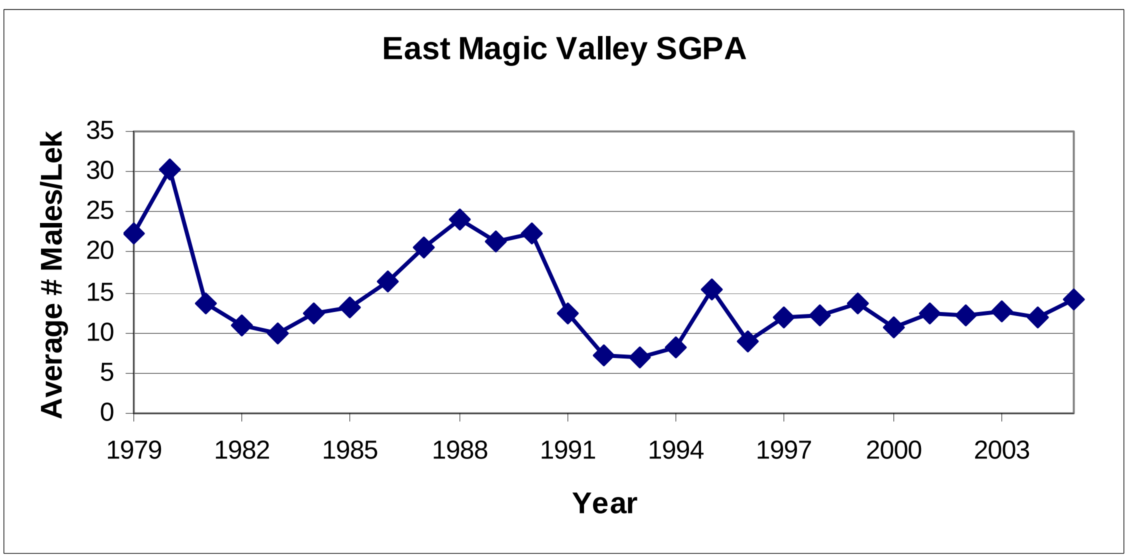

Figure 3-2. Greater sage-grouse population trend East Magic Valley sage-grouse planning area (Idaho SAC 2006).

The 2006 Conservation Plan for Greater Sage-grouse in Idaho ranks human disturbance as the fifth most important threat to sage-grouse in Idaho and of primary concern is OHV disturbance to sage-grouse on leks and or nests. Ground disturbance, spread of invasive plants, and increased fire risk can also be caused by off-road motorized activities within sage-grouse habitat use and areas of concern (Idaho SAC 2006).

Human use of roads and trails and motorized cross-country travel within the Fairfield and Ketchum RDs during the late brood-rearing time period can potentially disturb sage-grouse causing them to flush and fly short distances. This disturbance is short term and likely has little effect on the grouse. However, this same type of disturbance during strutting, nesting, and early brood-rearing time periods would be more detrimental, potentially affecting reproduction and nesting success. However, as discussed earlier, sage-grouse are not known to occur on either RD during the strutting, nesting, or early brood-rearing time period.

The primary threat to sage-grouse in the Fairfield and Ketchum RDs is the possibility of loss of large stands of sagebrush by wildfire. Small fires may actually benefit sage-grouse in late brood-rearing habitat, but large fires can reduce habitat blocks such they will not likely be used by sage-grouse for several years. Human use of roads and trails and cross-country travel in the project area increases the potential for wildfire by accidental or intentional starting of fires. Noxious weed invasion into sage-grouse habitat is another key threat in the project area. Both wildfire and noxious weed invasion are potential indirect effects from motorized use of roads, trails, and cross-country travel. Domestic livestock grazing on the RD also affects some components of sage-grouse habitat, primarily wet meadows, and increases potential for noxious weed invasion.

Minidoka RD

Greater sage-grouse are known to use the sagebrush/forb-dominated communities for late brood rearing on all five divisions within the Minidoka RD. Sage-grouse are highly dependant on sagebrush for food and cover throughout the year. Wet meadows and riparian areas provide critical brood rearing habitat because of the presence of forbs and insects. Sage-grouse feed almost exclusively on sagebrush throughout winter. Sage-grouse on the Minidoka RD are considered migratory and typically descend to lower elevation sagebrush to winter on BLM and private lands. Despite management and research efforts that date to the 1930s, breeding populations of this species have declined 17–47% throughout much of its range (Connelly and Braun 1997). Causes are frequently attributed to habitat fragmentation, land conversion, overgrazing, introduction of exotic weeds and altered fire regimes (Miller and Eddleman 2001). IDFG estimates sage-grouse populations in southern Idaho to be on an overall, long-term downward trend. Sage-grouse numbers experienced their recent all time low in 1993–94. Since 1997, the numbers of males counted on standardized lek routes in southern Idaho have gradually increased (Smith 2007).

UDWR estimates sage-grouse populations in northern Utah to be on a long-term downward trend. Since 2000, UDWR's annual surveys of all historical leks (none known to occur on the SNF) indicate an overall downward trend in sage-grouse numbers. Sagebrush habitats on the Raft River Division are relatively intact but losing continuity with sagebrush habitat on adjacent private land. Large fires in recent years combined with current agricultural practices have contributed greatly to this loss of continuity (Enright 2007).

Existing roads and trails in the project area pose a risk to greater sage-grouse habitat through factors such as increased human access to their habitat, spread of invasive species, increased wildfire risk, and collisions. The Idaho SAC recommends that existing roads and trails be managed to minimize disturbance to leks and early/late brood rearing within the project area (Idaho SAC 2006).

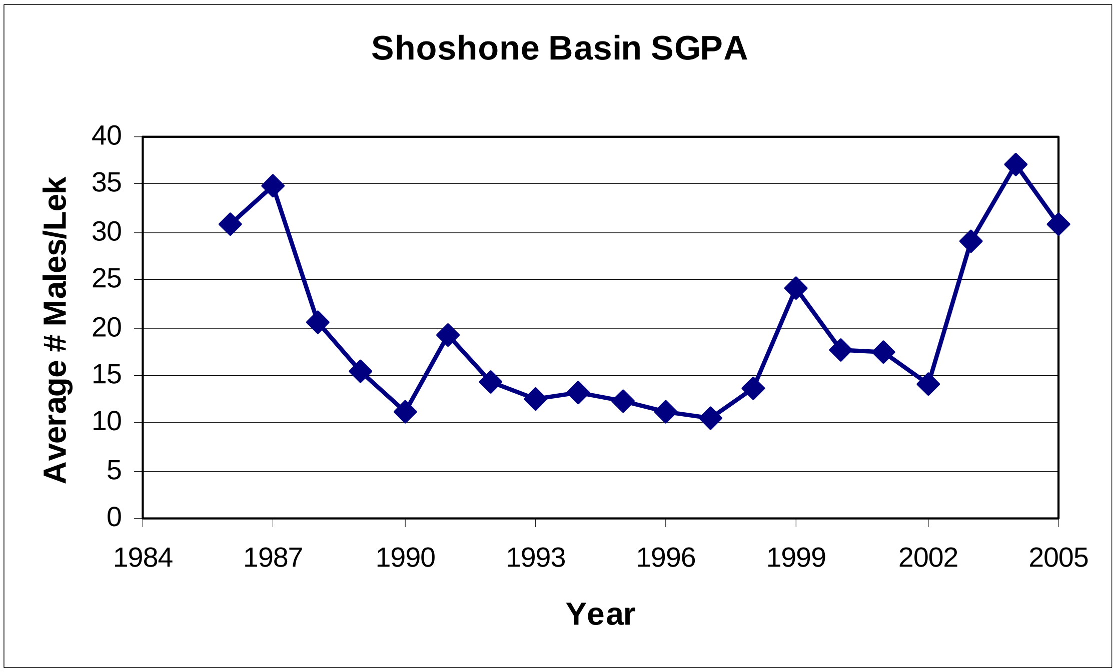

Figure 3-3. Changes in number of males / lek, 1964–2003, Shoshone Basin sage-grouse local planning area.

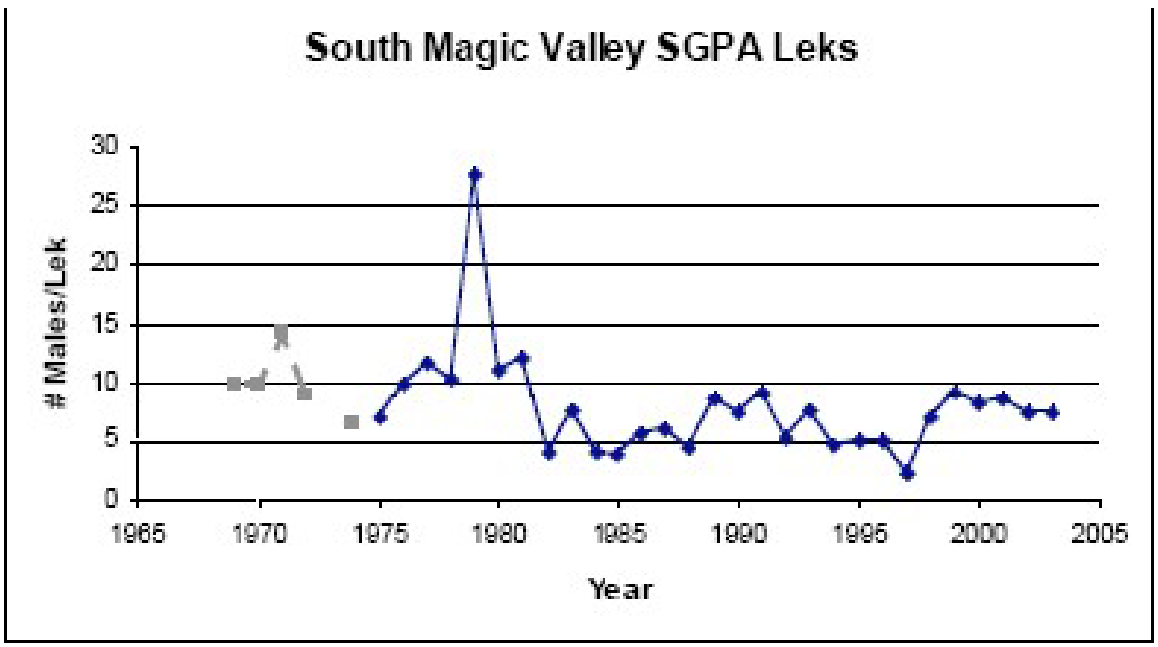

Figure 3-4. Changes in number of males / lek, 1968–2003, South Magic Valley sage-grouse local planning area.

Minidoka RD—Cassia Division

The Cassia Division has nearly half (198,854 acres) of the total sage-grouse habitat on the Minidoka RD. Sagebrush habitat on the Cassia Division is used primarily for early to late brood rearing. Sage-grouse on the Cassia Division are considered migratory and typically descend to lower elevation sagebrush to winter on BLM and private lands. Leks on the northeast portion of this division represent the highest number of breeding sage-grouse on the Cassia Division. Counts of male grouse on these leks tend to vary from year to year (Figures 3-3 and 3-4). The Shoshone Basin local working group has been active in Shoshone Basin since 1994 to assist in developing management objectives for sage-grouse on private and public lands. The South Magic Valley local working group (associated with the east side of the Cassia Division and the west side of the Albion Division) has recently been formed and will function in the same capacity. Local working groups operate under the management framework of the Idaho State Plan for the Conservation of Greater Sage-grouse (Idaho SAC 2006). It is anticipated that, at the 'local' level, these working groups will help maintain and enhance sage-grouse populations and habitat (Idaho SAC 2006).

The Albion, Black Pine, Raft River, and Sublett divisions are used by sage-grouse primarily for late brood rearing. There are no known leks on these mountain ranges. Sage-grouse breeding activities, early brood rearing, and wintering typically take place on lower elevation BLM and private lands surrounding these four divisions.

The Minidoka RD contains approximately 446,170 acres of sage-grouse habitat based on GIS modeling (Nutt and Miller 2006a). Specific sagebrush habitat by acres and division are the following: Albion 34,289 acres, Black Pine 56,077 acres, Cassia 198,854 acres, Raft River 54,897 acres, and Sublett 47,542 acres. Current road and trail density within sagebrush habitat on the Minidoka RD is 1.59 mi/mi^2.

Environmental Effects—Greater Sage-Grouse

Alternative 1—Direct and Indirect Effects

Fairfield, Ketchum, and Minidoka RDs

Under Alternative 1, current conditions for sage-grouse habitat, related to road and trail use and cross-country travel, would be maintained throughout the route designation area. Motorized cross-country travel would continue to be allowed on sage-grouse habitat, continuing the potential for disturbance effects to sage-grouse (Table 3-61). The current potential for indirect effects to sage-grouse from motorized use of roads, trails, and cross-country travel would be maintained. Motorized trail densities within sage-grouse habitat within the project area would likely continue to increase because of trail pioneering, particularly by ATV users. This would have continued long-term negative effects to greater sage-grouse and its habitat.

Implementing Alternative 1 would not be fully consistent with SNF Forest Plan Wildlife Goal 2, "Reduce human-caused disturbances that cause undesirable effects to wildlife populations during critical stages" (Forest Plan, p. III-25).

Alternatives 2, 3, and 4—Direct and Indirect Effects

Implementing any of the action alternatives would benefit sage-grouse by reducing potential disturbance of nesting, and early/late brood rearing habitat where cross-country travel would no longer be allowed. Route densities are also reduced within sage-grouse late brood rearing habitat in the project under the action alternatives (Table 3-61). These reductions in road and trail density would help to reduce the potential for motorized vehicles to spread noxious weeds or start wildfires within sage-grouse habitat.

Alternative 2 represents a considerable improvement in sage-grouse late brood rearing habitat within the project area over current conditions. Alternative 3 represents an improvement in sage-grouse late brood rearing habitat over current conditions, although not quite to the same degree as Alternatives 2 or 4. Alternative 4 represents the greatest (however modest) improvement in sage-grouse early/late brood rearing habitat within the project area over current conditions.

Implementing any of the action alternatives would be fully consistent with the direction provided in the Forest Plan for management of MIS and sensitive species.

Table 3-61. Travel routes within greater sage-grouse habitat in route designation areas.

Fairfield Ranger District (RD)	Alt 1	Alt 2	Alt 3	Alt 4
Area open to off road travel within greater sage-grouse habitat (acres)	34,875	0	0	0
Roads (system and nonsystem) in greater sage-grouse habitat (mi)	44	30	32	30
Road density in greater sage-grouse habitat (mi/mi^2)	0.8	0.55	0.58	0.56
Motorized trails (system and nonsystem) in greater sage-grouse habitat (mi)	54	21	22	18
Motorized trail density in greater sage-grouse (mi/mi^2)	1.0	0.39	0.4	0.33
Non-motorized only trails in greater sage-grouse habitat (mi)	0	0.73	0.17	0.73
Total density of all trails (motorized + non-motorized) in habitat (mi/mi^2)	1.0	0.4	0.4	0.35
Ketchum RD	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Area open to off road travel within greater sage-grouse habitat (acres)	19,636	0	0	0
Roads (system and non-system) in greater sage-grouse habitat (mi)	15	12	13	11
Road density in greater sage-grouse habitat (mi/mi^2)	0.49	0.38	0.41	0.37
Motorized trails (system and non-system) in greater sage-grouse habitat (mi)	39	25	27	21
Motorized trail density in greater sage-grouse (mi/mi^2)	1.27	0.81	0.88	0.69
Non-motorized only trails in greater sage-grouse habitat (mi)	3	3	2	3
Total density of all trails (motorized and non-motorized) in habitat (mi/mi^2)	1.35	0.9	0.95	0.78
Minidoka RD	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Area open to off road travel within Greater sage-grouse habitat (acres)	446,170	0	0	0
Roads in sage-grouse habitat (system and non-system) (mi)	1024	702	702	702
Road density in sage-grouse habitat (mi/mi^2)	1.67	1.15	1.15	1.15
Motorized trails in sage-grouse habitat (mi)	167	166	165	162
Motorized trail density in sage-grouse habitat (mi/mi^2)	0.27	0.27	0.27	0.26
Non-motorized trails only in sage-grouse habitat (mi)	4	4	4	4
Total density of all trails (motorized and non-motorized) in habitat (mi/mi^2)	0.28	0.28	0.28	0.27
Note: Miles rounded to nearest whole mi unless < 1.				

Cumulative Effects to Greater Sage-Grouse

Fairfield and Ketchum RDs

Across the north end of the SNF late brood rearing habitat for sage-grouse has been affected by several human-influenced factors including livestock grazing and associated range structures, wildfire and fire suppression, motorized recreation, and noxious weeds. Historic sheep grazing across the north end of the SNF degraded upland and riparian habitats because of the sheer numbers of sheep. Erosion, topsoil loss, and vegetation species composition changes have all resulted from historic grazing likely affecting habitat for sage-grouse.

Current cattle and sheep grazing on the Fairfield and Ketchum RDs, adjacent BLM, State, and private lands, and across the north end of the SNF may affect sage-grouse habitat to some degree, particularly in riparian areas. Cattle grazing can reduce stubble height of grasses along streams, seeps, and wet meadows, which may reduce hiding cover for grouse, but may also stimulate forb production, an important food source to sage-grouse broods at the time period they use habitat on the Fairfield and Ketchum RDs. Moving cattle and sheep in large congregated herds can have some disturbance effects to sage-grouse, particularly if grouse actually nest in areas on the SNF. Rangeland structures such as fences, permittee cabins and corrals, and water developments also can affect sage-grouse in various ways. Sage-grouse have been known to hit barbed wire fences, particularly newly placed fences in key occupied habitat, and either be injured or die from the impact. Permittee cabins and corrals have been placed in areas likely previously used by sage-grouse and may present disturbance effects to grouse. Water developments can reduce water availability to grouse in certain cases or potentially improve vegetation conditions at spring and seep sites, if the sites are protected from livestock, but are still accessible by grouse.

Over their entire range, greater sage-grouse have been negatively affected by large-scale wildfire and conversion of sagebrush areas to, predominately, cheatgrass. However, this has not occurred in large blocks on the north end of the SNF because cheatgrass is more prevalent in lower, dryer elevations than that found on the north end SNF. Larger wildfires could impact late brood rearing habitat for sage-grouse on the north end of the SNF if enough acres of sagebrush are burned, such as occurred in the Willow Creek fire on the Fairfield RD and adjacent private and BLM lands in 2001.

Conversely, wildfire suppression on the SNF over the last 100 years may have lead to conditions where sagebrush may actually be too thick for optimal habitat for grouse. Mosaic patterns of vegetation where native bunch grasses and forbs are intermixed with sagebrush are ideal for late brood rearing habitat (Connelly et al. 2000). Fire suppression also may have contributed to conifer encroachment of rangelands reducing sage-grouse habitat on the SNF.

Noxious weed infestations on the north end of the SNF occurring within potential sage-grouse habitat negatively affects the quality of that habitat for sage-grouse. Noxious weed infestations likely come from a variety of sources including livestock grazing and recreation activities.

As previously presented, motorized recreation on the north end of the SNF has influenced sage-grouse habitat in several ways. Implementing Alternative 1 would, however, continue these cumulative effects and increase them over time as new routes are pioneered through sage-grouse habitat. Implementing any of the action alternatives (Alternatives 2–4) as proposed in this EA would represent an improvement in greater sage-grouse habitat across the north end of the SNF and help to decrease cumulative effects to the species.

A reasonably foreseeable future action within the Fairfield RD is future construction of 8.66 mi of new ATV trails on the RD and adjacent BLM and private lands. Approximately 1.4 mi of this occurs within modeled sage-grouse habitat and, therefore, would represent a very small increase in cumulative effects to sage-grouse, but much less than that under current conditions.

Minidoka RD

Greater sage-grouse habitat (early to late brood rearing) on the Minidoka RD has been affected by many factors, including but not limited to, livestock grazing and associated range structures, wildfire and wildfire suppression activities, invasive species (cheatgrass) and noxious weeds, and motorized recreation. Current cattle and sheep grazing may negatively affect sage-grouse habitat in riparian areas. Grazing may reduce hiding cover along streams, by springs, and in wet meadows. Moving large bands of sheep or herding cattle can have disruptive effects in nesting areas and during early brood rearing. Livestock structural developments affect sage-grouse in various ways. Sage-grouse may be injured on barbed wire fences and water troughs confine water, making it unavailable to grouse if wildlife access is not provided. Fencing springs from livestock may improve the vegetation (cover) and also provide clean sources of water for grouse.

Throughout their range in southern Idaho, greater sage-grouse have been negatively affected by large-scale wildfire and vegetation conversion to cheatgrass. There have been several large wildfires in sage-grouse habitat on the Minidoka RD in the past seven years, which removed several thousand acres of sagebrush habitat. This removal will negatively affect late brood rearing habitat into the near (0–15 years) future. While some cheatgrass and noxious weeds have developed in these areas, likely affecting sage-grouse foraging habitat, most of the occurrences are along roads and SNF access points. Large-scale invasions have not occurred as they likely have at lower elevation fire sites. Conversely, wildfire suppression on the SNF over the past 80 years may have lead to conditions in specific areas where sagebrush may be too dense for optimal late brood rearing habitat for sage-grouse. Large wildfires may interrupt continuity and travel corridors for sage-grouse from nesting and early brood rearing habitat.

Up to 2.5 mi of road construction associated with rock quarries may be built if plans to operate are approved in the future. The quarry activities and associated roads may affect sage-grouse by actual removal of some habitat and disruption of sage-grouse activities. Reclamation and reseeding of habitat is required at completion of operations but some habitat is taken out of production during the life of the quarry operation.

Motorized recreation on the Minidoka RD has influenced sage-grouse habitat in several ways. Implementation of any of the action alternatives would be beneficial to greater sage-grouse.

Foreseeable future actions within the Minidoka RD project area include proposals to construct additional recreational trails. A portion of these trails could be constructed within sage-grouse habitat. This may add to cumulative effects to sage-grouse habitat but would still be lower than the current mileage and density of trails in the project area. Under a separate NEPA action, 82.55 mi of spur and redundant roads have been identified for review and possible closure. This would make a significant improvement to greater sage-grouse habitat.

Region 4 USFS Sensitive Species

This section analyzes the current condition and effects of the proposed action and alternatives upon Region 4 sensitive species with a high or moderate probability of occurrence in the route designation area (Table 3-62). Direct and indirect effects for these species are analyzed at the scope of the proposed route designation changes. Cumulative effects for the Fairfield and Ketchum RDs are analyzed at the scope of the north end of the SNF. Cumulative effects for the Minidoka RD are analyzed at the scope of the RD. These species are also evaluated in BEs for each RD. Copies of these documents can be found in the route designation EA project record.

Effects Common to All Sensitive Species

A foreseeable future action within the Fairfield RD is future construction of 8.66 mi of new ATV trails, of which approximately 5 mi would be on the SNF and the remainder on BLM and private lands. This action, if pursued, will be handled under a new, separate NEPA analysis. Although this addition would add to the potential cumulative effects experienced by any sensitive species currently impacted, the cumulative impacts are exceptionally minor and much less to the impacted species than what they are experiencing under current conditions (Alternative 1).

Another foreseeable future action within the Minidoka RD that may add to cumulative effects to a sensitive species is future proposals to permit additional rock quarrying or mining. Up to 2.5 mi of additional road may be added in association with approved rock quarry permits. It is also likely that additional recreational trails may be proposed in the future for this area. Under a separate NEPA action, 82.55 mi of spur and redundant roads have been identified for review and possible closure. Although any addition as a result of these proposed actions could add to the potential cumulative effects experienced by any sensitive species currently impacted, the cumulative impacts are minor for these actions and much less to the impacted species than what they are experiencing under current conditions (Alternative 1).

Table 3-62. Region 4 USFS sensitive species probability of occurrence within the analysis area.

Species	Ranger District	Probability of Occurrence/Rational	Analyzed for EA (Y/N)
Spotted Bat (*Euderma maculatum*)	Ketchum	Moderate/potential habitat	Y
	Fairfield	Moderate/potential habitat	Y
	Minidoka	Moderate/potential habitat	Y
Townsend's Big-eared Bat (*Corynorhinus townsendii*)	Ketchum	High/known occurrences	Y
	Fairfield	Moderate/potential habitat	Y
	Minidoka	High/potential habitat	Y
Wolverine (*Gulo gulo*)	Ketchum	High/known occurrences	Y
	Fairfield	High/known occurrences	Y
	Minidoka	Low/potential habitat	N
Fisher (*Martes pennanti*)	Ketchum	Low/no records or habitat	N
	Fairfield	Low/no records or habitat	N
	Minidoka	Low/potential habitat	N
Northern Goshawk (*Accipter gentiles*)	Ketchum	High/known occurrences	Y
	Fairfield	High/known occurrences	Y
	Minidoka	High/known occurrences	Y
Boreal Owl (*Aegolius funereus*)	Fairfield	High/1 known occurrence	Y
	Ketchum	High/known occurrences	Y
	Minidoka	Low/potential habitat, not analyzed	N
Flammulated Owl (*Otus flammeolus*)	Ketchum	High/known occurrences	Y
	Fairfield	High/known occurrences	Y
	Minidoka	High/potential habitat, known occurrences	Y
Three-toed Woodpecker (*Picoides tridactylus*)	Ketchum	Low/lack of habitat and no known records	N
	Fairfield	Low/lack of habitat and no known records	N
	Minidoka	Low/no potential habitat, no records	N
Spotted Frog (*Rana luteiventris*)	Ketchum	High/known occurrences	Y
	Fairfield	High/known occurrences	Y
	Minidoka	Low/potential habitat	N

Species	Ranger District	Probability of Occurrence/Rational	Analyzed for EA (Y/N)
White-headed Woodpecker (*Picoides albolarvatus*)	Fairfield	Moderate/known occurrence within 1 mi of analysis area	Y
	Ketchum	Low/no habitat or known occurrences	N
	Minidoka	Low/no habitat or known occurrences	N
Mountain Quail (*Oreortyx pictus*)	Ketchum	Low/potential habitat	N
	Fairfield	Low/potential habitat	N
	Minidoka	Low/potential habitat, no occurrences	N
Greater Sage-Grouse (*Centrocercus urophasianus*)	Fairfield	High, known occurrences	Y - MIS section
	Minidoka	High/known occurrences	Y - MIS section
	Fairfield	High/known occurrences	Y - MIS section
Pygmy Rabbit (*Brachylagus idahoensis*)	Ketchum	Moderate/potential habitat	Y
	Fairfield	Moderate/potential habitat	Y
	Minidoka	High/potential habitat, known occurrences	Y
Peregrine Falcon (*Falco peregrinus*)	Fairfield	High/known occurrences	Y
	Ketchum	Moderate/potential habitat	Y
	Minidoka	Low/potential habitat, no occurrences	N
Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*)	Fairfield	Low/not found	N
	Ketchum	Low/not found	N
	Minidoka	Low/not found	N

Affected Environment—Spotted Bat

Spotted bats forage nocturnally and feed mainly on moths in open ponderosa pine stands, marshy areas, and open pastures. They roost in rock crevices on steep cliff faces (Watkins 1977; Wai-Ping and Fenton 1989). Spotted bats hibernate during the winter and emerge in spring, generally March or April depending on daytime temperatures during those months.

It is unlikely that the current road and trail use and cross-country travel has much affect on spotted bats or their habitat directly. Roosting habitat for this species (rock crevices and cliffs) is unaffected by motorized and non-motorized travel. However, the greater the density of roads and trails along with the amount and frequency of their use can affect the potential for wildfire and noxious weeds, which could in turn affect spotted bat foraging habitat.

There are no documented sightings of the spotted bat in the project area, although habitat is present. No systematic surveys for the species have been conducted. Potential foraging habitat for this species exists within the Minidoka RD while both foraging and roosting habitat for this species are present throughout the Ketchum and Fairfield RDs.

Environmental Effects—Spotted Bat

Alternative 1—Direct and Indirect Effects

Under Alternative 1, current travel plan map designations and conditions of spotted bat habitat in the project area would remain. As motorized cross-country travel would continue, it is likely that road and trail densities would increase over time by the pioneering of new routes. This could indirectly negatively affect potential spotted bat foraging habitat in the project area by increasing the potential for human-caused wildfire or spread of noxious weeds. This would have continued long-term negative effects to potential spotted bat foraging and roosting habitat.

Implementing Alternative 1 would not be fully consistent with SNF Forest Plan Wildlife Goal 2, "Reduce human-caused disturbances that cause undesirable effects to wildlife populations during critical stages" (Forest Plan, p. III-25).

Alternatives 2, 3, 4—Direct and Indirect Effects

Under Alternatives 2–4, motorized cross-country travel would be eliminated and route densities would be reduced. This would likely reduce the potential for human-caused, motorized recreation-related wildfire, spread of noxious weeds, and disturbance to vegetation within spotted bat habitat. Reductions in route density would likely reduce direct interference to spotted bat use sites due to human or motorized activities that are facilitated by road and trail access.

Alternative 4 represents the greatest reduction of potential threats to spotted bat foraging habitat of the action alternatives. Alternative 3 would have the same beneficial effects, but not to the same degree as either Alternatives 2 or 4.

Implementing any of the action alternatives would be fully consistent with the direction provided in the SNF Forest Plan for management of sensitive species.

Cumulative Effects to Spotted Bat

Fairfield and Ketchum RDs

Implementation of any of the action alternatives (Alternatives 2–4) would reduce current potential cumulative effects to spotted bat foraging habitat across the north end of the SNF by eliminating motorized cross-country travel and reducing road and trail densities. These actions would likely reduce the chances for human-caused wildfire or noxious weed spread, which could in turn affect spotted bat foraging habitat. Implementing Alternative 1 would, however, continue these potential cumulative effects at current levels.

Minidoka RD

Mining and rock quarry operations on the Minidoka RD may affect roosting habitat for spotted bat. The quarries and associated roads and quarrying activities may affect spotted bat by actual removal of some roosting habitat and disruption of their activities.

Under a separate NEPA action, the possible future removal/closure of 82.55 mi of spur and redundant roads may result in an additional improvement to spotted bat habitat if by removal of these routes that access to roost sites is reduced.

Affected Environment Townsend's Big-Eared Bat

Townsend's big-eared bats are nocturnal insectivores feeding primarily on moths along forest edges. They roost in crevices of rocky outcrops, caves, old mines or buildings. Unlike many species, which seek refuge in crevices, Townsend's big-eared bat forms highly visible clusters on open surfaces making them extremely vulnerable to disturbance (Christy and West 1993). Townsend's big-eared bats hibernate during the winter and emerge in spring, generally March or April depending on daytime temperatures during those months.

No documented sightings of Townsend's big-eared bat have been made on the Fairfield or Minidoka RDs; however, both foraging and roosting habitat are present. Townsend's big-eared bats have been found on the Ketchum RD approximately 8 mi to the east of the Fairfield RD and within 0.5 mi to the north of the Ketchum RD route designation area. Suitable roosting habitat for these bats exists within in old mine shafts and buildings.

It is unknown if motorized cross-country travel and current levels of road and trail use has created disturbance effects to Townsend' big-eared bats in the project areas. The greater the density of roads and trails, and the greater the amount and frequency of their use, the greater likelihood of disturbance to foraging or roosting Townsend's big-eared bats. Foraging habitat for the species also could be negatively affected by human-caused wildfire and noxious weed spread.

GIS modeling (Nutt and Geier-Hayes 2007a) shows that there are 33,038 acres of potential Townsend's big-eared bat habitat in the Fairfield RD route designation area, within which there are 46 mi of road and 64 mi of trail (road density 0.89 mi/mi^2, trail density 1.23 mi/mi^2). Within the Ketchum RD route designation area there are 4,478 acres of potential Townsend's big-eared bat habitat, within which there are 4 mi of road and 10 mi of trail (road density 0.62 mi/mi^2, trail density 1.47 mi/mi^2). The Minidoka RD contains approximately 130 acres of potential Townsend's big-eared bat habitat, within which there is a road density of 1.45 mi/mi^2 and 0 mi of trails.

The acres of potential Townsend's big-eared bat habitat is likely an underestimate for all RDs as not all habitat likely affected by existing user-created routes has been mapped.

Environmental Effects—Townsend's Big-Eared Bat

Alternative 1—Direct and Indirect Effects

Fairfield, Ketchum, and Minidoka RDs

Under Alternative 1 (Table 3-63), current travel plan map designations and conditions of Townsend's big-eared bat foraging and roosting habitat would remain the same in the project areas. On the Minidoka RD, motorized cross-country travel would continue to be allowed within 130 acres of potential Townsend's big-eared bat foraging and roosting habitat. Direct and indirect effects to Townsend's big-eared bat from motorized roads, trails, and cross-country travel would continue. Road and trail densities would likely increase under this alternative because of the pioneering of new routes. As this species is particularly sensitive to disturbance at the roost and may shift foraging activities away from road networks, this would have continued long-term negative effects to potential Townsend's big-eared bat foraging and roosting habitat. Increased road and trail densities could indirectly negatively affect potential Townsend's big-eared bat habitat by increasing the potential for human-caused wildfire or spread of noxious weeds.

Implementing Alternative 1 would not be fully consistent with SNF Forest Plan Wildlife Goal 2, "Reduce human-caused disturbances that cause undesirable effects to wildlife populations during critical stages" (Forest Plan, p. III-25).

Alternatives 2, 3, 4—Direct and Indirect Effects

Implementing any of the action alternatives would be fully consistent with the direction provided in the SNF Forest Plan for management of sensitive species.

Under any of the action alternatives, motorized cross-country travel would be eliminated and road and trail densities would be reduced (Table 3-63). This would likely reduce the potential for human-caused wildfire, spread of noxious weeds, and disturbance to vegetation as potentially caused by motorized recreation within Townsend's big-eared bat habitat. The reduction in roads, trails, and cross-country travel in any of the three action alternatives would help reduce the potential for motorized vehicles to disturb or disrupt Townsend's big-eared bat foraging and roasting habitat. Alternative 4 represents the greatest reduction of potential threats to Townsend's big-eared bat foraging habitat of the action alternatives.

Table 3-63. Comparison table of travel routes within Townsend's Big-eared Bat habitat in route designation areas

Fairfield Ranger District (RD)	Alt 1	Alt 2	Alt 3	Alt 4
Area open to off road travel within big-eared bat habitat (acres)	33,038	0	0	0
Roads (system and non-system) in big-eared bat habitat (mi)	46	29	29	25
Road density in big-eared bat habitat (mi/mi^2)	0.89	0.57	0.57	0.49
Motorized trails (system and non-system) in big-eared bat habitat (mi)	64	30	35	30
Motorized trail density in big-eared bat habitat (mi/mi^2)	1.23	0.58	0.68	0.57
Non-motorized only trails in big-eared bat habitat (mi)	0	2	0.29	1
Total density of all trails (motorized and non-motorized) in big-eared bat habitat (mi/mi^2)	1.23	0.61	0.68	0.61
Ketchum RD	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Area open to off road travel within big-eared bat habitat (acres)	4,478	0	0	0
Roads (system and non-system) in big-eared bat habitat (mi)	4	2	3	1
Road density in big-eared bat habitat (mi/mi^2)	0.62	0.31	0.41	0.2
Motorized trails (system and non-system) in big-eared bat habitat (mi)	10	7	7	7
Motorized trail density in big-eared bat habitat (mi/mi^2)	1.47	0.99	0.97	0.94
Non-motorized only trails in big-eared bat habitat (mi)	0.04	0.04	0.04	0.04
Total density of all trails (motorized and non-motorized) in big-eared bat habitat (mi/mi^2)	1.47	0.99	0.98	0.95
Minidoka RD	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Area open to off road travel within big-eared bat habitat (acres)	130	0	0	0
Roads (system and non-system) in big-eared bat habitat (mi)	.29	.29	.29	.29
Road density in big-eared bat habitat (mi/mi^2)	1.45	.61	.61	.61
Motorized trails (system and non-system) in big-eared bat habitat (mi)	0	0	0	0
Motorized trail density in big-eared bat habitat (mi/mi^2)	0	0	0	0
Non-motorized only trails in big-eared bat habitat (mi)	0	0	0	0
Total density of all trails (motorized and non-motorized) in big-eared bat habitat (mi/mi^2)	0	0	0	0

Cumulative Effects to Townsend's Big-eared Bat

Fairfield and Ketchum RDs

Implementation of any of the action alternatives (Alternative 2–4) would reduce current potential cumulative effects to Townsend's big-eared bat foraging habitat across the north end of the SNF by eliminating motorized cross-country travel and reducing road and trail densities. These actions would likely reduce the chances for human-caused wildfire or noxious weed spread, which could in turn affect Townsend's big-eared bat foraging habitat. Implementing Alternative 1 would, however, continue these potential cumulative effects at current levels.

Future development of 8.66 mi of ATV trail, 2.44 mi of which would go through mapped potential Townsend's big-eared bat habitat and would slightly increase mileage and densities of motorized trail within potential bat habitat across the north end of the SNF. The mileages and densities would still be lower than current levels.

Minidoka RD

Mining and rock quarry operations on the Minidoka RD have likely affected roosting habitat for Townsend's big-eared bat in the past. The quarries and associated roads and quarrying activities may affect Townsend's big-eared bat by actual removal of some habitat, disturbance of maternity or nursery colonies, and disruption of their activities. Reclamation and reseeding of habitat is required at completion of operations but some habitat is taken out of production during the life of the quarry operation.

Affected Environment—Wolverine

Wolverines are primarily scavengers and forage on carcasses of ungulates such as elk, deer, mountain goats, and bighorn sheep. They also may hunt for snowshoe hares, marmots, mice, voles, ground squirrels, and grouse but will also eat fruits, berries, and insects when other prey is unavailable (Hash 1987). Home-range sizes of wolverines are highly influenced by prey remains and other food sources. Individual animals generally have very large ranges and can cover large distances in very little time. In central Idaho, home ranges average 148 mi^2 for females and 582 mi^2 for males and may have overlapping ranges (Copeland 1996).

Female wolverines are very sensitive to disturbance during mid-February through May while they are searching for, establishing, and occupying their natal dens. Seeing people and their tracks near an existing den was enough to cause a female wolverine to move her kits to a different site (Copeland 1996). During the time females are lactating, disturbance that leads to increased energy expenditure can be very detrimental. It is a critical time for females as they are trying to maintain energy levels to properly nourish their kits during a time when food is scarce (Copeland 1996).

While there have been no wolverine sightings on the Minidoka RD in recent years (18 years), suitable foraging habitat is available along forested riparian areas on the RD. Suitable denning habitat is extremely limited over the entire RD and found only at the highest elevations. The Minidoka RD contains approximately 49,240 acres of potential wolverine habitat based on GIS modeling (Nutt and Geier-Hayes 2007b).

The Fairfield RD route designation area is approximately 340 mi^2, approximately twice the size of the average female wolverine home range and less than the average area of a male wolverine home range. The Ketchum RD route designation area is approximately 120 mi^2, roughly the size of the average female wolverine home range and less than half the average area of a male wolverine home range. Wolverines use several habitats and have been located in low-elevation, forested drainage bottoms to high-elevation, sparsely-timbered cirque basins. Two natal den sites were located in subalpine cirque areas on north-facing slopes on the north end of the SNF suggesting that this type of habitat is critical to wolverines in central Idaho (Copeland 1996).

A study of wolverines in central Idaho was conducted from 1992–1995 (Copeland 1996). The Fairfield and Ketchum RDs were part of the study area for this project. Wolverine locations were detected in many locations in the Fairfield and Ketchum RDs. Four radio-collared male wolverines were tracked within the Fairfield RD route designation area between 1992–1996. One radio-collared male was tracked in the winter of 1994 within the Ketchum RD route designation area. It is possible that uncollared female wolverines occurred within the Fairfield and Ketchum RDs but none were trapped and radio collared. It is likely that both the Fairfield and Ketchum RD route designation areas are currently part of one or more wolverine home ranges.

No natal dens were located on the Fairfield or Ketchum RDs during the study due to the lack of radio-marked females in this part of the study area. It is likely that one or more dens actually occur on the Fairfield RD based on observations of wolverines during the denning period, and at least two areas on the

Fairfield RD outside of the project area are suspected as denning areas. It is also possible that a den actually occurs on the Ketchum RD based on observations of wolverines during the denning period. It is possible that a wolverine dens could occur within both the Fairfield and/or Ketchum RD route designation areas.

General wolverine habitat was modeled by Nutt and Geier-Hayes (2007b) using satellite imagery and GIS. The Fairfield RD route designation area contains 40,807 acres of modeled wolverine habitat and the Ketchum RD route designation area contains 11,563 acres of modeled habitat.

Wolverine denning habitat (subalpine cirque area) was modeled by SNF wildlife biologists using satellite imagery and GIS. There are approximately 97.5 acres of potential wolverine denning habitat in the Fairfield RD route designation area based on this model, and approximately 117.5 acres of potential wolverine denning habitat in the Ketchum RD route designation area.

There are no existing roads and less than one tenth of 1.0 mi of motorized trail directly through mapped wolverine denning habitat for the Fairfield and Ketchum RD route designation areas. This is primarily due to the fact that this habitat is talus slope in very high alpine areas. In the Fairfield RD route designation area, potential denning habitat is concentrated around Smoky Dome Canyon. A few trails go within 1.0 mi of this habitat. In the Ketchum RD route designation area, potential denning habitat is concentrated around the head of Finely Gulch and Big Witch Creek drainages in the eastern portion of the project area.

The extent that motorized and non-motorized recreation activities associated with roads, trails, and cross-country travel during the summer to fall time period are affecting wolverine habitat or disturbance to the species in the Fairfield and Ketchum RD route designation areas is unknown. It is possible wolverines are being affected by current recreation activities.

Currently in the Fairfield RD route designation area, there are 46 mi of road and 64 mi of trail within modeled wolverine habitat, which equates to a road density of 0.89 mi/mi^2 and a trail density of 1.23 mi/mi^2 (Nutt and Geier-Hayes 2007b). In the Ketchum RD route designation area, there are 13.6 mi of road (density of 0.75 mi/mi^2) and 25.5 mi of trail (density of 1.41 mi/mi^2) within modeled wolverine habitat (Nutt and Geier-Hayes 2007b). These figures likely underestimate the actual mileage and densities as not all existing user-created routes have been located or mapped. Foraging habitat for this species is quite broad on both RDs and modeled habitat likely underestimates actual foraging habitat for wolverines particularly in the winter.

Environmental Effects—Wolverine

Alternative 1—Direct and Indirect Effects

For all three RDs, implementing Alternative 1 would potentially not be fully consistent with SNF Forest Plan Wildlife Goal 2, "Reduce human-caused disturbances that cause undesirable effects to wildlife populations during critical stages" (Forest Plan, p. III-25).

Under Alternative 1, current travel plan map designations and conditions of wolverine habitat in the project would remain (see Table 3-64). As motorized cross-country travel would continue, it is likely that road and trail densities would increase over time by the pioneering of new routes. This could potentially maintain or increase disturbance effects to wolverines within the project area and have continued long-term negative effects to potential wolverine habitat.

Alternatives 2, 3, and 4—Direct and Indirect Effects

For all three RDs, implementing any of the action alternatives (Alternatives 2–4) would be fully consistent with the direction provided in the SNF Forest Plan for management of sensitive species.

Implementing Alternative 2 would benefit wolverine by reducing disturbance on potential foraging habitat where cross-country travel would no longer be allowed. Alternative 2 would reduce motorized road and trail densities in potential wolverine habitat (Table 3-64). This reduction in road and trail density would help reduce the potential for motorized vehicles to disturb or disrupt wolverine foraging or denning. Alternative 2 represents an improvement in potential wolverine foraging habitat within the project area over current conditions. Alternative 2 would reduce potential effects to wolverines to a greater degree than Alternative 3, but less than Alternative 4. Alternative 4 represents the greatest potential reduction in roads and trails in or near wolverine habitat and would therefore reduce potential effects to wolverines to the greatest degree of the alternatives.

Cumulative Effects to Wolverine

Fairfield and Ketchum RDs

Implementation of any of the action alternatives (Alternatives 2–4) would reduce current potential cumulative effects to wolverines by reducing potential disturbance effects from motorized cross-country travel activities and road and trail recreation. Implementing Alternative 1 would, however, continue these potential cumulative effects at current levels.

Table 3-64. Travel routes within wolverine habitat in route designation areas.

Fairfield Ranger District (RD)	Alt 1	Alt 2	Alt 3	Alt4
Area open to off road travel within wolverine habitat (acres)	40,807	0	0	0
Roads (system and non-system) in wolverine habitat (mi)	70	46	46	35
Road density in wolverine habitat (mi/mi^2)	1.10	0.72	0.71	0.55
Motorized trails (system and non-system) in wolverine habitat (mi)	96	45	58	44
Motorized trail density in wolverine habitat (mi/mi^2)	1.51	0.71	0.91	0.69
Non-motorized only trails in wolverine habitat (mi)	0	2	0	2
Total density of all trails (motorized and non-motorized) in wolverine habitat (mi/mi^2)	1.51	0.75	0.91	0.73
Ketchum RD	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Area open to off road travel within wolverine habitat (acres)	11,563	0	0	0
Roads (system and non-system) in wolverine habitat (mi)	14	5	10	5
Road density in wolverine habitat (mi/mi^2)	0.75	0.27	0.53	0.27
Motorized trails (system and non-system) in wolverine habitat (mi)	25	17	16	17
Motorized trail density in wolverine habitat (mi/mi^2)	1.37	0.92	0.87	0.92
Non-motorized only trails in wolverine habitat (mi)	0.69	0.69	0.69	0.69
Total density of all trails (motorized and non-motorized) in wolverine habitat (mi/mi^2)	1.41	0.96	0.91	0.96
Minidoka RD	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Area open to off road travel within wolverine habitat (acres)	49,240	0	0	0
Roads (system and non-system) in wolverine habitat (mi)	103	57	57	57
Road density in wolverine habitat (mi/mi^2)	1.34	0.74	0.74	0.74
Motorized trails (system and non-system) in wolverine habitat (mi)	63	63	63	61
Motorized trail density in wolverine habitat (mi/mi^2)	0.82	0.82	0.82	0.79
Non-motorized only trails in wolverine habitat (mi)	0.70	2.29	2.29	2.29
Total density of all trails (motorized and non-motorized) in wolverine habitat (mi/mi^2)	0.84	0.84	0.84	0.83

Data based on GIS modeling for the Southwest Idaho Ecogroup by Nutt and Geier-Hayes (2007).

Note: Miles rounded to nearest whole mile unless < 1.

The possible future development of 8.66 mi of ATV trail on the SNF and adjacent land would go through approximately 0.7 mi potential wolverine habitat (Nutt and Geier-Hayes 2007b). Although this future action would slightly increase mileage and densities of motorized trail through potential wolverine habitat on the north end of the SNF, those mileages and densities would still be lower than current levels.

Minidoka RD

Past livestock grazing effects on riparian corridors and substantial increases in motorized recreation may have affected wolverine and their habitat on the Minidoka RD. Foreseeable future actions within the Minidoka RD analysis area are proposals to construct additional recreational trails. A portion of these trails could potentially be constructed within wolverine habitat. This may add to cumulative effects to wolverine habitat but would still be lower than the current mileage and density of trails in the project area. Under a separate NEPA action, 82.55 mi of spur and redundant roads have been identified for review and possible closure. This may result in an additional improvement to wolverine habitat by removal of additional travel routes.

Northern Goshawk—Affected Environment

Goshawk nest areas typically have high tree canopy cover and higher proportion of larger trees than surrounding areas. Goshawk home ranges occurring in mixed conifers forests, such as those on the Fairfield, Ketchum, and Minidoka RDs, have been described as being approximately 6,000 acres in size. They comprise a nest area, which is approximately 30 acres in size, a post fledging-family area (PFA), which is approximately 420 acres in size, and a foraging area, which is approximately 5,400 acres in size (Reynolds et al. 1992). Nest areas generally have high tree canopy cover (50–60%) and a high density of large trees (average 20 in. diameter breast height). The PFA provides cover and prey for the fledglings while they develop their flying and hunting skills. These areas should have canopy cover of greater than 50% with well-developed understories.

Goshawks prey on a wide variety of forest-dwelling birds and mammals such as grouse, woodpeckers, squirrels, and rabbits. They also heavily prey upon Columbian ground squirrels, which are found within meadow and sagebrush areas. Goshawks tend to use mature forests (and forest edges) for foraging, but also need other habitat elements that provide the necessary requirements for their prey such as snags, downed logs, small openings, and herbaceous and shrubby understories (Reynolds et al. 1992). Goshawks do not necessarily migrate long distances, but may move off their breeding territories during winter to find food. They tend to move to lower elevations with less snow cover during the winter, and return to breeding territories in March or April.

Goshawks can be highly sensitive to disturbance at nest sites. In some places, individual goshawks can become habituated and more tolerant of human activity, such as those that choose to nest near campgrounds (such as a few nests on the Minidoka RD). Adult goshawks observed at nests on the Fairfield and Ketchum RDs, have shown intolerance for non-motorized human activity based observations of territorial behavior and changing of nest areas to those further from roads and trails in subsequent years of being discovered. In one case within the Fairfield RD, a nest site failure occurred after a logging operation began within a few hundred yards from the nest. On the Ketchum RD, both goshawk nest areas are along trails and were reported by hikers who were attacked by adult goshawks.

Fairfield and Ketchum RDs

Four known goshawk nest areas occur within the Fairfield RD and more undiscovered nesting territories likely exist. Goshawk nests have been located in two areas on the Ketchum RD. No known goshawk nest areas occur within the Ketchum RD route designation area, but it is likely that one or more exist. Goshawks have been observed foraging within the project area.

Based on GIS modeling (Nutt, Geier-Hayes and Miller 2007a), there are 36,888 acres of goshawk habitat in the Fairfield RD route designation area and approximately 19,500 acres of potential goshawk habitat in the Ketchum RD route designation area. Fairfield has 44 mi of road and 53 mi of trail within this habitat which equates to a road density of 0.77 mi/mi^2 and a trail density of 0.91 mi/mi^2. The Ketchum RD route designation area has 9.35 mi of road and 36 mi of trail within this habitat, with corresponding densities of 0.31 mi/mi^2 and 1.18 mi/mi^2. These figures likely underestimate the actual mileage and densities as not all existing user-created routes have been located or mapped. Acreage of actual nesting habitat is likely less than the modeled acres and foraging habitat for this species is likely greater.

It is unknown if current levels of cross-country motorized travel or current road and trail densities have had any negative influence on goshawk populations in the Fairfield and Ketchum RDs. It is likely that the greater the densities of roads and trail in combination with the greater amount of their use by humans, the more likelihood there is of disturbing goshawks at nest sites.

Minidoka RD

Several goshawk nest territories exist on the Minidoka RD. Occupancy of historic nests on the Minidoka RD varies widely from year to year. Monitoring of nests and fledgling success since 1994 indicate nest occupancy and number of young fledged varies from year to year depending on prey availability and other factors.

The Minidoka RD contains approximately 33,028 acres of northern goshawk habitat based on GIS modeling (Nutt, Geier-Hayes and Miller 2007a). With this particular species, estimated acres of potential habitat obtained from the modeling process are low for the Cassia Division. Personal knowledge of the habitat and actual northern goshawk nest locations suggest higher acreages of northern goshawk habitat exist (Santini 2007). Road density estimates on the Cassia Division reported herein may be lower than what actually exists on the ground. High motorized recreational use in this area has contributed to higher road and trail densities in and around campgrounds, organizational camps, and summer homes.

Environmental Effects—Northern Goshawk

Alternative 1—Direct and Indirect Effects

Implementing Alternative 1 would potentially not be fully consistent with SNF Forest Plan Wildlife Goal 2, “Reduce human-caused disturbances that cause undesirable effects to wildlife populations during critical stages” (Forest Plan, p. III-25).

Under Alternative 1, current travel plan map designations on the project area would remain and mileages and densities of roads and trails through goshawk habitat would stay at current levels (Table 3-65). Motorized cross-country travel would continue to be allowed. Direct and indirect effects to northern goshawk from motorized roads, trails, and cross-country travel would continue. Road and trail densities would likely increase under this alternative due to pioneering of new routes. As northern goshawks appear to be particularly sensitive to disturbance within the nest area, this would have continued long-term negative effects to northern goshawk and their habitat.

Alternatives 2, 3, 4—Direct and Indirect Effects

Implementing any of the action alternatives would be fully consistent with the direction provided in the SNF Forest Plan for management of sensitive species.

Under Alternative 2, motorized cross-country travel would be eliminated and road and trail densities would be reduced (Table 3-65). This would likely reduce the potential for disturbance effects to goshawks within the entire project area over current conditions. Alternative 2 would reduce potential effects to goshawks to a greater degree than Alternative 3, but less than Alternative 4. Ending cross-country travel and administratively closing user-created roads would likely reduce direct interference to northern goshawk nest areas and PFAs due to human or motorized activities as facilitated by road and trail access, particularly on the Cassia Division. Current road densities within northern goshawk habitat on the Cassia Division are likely higher than 0.76 mi/mi^2 in specific areas, such as the Rock Creek drainage. High motorized recreational use in this area has contributed to higher road and trail densities in and around campgrounds, organizational camps, and summer homes.

Table 3-65. Travel routes within goshawk habitat in route designation areas.

Fairfield Ranger District (RD)	Alt 1	Alt 2	Alt 3	Alt 4
Area open to off road travel within goshawk habitat (acres)	36,888	0	0	0
Roads (system and non-system) in goshawk habitat (mi)	44	23	23	19
Road density in goshawk habitat (mi/mi^2)	0.77	0.39	0.4	0.33
Motorized trails (system and non-system) in goshawk habitat (mi)	53	30	35	30
Motorized trail density in goshawk habitat (mi/mi^2)	0.91	0.52	0.61	0.51
Non-motorized only trails in goshawk habitat (mi)	0	2	0.08	2
Total density of all trails (motorized and non-motorized) in goshawk habitat (mi/mi^2)	0.91	0.56	0.62	0.55
Ketchum RD	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Area open to off road travel within goshawk habitat (acres)	19,499	0	0	0
Roads (system and non-system) in goshawk habitat (mi)	9	4	6	3
Road density in goshawk habitat (mi/mi^2)	0.31	0.13	0.21	0.1
Motorized trails (system and non-system) in goshawk habitat (mi)	33	21	20	20
Motorized trail density in goshawk habitat (mi/mi^2)	1.07	0.7	0.66	0.67
Non-motorized only trails in goshawk habitat (mi)	3	3	3	3
Total density of all trails (motorized and non-motorized) in goshawk habitat (mi/mi^2)	1.18	0.81	0.77	0.77
Minidoka RD	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Area open to off road travel within goshawk habitat (acres)	33,028	0	0	0
Roads (system and non-system) in goshawk habitat (mi)	39.19	29.88	29.88	29.88
Road density in goshawk habitat (mi/mi^2)	0.76	0.58	0.58	0.58
Motorized trails (system and non-system) in goshawk habitat (mi)	17.18	16.44	17.14	16.44
Motorized trail density in goshawk habitat (mi/mi^2)	0.33	0.32	0.33	0.32
Non-motorized only trails in goshawk habitat (mi)	1.44	1.44	1.44	1.44
Total density of all trails (motorized and non-motorized) in goshawk habitat (mi/mi^2)	0.36	0.35	0.36	0.35
Note: Miles rounded to nearest whole mile unless < 1.				

Cumulative Effects to Northern Goshawk

Fairfield and Ketchum RDs

On the north end of the SNF, past timber harvest, road building, fire suppression, and livestock grazing has affected goshawk habitat in some locations where these activities have occurred. Past clear cutting has reduced potential nesting habitat in certain areas of the north end of the SNF, but may have also increased foraging habitat in those same locations by increasing early seral, brushy areas often used by snowshoe hare, Columbian ground squirrel, and other prey species. Forestry practices conducted during the nesting season near active nests caused disturbance effects that may have impacted goshawk reproduction in those areas as observed at one nest site on the Fairfield District in 1996 (Skinner 1996).

Past road building into goshawk nesting habitat on the north end of the SNF increased the likelihood of future disturbance to nesting goshawks. Current human use of roads and trails within goshawk nest areas can present disturbance effects to nesting goshawks. Many known nest areas on the north end of the SNF occur along roads and trails and nesting goshawks actively defend these areas against hikers and mountain bikers. No nest failures have been observed in response to these disturbances to nesting activity in these areas over the past 10 years, although some effects likely occurred. As previously presented, some goshawks appear to become somewhat habituated to human presence in nesting areas while perhaps most do not.

Livestock grazing, particularly high historic grazing levels, has likely affected goshawk foraging habitat resulting from changes in prey species abundance and distribution. These responses may include increases in certain prey abundance and decreases in others. Fire suppression and livestock grazing has affected aspen habitat across the north end of the SNF, which is foraging, and in some cases nesting, habitat for goshawks.

To some degree, urbanization and direct mortality from shooting activities have likely affected goshawks on the north end of the SNF. In particular, the subdividing and building of homes and cabins within private land inholdings of the SNF and adjacent private lands has altered some goshawk foraging habitat from historic times and increased potential disturbance and mortality to individuals of the species. This urbanization is continuing to occur within private land inholdings, upon patented mining claim areas within the boundaries of the SNF, and adjacent private lands.

Current and future activities on the north end of the SNF that may influence goshawk habitat include fuels reduction projects, i.e., those on the Fairfield RD including Soldier Mountain Hazardous Fuels Reduction Project, Barker Marsh Hazardous Fuels Reduction Project, and the proposed Salt Log and Liberal Creek Hazardous Fuels Reduction Projects. While these projects will likely have long-term benefits to many goshawk prey species and foraging habitat, they may have some temporary, short-term negative effects to foraging habitat.

Implementation of any of the action alternatives (Alternatives 2–4) would reduce current potential cumulative effects to goshawks by reducing potential disturbance effects from motorized cross-country travel activities and road and trail recreation. Implementing Alternative 1 would, however, continue these potential cumulative effects at current levels.

The possible future development of 8.66 mi of ATV trail on the Fairfield RD and adjacent land would go through approximately 0.6 mi of potential goshawk habitat (Nutt, Geier-Hayes and Miller 2007a). Although this future action would slightly increase mileage and densities of motorized trail through potential goshawk habitat on the north end of the SNF, those mileages and densities would still be lower than current levels.

Minidoka RD

Past timber harvest, firewood cutting, and related road building have likely had the greatest effect on goshawk by incidental removal of nest trees and disruption of the nesting period. Over the past two decades, motorized recreation and establishment of user-created routes on the Minidoka RD has likely added to this disturbance.

In the foreseeable future, there may be timber sales proposed and support roads associated with them. Roads are a concern to Northern goshawk as they appear to facilitate the removal of nest trees and disturb both adults and fledglings within the nest area and post fledging area. There is generally less than 1.0 mi of road reopening or construction associated with these proposals. These roads will be eliminated once the project is completed.

Under a separate NEPA action, 82.55 mi of spur and redundant roads have been identified for review and possible closure. These closures, if executed, will be an improvement to northern goshawk habitat.

Affected Environment—Boreal Owl

Boreal owls are known to occur in spruce-fir, Douglas-fir, and mixed conifer forests above elevations of 5,000 ft. They are cavity-dependent and generally use old woodpecker cavities for their nest sites. They feed on forest dwelling small mammals such as voles and shrews (Johnsgard 1988). Boreal owls depend on woodpecker cavities, which usually occur in dead trees for their nest sites. Males arrive at potential breeding territories in late winter (mid-February) and begin calling to attract females by late February or early March.

Boreal owls have a low probability of occurrence on the Minidoka RD and will not be discussed further. A single boreal owl was heard in 1998 on the Fairfield RD within the project area. Many observations of boreal owls have been made on the Ketchum RD in open, mature Douglas-fir forests above 6,000 ft in elevation, including observations within the project area near the backside of the Bald Mountain Ski Area in Basset Gulch. Based on surveys conducted across the north end of the SNF, boreal owls appear to be more common on the Ketchum RD and SNRA than on the Fairfield RD.

Based on GIS modeling (Nutt, Geier-Hayes and Miller 2007b), there are approximately 35,865 acres of boreal owl habitat in the Fairfield RD route designation area. In this case, the model likely overestimates actual acreage of boreal owl habitat in the analysis area. Currently, there are approximately 45 mi of road and 50 mi of motorized trail within this habitat (densities of 0.8 mi/mi^2 and 0.89 mi/mi^2). This is likely an underestimate of mileage and densities as not all existing user-created routes have been located or mapped.

Also based on the GIS modeling (Nutt, Geier-Hayes and Miller 2007b), there are approximately 19,765 acres of boreal owl habitat in the Ketchum RD route designation area. Currently, there are approximately 9.6 mi of road (system and non-system) and 37 mi of motorized trail (system and non-system) within this habitat, which equates to densities of 0.31 mi/mi^2 and 1.19 mi/mi^2, repectively. These figures likely underestimate mileage and densities as not all existing user-created routes have been located or mapped.

It is unknown if current levels of cross-country motorized travel or current road and trail densities have had any negative influence on boreal owl populations in the Fairfield and Ketchum RDs. As this species uses snags for nesting, firewood cutting (of snags) can have a negative effect to nesting habitat and potentially cause mortality to boreal owl nestlings. Road mileage and motorized cross-country travel within boreal owl habitat can, therefore, have an indirect effect to boreal owls because firewood cutting is done off of existing roads. Human use of roads and trails can also affect boreal owl habitat by potentially spreading noxious weeds into foraging habitat (from vehicles) and increasing the potential for human-caused wildfire.

Environmental Effects—Boreal Owl

Alternative 1—Direct and Indirect Effects

Under Alternative 1, current travel plan map designations on the RDs would remain and mileages and densities of roads and trails through boreal owl habitat would stay at current levels (Table 3-66). As motorized cross-country travel would continue, it is likely that road and trail densities would increase over time by the pioneering of new routes. This could potentially increase the current effects to potential boreal owl nesting habitat occurring from firewood cutting or potential effects to foraging habitat from potential weed spread or human-caused wildfire.

Implementing Alternative 1 would potentially not be fully consistent with SNF Forest Plan Wildlife Goal 2, "Reduce human-caused disturbances that cause undesirable effects to wildlife populations during critical stages" (Forest Plan, p. III-25).

Alternatives 2, 3, 4—Direct and Indirect Effects

Under Alternative 2, motorized cross-country travel would be eliminated and road and trail densities would be reduced (Table 3-66). Decreasing road densities in potential boreal owl habitat where firewood cutting is occurring (as proposed) could reduce effects to nesting habitat for this species. Reducing road and trail densities through boreal owl foraging habitat would reduce the potential for effects to foraging habitat from weed spread or human-caused wildfire. Alternative 2 would reduce potential effects to boreal owls to a greater degree than Alternative 3, but less than Alternative 4.

Implementing any of the action alternatives would be fully consistent with the direction provided in the SNF Forest Plan for management of sensitive species.

Table 3-66. Travel routes within boreal owl habitat in route designation areas.

Fairfield Ranger District (RD)	Alt 1	Alt 2	Alt 3	Alt 4
Area open to off road travel within boreal owl habitat (acres)	35,865	0	0	0
Roads (system and non-system) in boreal owl habitat (mi)	45	24	24	19
Road density in boreal owl habitat (mi/mi^2)	0.8	0.42	0.43	0.34
Motorized trails (system and non-system) in boreal owl habitat (mi)	50	27	32	26
Motorized trail density in boreal owl habitat (mi/mi^2)	0.89	0.47	0.57	0.46
Non-motorized only trails in boreal owl habitat (mi)	0	2	0.08	2
Total density of all trails (motorized + non-motorized) in boreal owl habitat (mi/mi^2)	0.89	0.51	0.57	0.5
Ketchum RD	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Area open to off road travel within boreal owl habitat (acres)	19,765	0	0	0
Roads (system and non-system) in boreal owl habitat (mi)	10	4	6	3
Road density in boreal owl habitat (mi/mi^2)	0.31	0.14	0.21	0.1
Motorized trails (system and non-system) in boreal owl habitat (mi)	33	22	21	21
Motorized trail density in boreal owl habitat (mi/mi^2)	1.08	0.7	0.67	0.67
Non-motorized only trails in boreal owl habitat (mi)	3	3	3	3
Total density of all trails (motorized + non-motorized) in boreal owl habitat (mi/mi^2)	1.19	0.81	0.78	0.78
Note: Miles rounded to nearest whole mile unless < 1.				

Cumulative Effects to Boreal Owl

Fairfield and Ketchum RDs

On the north end of the SNF, past timber harvest, road building, fire suppression, and livestock grazing has affected boreal owl habitat in some locations where these activities have occurred. Past clear cutting has reduced potential nesting habitat in certain areas of the north end of the SNF. Livestock grazing, particularly high historic grazing levels, may have influenced boreal owl foraging habitat due to changes in prey species abundance and distribution in response to livestock grazing. Fire suppression and livestock grazing has affected aspen habitat across the north end of the SNF, which is foraging, and in some cases nesting, habitat for boreal owls.

Current and future activities on the north end of the SNF that may influence boreal owl habitat include fuels reduction projects, i.e., those on the Fairfield RD including Soldier Mountain Hazardous Fuels Reduction Project and the proposed Salt Log and Liberal Creek Hazardous Fuels Reduction Projects. While these projects will likely have long-term benefits to boreal owls, they may have some negative effects such as unintentional burning of snags and short-term impacts on prey species.

Implementation of any of the action alternatives (Alternatives 2–4) would reduce current potential cumulative effects to boreal owls by reducing mileage of roads available to cut firewood from within boreal owl habitat. This would help maintain snags on the landscape for boreal owl nesting and foraging. Implementing Alternative 1 would, however, continue these potential cumulative effects at current levels.

The possible future development of 8.66 mi of ATV trail in the Fairfield RD on SNF and adjacent land would go through approximately 0.3 mi of mapped potential boreal owl habitat (Nutt, Geier-Hayes and Miller 2007b). Although this future action would slightly increase mileage and densities of motorized trail through potential boreal owl habitat on the north end of the SNF, those mileages and densities would still be lower than current levels.

Affected Environment—Flammulated Owl

Flammulated owls are known to occur in mature ponderosa pine, Douglas-fir, sub-alpine fir, and aspen forests with an abundance of snags or live trees with cavities for nesting. Flammulated owls eat mainly invertebrates such as various insects, beetles, grasshoppers, and moths. Prey is more abundant and accessible in open forest stands with grass and shrub understories (Johnsgard 1988). Flammulated owls often forage along forest edges and within riparian areas. This species is truly migratory and does not arrive on its breeding territories until mid-May in central and southern Idaho (Powers et al. 1996). As this species depends on snags to meet life-cycle requirements, flammulated owls would likely be negatively affected by a reduction in density of snags. Presumably, road access facilitates a reduction in snag density along roads due to construction and maintenance (Hann, Jones, and Karl 1997). Firewood cutting (of snags) can have a negative effect to nesting habitat and potentially cause mortality to flammulated owl nestlings.

Fairfield and Ketchum RDs

Observations of flammulated owls have been recorded in many areas on the Fairfield and Ketchum RDs in open, mature ponderosa pine and Douglas-fir stands. Flammulated owls have been observed within five areas within the South Fork Boise River watershed portion of the Fairfield RD route designation area. Flammulated owls likely also occur in other areas of the Fairfield RD that have yet to be surveyed. Flammulated owls have been observed approximately 1.0 mi north of the Ketchum RD route designation area in Moonlight Gulch, a tributary to the West Fork of Warm Springs Creek. Flammulated owls likely occur in several areas of the Ketchum RD route designation area based on presence of potential habitat. Some areas in the Ketchum RD route designation area were surveyed in the early 1990s, and no observations were recorded. It may be these surveys were done too early in the season (mid-May) as flammulated owl calling is more common in June and July.

Based on GIS modeling (Nutt, Geier-Hayes and Miller 2006) there are approximately 4,500 acres of flammulated owl habitat in the Fairfield RD route designation area. The model most likely underestimates the actual acreage of flammulated owl habitat in the project area. Currently, there are just over 5 mi of road and 5 mi of trail (system and non-system) within this modeled habitat (with densities of 0.73 mi/mi^2 and 0.74 mi/mi^2, respectively).

Also based on the same GIS modeling, there are approximately 19.6 acres of flammulated owl habitat in the Ketchum RD route designation area. Due to the small acreage of flammulated owl habitat, there are currently no roads or trails within the 19.6 acres. The model most likely underestimates the actual acreage of flammulated owl habitat in the project area. Based on visual assessment, there are miles of roads and trails within potential habitat for flammulated owls in the analysis area (Skinner 2007c).

It is unknown if current levels of cross-country motorized travel or current road and trail densities have had any negative influence on flammulated owl populations in the Fairfield and Ketchum RDs. Road mileage and motorized cross-country travel within flammulated owl habitat can have an indirect effect to flammulated owls because firewood cutting is done off of existing roads. Firewood cutting currently occurs in potential flammulated owl habitat within the Fairfield and Ketchum RDs. Firewood cutting occurs in four of the five areas flammulated owls have been heard within the Fairfield RD route designation area. Human use of roads and trails can also affect flammulated owl habitat by potentially helping the spread of noxious weeds into foraging habitat (from vehicles) and increasing the potential for human-caused wildfire.

Minidoka RD

Flammulated owls are known to occur on the Minidoka RD, primarily on Raft River and Sublett Divisions. They have been located in areas which are dominated by large, mature, subalpine fir or in aspen communities with an abundance of snags or large trees with cavities for nesting. Several seasons of monitoring data have been collected for this species. Population trends appear to be stable in the habitats where they are known to occur on the Minidoka RD.

Based on GIS modeling (Nutt, Geier-Hayes and Miller 2006) the Minidoka RDs contains approximately 1,783 acres of potential flammulated owl habitat.

Environmental Effects—Flammulated Owl

Alternative 1—Direct and Indirect Effects

Under Alternative 1, current travel plan map designations in the RDs would remain and mileages and densities of roads and trails through flammulated owl habitat would stay at current levels (Table 3-67). Direct and indirect effects to flammulated owls from motorized roads, trails, and cross-country travel would continue. Road and trail densities would likely increase under this alternative due to pioneering of new routes. New routes would open up more opportunity for incidental cutting of snags used for nest trees. This could have long-term negative effects to flammulated owl nesting habitat. Implementing Alternative 1 could also increase potential effects to foraging habitat from potential weed spread or human caused wildfire.

Implementing Alternative 1 would potentially not be fully consistent with SNF Forest Plan Wildlife Goal 2, “Reduce human-caused disturbances that cause undesirable effects to wildlife populations during critical stages” (Forest Plan, p. III-25).

Alternatives 2, 3, 4—Direct and Indirect Effects

Implementing any of the action alternatives would be fully consistent with the direction provided in the SNF Forest Plan for management of sensitive species.

Implementing any of the three action alternatives would benefit flammulated owls by reducing disturbance on potential foraging and nesting habitat where cross-country travel would no longer be allowed. Alternatives 2, 3, and 4 are similar in reducing the road density in flammulated owl habitat. Alternative 2 would reduce potential effects to flammulated owls to a greater degree than Alternative 3, but less than Alternative 4.

The closure to cross-country travel would reduce road and trail densities through flammulated owl foraging habitat and lessen the potential for effects to foraging habitat from weed spread or human-caused wildfire. Closure of cross-country travel would lessen the opportunity for incidental cutting of snags used for nesting. None of the three alternatives would reduce motorized road/trail densities significantly in flammulated owl habitat. All three alternatives represent an improvement in flammulated owl foraging and nesting habitat within the project area over current conditions.

Table 3-67. Travel routes within flammulated owl habitat in route designation areas.

Fairfield Ranger District (RD)	Alt 1	Alt 2	Alt 3	Alt 4
Area open to off road travel within flammulated owl habitat (acres)	4,500	0	0	0
Roads (system and non-system) in flammulated owl habitat (mi)	5	2	2	1
Road density in flammulated owl habitat (mi/mi^2)	0.73	0.26	0.26	0.18
Motorized trails (system and non-system) in flammulated owl habitat (mi)	5	4	4	4
Motorized trail density in flammulated owl habitat (mi/mi^2)	0.74	0.55	0.57	0.55
Non-motorized only trails in flammulated owl habitat (mi)	0	0.15	0.03	0.15
Total density of all trails (motorized and non-motorized) in flammulated owl habitat (mi/mi^2)	0.74	0.57	0.57	0.57
Ketchum RD	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Area open to off road travel within flammulated owl habitat (acres)	20[a]	0	0	0
Roads (system and non-system) in flammulated owl habitat (mi)	0	0	0	0
Road density in flammulated owl habitat (mi/mi^2)	0	0	0	0
Motorized trails (system and non-system) in flammulated owl habitat (mi)	0	0	0	0
Motorized trail density in flammulated owl habitat (mi/mi^2)	0	0	0	0
Non-motorized only trails in flammulated owl habitat (mi)	0	0	0	0
Total density of all trails (motorized and non-motorized) in flammulated owl habitat (mi/mi^2)	0	0	0	0
Minidoka RD	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Area open to off road travel within flammulated owl habitat (acres)	1783	0	0	0
Roads (system and non-system) in flammulated owl habitat (mi)	4.73	3.88	3.88	3.88
Road density in flammulated owl habitat (mi/mi^2)	1.70	1.39	1.39	1.39
Motorized trails (system and non-system) in flammulated owl habitat (mi)	0	0	0	0
Motorized trail density in flammulated owl habitat (mi/mi^2)	0	0	0	0
Non-motorized only trails in flammulated owl habitat (mi)	0	0	0	0
Total density of all trails (motorized and non-motorized) in flammulated owl habitat (mi/mi^2)	0	0	0	0

a. The habitat model likely underestimated the acreage of flammulated owl habitat on the Ketchum RD.

Cumulative Effects to Flammulated Owl

Fairfield and Ketchum RDs

On the north end of the SNF, past timber harvest, road building, fire suppression, and livestock grazing has affected flammulated owl habitat in some locations where these activities have occurred. Past clear cutting has reduced potential nesting habitat in certain areas of the north end of the SNF. Livestock grazing, particularly high historic grazing levels, may have influenced flammulated owl foraging habitat due to changes in prey species (moth) abundance and distribution in response to livestock grazing. Fire suppression and livestock grazing has affected aspen habitat across the north end of the SNF, which is foraging, and in some cases nesting, habitat for flammulated owls.

Current and future activities on the north end of the SNF that may influence flammulated owl habitat include fuels reduction projects, i.e., those on the Fairfield RD including Soldier Mountain Hazardous Fuels Reduction Project, Barker Marsh Hazardous Fuels Reduction Project, and the proposed Salt Log and Liberal Creek Hazardous Fuels Reduction Projects. While these projects will likely have long-term benefits to flammulated owls by maintaining open stands of large trees, they may have some negative effects such as unintentional burning of snags.

Implementation of any of the action alternatives (Alternatives 2–4) would reduce current potential cumulative effects to flammulated owls by reducing mileage of roads available to cut firewood from within flammulated owl habitat. This would help maintain snags on the landscape for flammulated owl nesting and foraging. Implementing Alternative 1 would, however, continue these potential cumulative effects at current levels.

The possible future development of 8.66 mi of ATV trail in the Fairfield RD on SNF and adjacent land would go through approximately 0.15 mi of mapped potential flammulated owl habitat (Nutt, Geier-Hayes and Miller 2006). Although this future action would slightly increase mileage and densities of motorized trail through potential flammulated owl habitat on the north end of the SNF, those mileages and densities would still be lower than current levels.

Minidoka RD

Past timber harvest, and related road building, and firewood cutting have likely had the greatest effect on flammulated owls by incidental removal of nest trees and the disruption of the nesting period. Over the past two decades motorized recreation and establishment of user-created routes on the Minidoka RD has likely added to this disturbance.

In the foreseeable future, there may be timber sales proposed and support roads associated with them. Roads are a concern to flammulated owls as they appear to facilitate the removal of snags for nesting. There is generally less than 1.0 mi of road reopening or construction associated with these proposals. These roads will be eliminated once the project is completed.

Under a separate NEPA process, 82.55 mi of spur and redundant roads have been identified for review and possible closure. These closures, if executed, will be an improvement to flammulated owl habitat

Affected Environment—Spotted Frog

Spotted frogs are found in areas where permanent water is present such as marshes, ponds, or riparian areas. They may move considerable distances from water following the breeding season, often frequenting mixed conifer and subalpine forests, grasslands, and brushlands of sage and rabbitbrush if puddles, seeps, or other water is available. Adult spotted frogs feed on invertebrates, generally within 1.64 ft of shore on dry days. During and after rains, they may move away from permanent water to feed in wet vegetation or ephemeral puddles (Licht 1986). Spotted frogs hibernate during winter and emerge when open water becomes available, generally during spring thaw. Spotted frogs breed from late February to early July. A water temperature of 4°C seems to be the critical temperature for emergence from hibernation (Morris and Tanner 1969).

Spotted frogs have a low probability of occurrence on the Minidoka RD and will not be discussed further. Observations of spotted frogs have been recorded on the Fairfield RD including within three areas in the Fairfield RD route designation area (Middle Fork Lime Creek, Basalt Creek, and Little Smoky Creek). It is likely spotted frogs occur in many other locations within the Fairfield RD route designation area. Observations of spotted frogs have been recorded in several areas on the Ketchum RD, primarily in ponds north of the route designation area. Few surveys have been conducted in this area, but potential habitat is abundant in the area. It is likely that spotted frogs do occur in the Ketchum RD route designation area.

It is unknown if current levels of cross-country motorized travel or current road and trail densities have negatively affected spotted frog populations in the Fairfield and Ketchum RDs, but it is likely. It is probable that negative effects to individual frogs likely occur from motorized travel, including mortality from being run over in uplands or stream crossings and increased sediment into stream channels from adjacent roads, trails, and crossings. Numbers of stream crossings and miles of road and trail within riparian areas is discussed in the Fisheries/Aquatic Resources section of this EA and should be referred to in terms of sedimentation effects for spotted frogs. In general, the lower the road and trail densities within riparian areas (or upland roads and trails that contribute to sediment delivery to streams), the better the potential spotted frog habitat. Cross-country motorized travel likely impacts individual frogs, tadpoles, and eggs when streams are crossed outside of designated crossing locations.

In the Fairfield RD route designation area, spotted frogs are quite common along certain stretches of Little Smoky and Basalt Creeks, both of which have roads running parallel to the streams in these segments. It is likely spotted frogs are occasionally killed by motorized vehicles on these roads and by vehicles traveling cross-country, especially where streams are crossed outside of designated crossings.

Environmental Effects—Spotted Frog

Alternative 1—Direct and Indirect Effects

Under Alternative 1, current travel plan map designations on the project areas would remain. Current levels of effects to spotted frogs from motorized cross-country travel and current road and trail densities would be expected to remain or increase over time as new routes are pioneered.

Implementing Alternative 1 would potentially not be fully consistent with SNF Forest Plan Wildlife Goal 2, "Reduce human-caused disturbances that cause undesirable effects to wildlife populations during critical stages" (Forest Plan, p. III-25).

Alternatives 2, 3, 4—Direct and Indirect Effects

Implementing any of the action alternatives would be fully consistent with the direction provided in the SNF Forest Plan for management of sensitive species.

Under Alternative 2, motorized cross-country travel would be eliminated and road and trail densities would be reduced. The Fisheries/Aquatic Resources section of this EA discusses road and trail reductions within riparian areas. Decreasing road densities in spotted frog habitat as proposed would likely reduce effects to spotted frogs over current conditions. Alternative 2 would reduce more potential trail effects to spotted frogs than Alternative 3, but less road-related effects to spotted frogs than Alternative 4.

Cumulative Effects to Spotted Frog

Fairfield and Ketchum RDs

On the north end of the SNF, past timber harvest, road building, mining, and livestock grazing has affected spotted frog habitat by increasing sediment loads into riparian areas. Current levels of on and off-road motorized use likely affect individual spotted frogs. Urbanization (building of homes, businesses, and cabins) on private land inholdings of the SNF and on adjacent lands also continues to reduce and degrade spotted frog habitat. Current livestock grazing may also impact spotted frogs in certain locations by increasing sediment, nutrients, and reducing hiding cover within riparian areas.

Future activities on the north end of the SNF that may influence spotted frog habitat include fuels reduction projects, i.e., those on the Fairfield RD including Soldier Mountain Hazardous Fuels Reduction Project, Barker Marsh Hazardous Fuels Reduction Project, and the proposed Salt Log and Liberal Creek Hazardous Fuels Reduction Projects. While these projects may have long-term benefits to spotted frogs such as reducing the risk of catastrophic wildfire, they may have some short-term negative effects such as unintentional burning of areas of riparian areas or potentially increasing sediment loads for a year or two post-burn.

Continued riparian improvements to reduce current effects of roads such as the Rooks Creek Road Reclamation Project on the Ketchum RD and ongoing trail reroutes on the Fairfield RD will likely benefit riparian dependant species such as spotted frogs.

Implementation of any of the action alternatives (Alternatives 2–4) for this EA would reduce current potential cumulative effects to spotted frogs by reducing the effects of cross-country motorized travel and reducing mileage and densities of roads and trails within riparian areas. Implementing Alternative 1 would, however, continue these potential cumulative effects at current levels.

A foreseeable future action on the Fairfield RD is future development of 8.66 mi of ATV trail on SNF and adjacent land if an action alternative is chosen. Although this future action would slightly increase mileage and densities of motorized trail through some potential spotted frog habitat on the north end of the SNF, those mileages and densities would still be lower than current levels.

Affected Environment—White-headed Woodpecker

White-headed woodpeckers are found in open, mature mixed conifer forests, mainly ponderosa pine and mixed ponderosa pine/Douglas-fir forests in Idaho (Frederick and Moore 1991). They feed on pine seeds and insects under bark and on branches (Ligon 1973). Nests are usually excavated in large diameter, dead trees in moderate to advance decay (Bull, Peterson, and Thomas 1986). Breeding begins in late April in central Idaho.

Habitat for white-headed woodpeckers does not occur on the Ketchum and Minidoka RDs and will therefore not be discussed further. Habitat for the white-headed woodpecker is present on the Fairfield RD and to the east on the Mountain Home RD where ponderosa pine occurs. To date, white-headed woodpeckers have been located in two locations on the Fairfield RD. One observation occurred approximately 1.0 mi to the north of the project area and another 1.0 mi west of the north end of the Fairfield RD route designation area. Very little potential habitat for the species occurs within the project area, except in ponderosa pine stands right along the South Fork Boise River.

No road or trail mileage goes through white-headed woodpecker habitat in the Fairfield RD route designation area except in the vicinity of Baumgartner Campground and Kelley Flat dispersed camping area. No white-headed woodpeckers have been observed in these areas during a few surveys conducted there. It is unknown if timber harvest, recreation activities, and firewood gathering has limited the use of this area for white-headed woodpeckers or if they simply do not occur there. Due to firewood gathering and hazard tree removal by USFS personnel in this area, snags for white-headed woodpeckers are limited.

Environmental Effects—White-headed Woodpecker

Alternative 1—Direct and Indirect Effects

Under Alternative 1, current travel plan map designations on the Fairfield RD would remain. Firewood gathering and hazard tree removal would continue within potential white-headed woodpecker habitat in the Baumgartner Campground and Kelley Flat area as does currently. This may potentially limit use of the area by white-headed woodpeckers.

Implementing Alternative 1 would potentially not be fully consistent with SNF Forest Plan Wildlife Goal 2, “Reduce human-caused disturbances that cause undesirable effects to wildlife populations during critical stages” (Forest Plan, p. III-25).

Alternatives 2, 3, 4—Direct and Indirect Effects

Under Alternative 2, motorized cross-country travel would be eliminated in the vicinity of Kelley Flats where potential white-headed woodpecker habitat occurs. This may reduce some areas for firewood gathering and potentially improve white-headed woodpecker nesting habitat in this area over time. Hazard tree removal near campsites and in Baumgartner Campground would continue as currently, potentially limiting white-headed woodpecker use of the area.

Implementing any of the action alternatives would be consistent with the direction provided in the SNF Forest Plan for management of sensitive species.

Cumulative Effects to White-headed Woodpecker

On the north end of the SNF, past timber harvest, road building, fire suppression, and development of campgrounds within ponderosa pine habitats along the South Fork Boise River has affected white-headed woodpecker habitat (Fairfield RD). No white-headed woodpeckers or potential habitat occurs on the Ketchum RD and very little potential habitat (no occurrences) exist on the SNF. More potential habitat and many observations of white-headed woodpeckers occur to the west of the SNF in ponderosa pine on the Boise and Payette NFs.

Current and future activities on the north end of the SNF that may influence white-headed woodpecker habitat include fuels reduction project, i.e., Barker Marsh Hazardous Fuels Reduction Project. While projects like these will likely have long-term benefits to white-headed woodpeckers by maintaining open stands of large ponderosa pine trees, they may have some negative effects such as unintentional burning of snags.

Implementing any of the action alternatives (Alternatives 2–4) would potentially reduce some cumulative effects of firewood gathering to white-headed woodpecker habitat over current (by reducing roads available for firewood cutting in the Kelley Flat area). Implementing Alternative 1 would, however, continue these potential cumulative effects at current levels.

The proposed 8.66 mi of future ATV trail on the Fairfield RD would not go through potential white-headed woodpecker habitat; thus, would not add to the cumulative effects.

Affected Environment—Pygmy Rabbit

Pygmy rabbits are the smallest of North American rabbits and are associated with dense, tall stands of healthy sagebrush. They excavate their own burrows systems. Due to this unique feature among rabbits, soil properties, including depth and texture that allow ease of excavation are required (Weiss and Verts 1984). They feed on sagebrush, grasses, and forbs in the summer and rely almost entirely on sagebrush in the winter (Green and Flinders 1980). Populations and distribution of pygmy rabbits declined in the 1900s due to conversion of shrub-steppe habitats to agriculture. Continued disturbance and altered fire regimes contribute to loss and fragmentation of suitable habitat for this species (Rachlow and Svancara 2003).

It is unknown if current levels of cross-country motorized travel or current road and trail densities have had any negative influence on existing pygmy rabbit populations on the Minidoka RD or potential pygmy rabbit populations on the Fairfield and Ketchum RDs. It is also not known if road densities limit pygmy rabbit occurrence in any of the areas. Motorized cross-country travel and human use of roads and trails could affect pygmy rabbits through incidental shooting and affect pygmy rabbit habitat through spread of noxious weeds and increase the potential for human-caused wildfire.

Fairfield RD

No observations of pygmy rabbits have been made on the Fairfield RD. A University of Idaho research project was initiated in 2003, conducting surveys for pygmy rabbits in areas mapped as having the highest potential using GIS techniques and habitat characteristics from known species locations (Rachlow and Svancara 2003). Some potential habitat for the species was determined to exist on the Fairfield RD route designation area. No pygmy rabbits or signs of pygmy rabbit have been observed on the Fairfield RD. Research technicians have located pygmy rabbits on BLM and private lands approximately 13 mi to the south of the Fairfield RD.

Based on GIS modeling (Nutt and Miller 2006b), there are approximately 24,774 acres of potential pygmy rabbit habitat in the Fairfield RD route designation area. Currently, there are 22.5 mi of road and 36 mi of motorized trail within this mapped habitat (with densities of 0.58 mi/mi^2 and 0.94 mi/mi^2, respectively).

Ketchum RD

No observations of pygmy rabbits have been made on the Ketchum RD, but surveys have not been conducted. From the research mapping project, some potential habitat for the species was determined to exist on the Ketchum RD and within the project area. Research technicians have located pygmy rabbits on BLM land 14 mi to the south of the Ketchum RD.

Based on the GIS modeling (Nutt and Miller 2006b), there are approximately 14,798 acres of pygmy rabbit habitat in the Ketchum RD route designation area. Currently, there are 11 mi of road and 34 mi of motorized trail within this modeled habitat (with densities of 0.48 mi/mi^2 and 1.47 mi/mi^2, respectively).

Minidoka RD

From the research mapping project, potential habitat for this species occurs on the Minidoka RD. Limited surveys for pygmy rabbit have occurred on the RD. Small isolated populations have been located on the Raft River Division.

The Minidoka RD contains approximately 237,114 acres of pygmy rabbit habitat (Nutt et al. 2006b). Road and trail densities in pygmy rabbit habitat are displayed in Table 3-68.

Table 3-68. Travel routes within pygmy rabbit habitat in the route designation areas.

Fairfield Ranger District (RD)	Alt 1	Alt 2	Alt 3	Alt 4
Area open to off road travel within pygmy rabbit habitat (acres)	24,774	0	0	0
Roads (system and non-system) in pygmy rabbit habitat (mi)	23	17	18	16
Road density in pygmy rabbit habitat (mi/mi^2)	0.58	0.45	0.45	0.42
Motorized trails (system and non-system) in pygmy rabbit habitat (mi)	36	14	16	13
Motorized trail density in pygmy rabbit habitat (mi/mi^2)	0.94	0.36	0.41	0.33
Non-motorized only trails in pygmy rabbit habitat (mi)	0	0.62	0.17	0.62
Total density of all trails (motorized and non-motorized) in pygmy rabbit habitat (mi/mi^2)	0.94	0.37	0.42	0.35
Ketchum RD	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Area open to off road travel within pygmy rabbit habitat (acres)	14,798	0	0	0
Roads (system and non-system) in pygmy rabbit habitat (mi)	11	9	9	8
Road density in pygmy rabbit habitat (mi/mi^2)	0.48	0.38	0.38	0.35
Motorized trails (system and non-system) in pygmy rabbit habitat (mi)	32	20	22	18
Motorized trail density in pygmy rabbit habitat (mi/mi^2)	1.38	0.87	0.95	0.77
Non-motorized only trails in pygmy rabbit habitat (mi)	2	2	2	2
Total density of all trails (motorized and non-motorized) in pygmy rabbit habitat (mi/mi^2)	1.47	0.97	1.03	0.87
Minidoka RD	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Area open to off road travel within pygmy rabbit habitat (acres)	237,114	0	0	0
Roads (system and non-system) in pygmy rabbit habitat (mi)	638	439	439	439
Road density in pygmy rabbit habitat (mi/mi^2)	1.72	1.18	1.18	1.18
Motorized trails (system and non-system) in pygmy rabbit habitat (mi)	143	140	141	139
Motorized trail density in pygmy rabbit habitat (mi/mi^2)	0.39	0.38	0.38	0.37
Non-motorized only trails in pygmy rabbit habitat (mi)	2.32	2.32	2.32	2.32
Total density of all trails (motorized and non-motorized) in pygmy rabbit habitat (mi/mi^2)	0.36	0.35	0.36	0.35
Note: Miles rounded to nearest whole mile unless < 1.				

Environmental Effects—Pygmy Rabbit

Alternative 1—Direct and Indirect Effects

Implementing Alternative 1 would potentially not be fully consistent with SNF Forest Plan Wildlife Goal 2, "Reduce human-caused disturbances that cause undesirable effects to wildlife populations during critical stages" (Forest Plan, p. III-25).

Under Alternative 1, current conditions for pygmy rabbit habitat as related to travel designation would remain the same in the project area. Motorized cross-country travel would continue to be allowed on pygmy rabbit habitat. Direct and indirect effects to pygmy rabbits from motorized roads, trails, and cross-country travel would continue. Road and trail densities would likely increase under this alternative due to pioneering of new routes. This would have continued long-term negative effects to pygmy rabbits and their habitat. This could increase the potential for effects to sagebrush habitat in the project areas including potential weed spread from vehicles or human-caused wildfire.

Alternatives 2, 3, 4—Direct and Indirect Effects

Implementing any of the action alternatives would be fully consistent with the direction provided in the SNF Forest Plan for management of sensitive species.

Alternative 2 would benefit pygmy rabbits by reducing potential disturbance on foraging and nesting/burrowing habitat where cross-country travel would no longer be allowed. All action alternatives would reduce route densities in pygmy rabbit habitat (Table 3-68). These reductions in road and trail densities would help reduce the potential for motorized vehicles to spread noxious weeds, fragment habitat, and facilitate the start of wildfires within pygmy rabbit habitat. Alternative 2 represents an improvement in pygmy rabbit foraging and nesting/burrowing habitat within the project area over current conditions. Alternative 2 would reduce potential threats to pygmy rabbit habitat to a greater degree than Alternative 3, but less than Alternative 4.

Cumulative Effects to Pygmy Rabbit

Fairfield and Ketchum RDs

On the north end of the SNF, past road building, mining, and livestock grazing has affected potential pygmy rabbit habitat. Urbanization and agricultural development of sagebrush habitats on private lands adjacent to the SNF has also affected potential pygmy rabbit habitat.

Current and future activities on the north end of the SNF that may influence pygmy rabbit habitat include motorized recreation and fuels reduction projects, i.e., those on the Fairfield RD including Soldier Mountain Hazardous Fuels Reduction Project, Barker Marsh Hazardous Fuels Reduction Project, and the proposed Salt Log and Liberal Creek Hazardous Fuels Reduction Projects. While fuels reduction projects will likely have long-term benefits to most wildlife, they may have some negative effects such as incidental burning of sagebrush.

Implementation of any of the action alternatives (Alternatives 2–4) would reduce current potential cumulative effects to sagebrush habitats potentially used by pygmy rabbits by reducing mileage of roads and trails through this habitat. This would therefore reduce the potential for noxious weed spread and wildfire caused by motorized vehicles. Implementing Alternative 1 would, however, continue these potential cumulative effects at current levels.

The possible future action on the Fairfield RD of development of 8.66 mi of ATV trail on SNF and adjacent land would go through approximately 0.68 mi of potential pygmy rabbit habitat (Nutt and Miller 2006). Although this future action would slightly increase mileage and densities of motorized trail through potential pygmy rabbit habitat on the north end of the SNF, those mileages and densities would still be lower than current levels.

Minidoka RD

Pygmy rabbit habitat on the Minidoka RD (foraging and nesting/burrowing habitat) has been affected by many factors, including but not limited to, livestock grazing, wildfire and wildfire suppression activities, invasive species (cheatgrass) noxious weeds, and motorized recreation. Current cattle and sheep grazing may negatively affect pygmy rabbit habitat if excessive vegetation is removed in foraging and burrowing areas. Grazing may reduce hiding cover and forage. Concentrations of sheep or cattle can have disruptive effects in nesting/burrowing areas and during early rearing of young.

Over their range, pygmy rabbits have been negatively affected by large-scale wildfire and habitat conversion to cheatgrass. There have been several large wildfires in sagebrush habitat on the Minidoka RD in the past 7 years removing several thousand acres of sagebrush habitat. Wildfires that have occurred in pygmy rabbit habitat have removed foraging and nesting/burrowing habitat into the future (15–25 years). While some cheatgrass and noxious weeds have developed in these areas, likely affecting long-term sagebrush habitat quality, most of the occurrences are along roads and SNF access points. Large-scale invasions have not occurred as they likely have at lower elevation fire sites.

Mining and rock quarry operations on the Minidoka RD may affect pygmy rabbit foraging and nesting/burrowing habitat. The quarries and associated roads and quarrying activities may affect pygmy rabbit by actual removal of some habitat and disruption of pygmy rabbit behavior. Up to 2.5 mi of road construction associated with rock quarries may be built if plans to operate are approved in the future. Reclamation and reseeding of habitat is required at completion of operations but some habitat is taken out of production during the span of the quarry operation.

Motorized recreation on the Minidoka RD has influenced pygmy rabbit habitat in several ways. Allowing the continual pioneering of new roads and trails would have cumulative affects to pygmy rabbits. Implementation of any of the action alternatives would be beneficial to pygmy rabbits.

Foreseeable future actions within the Minidoka RD project area are proposals to construct additional recreational trails. A portion of these trails could be constructed within pygmy rabbit habitat. This may add to cumulative effects to pygmy rabbit habitat but would still be lower than the current mileage and density of trails in the project area. Under a separate NEPA action, 82.55 mi of spur and redundant roads have been identified for review and possible closure. If these addition roads were closed, it could be an improvement to pygmy rabbit habitat.

Affected Environment—Peregrine Falcon

Peregrine falcons require the presence of tall cliffs, approximately 150 ft in height, with adequate ledges for nesting and perching. An adequate prey base consisting of small to medium-sized birds within approximately 10 mi of the nest cliff is also needed (Johnsgard 1990).

Peregrine falcons can be disturbed at nest sites and this disturbance could potentially lead to nest failure if the disturbance was of sufficient duration to cool eggs or young chicks still requiring thermoregulation from an adult. However, some peregrine falcons are known to become habituated to human presence such as those that nest in cities, i.e., downtown Boise, Idaho.

Peregrine falcons have a low probability of occurrence on the Minidoka RD and will not be discussed further. Currently, there are three known peregrine falcon eyries on the SNF located in the SNF Wilderness. The nearest of these eyries is approximately 26 mi to the north of the Fairfield RD project area and 29 mi to the northwest of the Ketchum RD project area. Potential nesting habitat for peregrine falcons exists in the analysis areas and other areas on the Fairfield and Ketchum RDs where cliffs occur.

Most recreation activities occurring on the Fairfield and Ketchum RDs that have the potential to disturb a nesting pair of peregrine falcons would be of short enough duration that nest failure as a result of the disturbance would be unlikely. There are some roads and trails that occur in the Fairfield RD route designation area within close enough proximity to cliffs that if peregrine falcons nested in these locations, they could potentially be disturbed by some activities (e.g., Iron Mountain Trail, Boardman Pass, Smoky Dome Trail, and North Fork Soldier Ridge Trail). A prairie falcon eyrie was discovered approximately 0.25 mi off of a non-system trail in the Cove Creek drainage within the Ketchum RD route designation area in 2005. The pair did not show nest defense behavior until hikers actually left the trail and headed toward the cliff.

Similar to the nesting bald eagles on the South Fork Boise River (Fairfield RD), it is hikers that likely present the greatest potential disturbance to nesting peregrines. This is due to the fact that most other types of recreationists (i.e., motorized) move quickly by an area. It is unknown if current off-road motorized travel and road and trail density is having any effect on nesting peregrine falcons in the Fairfield and Ketchum RDs. Cross-country motorized use and use of roads and trails do have the potential to negatively impact peregrine falcon foraging habitat and their prey species by increasing the potential for human-caused wildfire and weed spread.

No peregrine falcon nesting has been ever been confirmed on the Fairfield or Ketchum RDs. Peregrine falcons have been observed on the Fairfield RD and to the south of the RD on the Camas Prairie in the 1990s during both the fall migration period and during the nesting season. Biologists have suspected nesting has occurred on the Fairfield RD, but it has never been confirmed. An adult female peregrine was observed on June 6, 1999, on the north edge of the Fairfield RD near Big Smoky. Several reports of peregrine falcons were made in the early 1990s near Iron Mountain Lookout within the Fairfield RD route designation area, but no eyries were discovered during surveys conducted for the species in that area in 1999 and 2002.

Environmental Effects—Peregrine Falcon

Alternative 1—Direct and Indirect Effects

Under Alternative 1, current travel plan map designations on the Fairfield and Ketchum RDs would remain, and current potential disturbance effects to peregrine falcons and potential for impacts to foraging habitat would remain at current levels.

Implementing Alternative 1 would potentially not be fully consistent with SNF Forest Plan Wildlife Goal 2, “Reduce human-caused disturbances that cause undesirable effects to wildlife populations during critical stages” (Forest Plan, p. III-25).

Alternatives 2, 3, 4—Direct and Indirect Effects

Implementing any of the action alternatives would be fully consistent with the direction provided in the SNF Forest Plan for management of sensitive species.

Under all action alternatives, motorized cross-country travel would be eliminated and route densities would be reduced. This could reduce potential disturbance effects to nesting peregrine falcons if they happen to be nesting near a road or trail and reduce potential impacts to foraging habitat from human-caused wildfire or noxious weed spread. Alternative 2 would reduce potential threats to peregrine falcons to a greater degree than Alternative 3, but less than Alternative 4.

Cumulative Effects to Peregrine Falcon

Fairfield and Ketchum RDs

On the north end of the SNF, activities that have reduced prey species (small and medium-sized birds) and increased human activity near cliffs, may have cumulatively impacted peregrine falcons. Past mining, forestry practices, and related road building that occurred near cliffs may have reduced the likelihood of peregrine falcons nesting in those areas. Past pesticide use severely affected peregrine falcon populations across the United States and likely affected past peregrine falcons on the SNF. Fire suppression and livestock grazing has affected aspen stands on the north end of the SNF, affecting prey (bird) species that use aspen.

Current and future activities on the north end of the SNF that may influence peregrine falcon prey species include fuels reduction projects (i.e., Soldier Mountain Hazardous Fuels Reduction Project and Barker Marsh Hazardous Fuels Reduction Project on the Fairfield RD). While these projects will likely have long-term benefits to most wildlife, they may have some short-term negative effects to prey species by unintentional burning of snags or incidental burning of sagebrush.

Implementing any of the action alternatives (Alternatives 2–4) would reduce the potential disturbance to nesting peregrine falcons (if they are nesting near roads or trails) and potential negative effects to foraging habitat from motorized vehicle-caused spread of noxious weeds or ignition of wildfire. This would potentially reduce cumulative effects to the species across the north end of the SNF. Implementing Alternative 1 would, however, continue these potential cumulative effects at current levels.

Under a separate NEPA action, the proposed 8.66 mi of future ATV trail on the Fairfield RD would not go through potential peregrine falcon nesting habitat, but would increase mileages and densities of motorized trail in potential foraging habitat. This increase would still be lower than current levels; however, an overall reduction of potential cumulative effects to peregrine falcons would result from implementing any of the action alternatives.

Affected Environment—Columbian Sharp-tailed Grouse

Columbian sharp-tailed grouse habitat is characterized by bunchgrass and shrub/bunchgrass with a small percentage of the landscape in tall, deciduous thickets, riparian zones, and aspen stands. Rangeland communities provide nesting and brood rearing habitat while the riparian zones and mountain shrub areas are essential for wintering. Serviceberry, chokecherry, and snowberry are particularly valuable mountain shrub species, while hawthorn and willow are important riparian species (Columbian Sharp-tailed Grouse Conservation Plan; Ulliman, Sands, and Hemker 1998).

Columbian sharp-tailed grouse do not occur on the Fairfield or Ketchum RDs and will not be discussed further. Columbian sharp-tailed grouse exist on the Black Pine, Cassia, Raft River, and Sublett Divisions of the Minidoka RD. They were reintroduced to the Shoshone Basin on the Cassia Division during the early 1990s. Numerous observations of sharp-tailed grouse have been reported on the western and northwest portion of the Cassia Division suggesting that the population is expanding (Smith 2007). Populations on the Black Pine and Sublett divisions appear to be stable. The management goal is to increase distribution and abundance of this species.

Historically, sharp-tailed grouse ranged throughout central Utah, but they are now limited to remnant, but stable populations on the Raft River Division. Small populations of sharp-tailed grouse nest and forage near Onemile Canyon on the Raft River Division (UDWR 2007).

Based on GIS modeling (Nutt and Miller 2006c), the Minidoka RD contains approximately 413,391 acres of potential Columbian sharp-tailed habitat.

Environmental Effects—Columbian Sharp-tailed Grouse

Alternative 1—Direct and Indirect Effects

Under Alternative 1, current conditions for Columbian sharp-tailed grouse habitat as related to travel designation would remain the same in the Minidoka RD (Table 3-69). Motorized cross-country travel would continue to be allowed on 413,391 acres of sharp-tailed grouse habitat. Direct and indirect effects to sharp-tailed grouse from motorized roads, trails, and cross-country travel would continue. Road and trail densities would likely increase under this alternative due to pioneering of new routes. This would have continued long-term negative effects to sharp-tailed grouse and their habitat.

Implementing Alternative 1 would not be fully consistent with SNF Forest Plan Wildlife Goal 2, "Reduce human-caused disturbances that cause undesirable effects to wildlife populations during critical stages" (Forest Plan, p. III-25).

Alternative 2, 3, and 4—Direct and Indirect Effects

Implementing any of the action alternatives would be fully consistent with the direction provided in the SNF Forest Plan for management of sensitive species.

Implementing the any of the three action alternatives would benefit Columbian sharp-tailed grouse by reducing potential disturbance on 413,391 acres of foraging and brood rearing habitat on the Minidoka RD where cross-country travel would no longer be allowed. All three action alternatives would reduce road density from 1.42 to 0.61 mi/mi^2 and motorized trail density would remain the same as current conditions at 0.43 mi/mi^2 in sharp-tailed grouse habitat. The reductions in road density would help reduce the potential for motorized vehicles to spread noxious weeds, fragment habitat, and facilitate the start of wildfires within Columbian sharp-tailed habitat. This alternative represents an improvement in Columbian sharp-tailed grouse foraging and brood rearing habitat within the project area over current conditions.

Table 3-69. Travel routes within Columbian sharp-tailed grouse habitat.

Minidoka Ranger District	Alt 1	Alt 2	Alt 3	Alt 4
Area open to off road travel within sharp-tailed habitat (acres)	413,391	0	0	0
Roads (system and non-system) in sharp-tailed habitat (mi)	1049	722	722	722
Road density in sharp-tailed habitat (mi/mi^2)	1.62	0.61	0.61	0.61
Motorized trails in sharp-tailed habitat (mi)	281	279	279	276
Motorized trail density in sharp-tailed habitat (mi/mi^2)	0.43	0.43	0.43	0.43
Non-motorized trails (mi)	3.93	1.52	5.45	5.45
Total density of all trails (mi/mi^2)	0.44	0.43	0.44	0.44

Cumulative Effects to Columbian Sharp-tailed Grouse

Columbian sharp-tailed grouse habitat (early to late brood rearing) on the Minidoka RD has been affected by many factors, including but not limited to, livestock grazing and associated range structures, wildfire and wildfire suppression activities, invasive species (cheatgrass) and noxious weeds, and motorized recreation. Current cattle and sheep grazing may negatively affect sharp-tailed grouse habitat in riparian areas. Grazing may reduce hiding cover along streams, by springs, and in wet meadows. Moving large bands of sheep or herding cattle can have disruptive effects in nesting areas and during early brood rearing, although generally neither cattle or sheep are grazing on the Minidoka RD (within sharp-tailed grouse habitat) during the nesting period. Livestock structural developments affect sharp-tailed grouse in various ways. Livestock water troughs may confine water, making water unavailable to grouse if wildlife access is not provided. Fencing springs from livestock may improve the vegetation (hiding cover) and also provide clean sources of water for grouse.

Throughout their range, Columbian sharp-tailed grouse have been negatively affected by large-scale wildfire and conversion of vegetation to annual grasses. There have been several large wildfires in sharp-tailed grouse habitat on the Minidoka RD in the past 7 years removing several hundred acres of grassland and mountain brush habitat. This may affect late brood rearing habitat in specific areas into the near future. While some cheatgrass and noxious weeds have developed in these areas, likely affecting sharp-tailed grouse foraging habitat, most of the occurrences are along roads and SNF access points. Large-scale invasions have not occurred as they likely have at lower elevation fire sites.

Mining and rock quarry operations on the Minidoka RD have affected sharp-tailed grouse foraging habitat. The quarries and associated roads and quarrying activities may affect sharp-tailed grouse by actual removal of some habitat and disruption of sharp-tailed grouse activities. Reclamation and reseeding of habitat is required at completion of operations but some grouse habitat is likely taken out of production during the life of the quarry operation.

Motorized recreation on the Minidoka RD has affected sharp-tailed grouse habitat in several ways. Implementation of any of the action alternatives would be beneficial to Columbian sharp-tailed grouse habitat and would reduce the cumulative effects.

Foreseeable future actions within the Minidoka RD analysis area are proposals to construct additional recreational trails. A portion of these trails could potentially be constructed within Columbian sharp-tailed grouse habitat, which may add to cumulative effects to sharp-tail grouse but would still be lower than the current mileage and density of trails in the route designation area. Under a separate NEPA action, 82.55 mi of spur and redundant roads have been identified for review and possible closure. This may be an additional improvement of sharp-tailed grouse habitat by removal of additional travel routes.

Affected Environment—Bighorn Sheep

There are no known populations of bighorn sheep (*Ovis canadensis*) within the Fairfield RD or the Ketchum RD. However, there have been a number of incidental sightings of bighorn sheep on the Ketchum RD, the closest to the project area being an unconfirmed sighting of a young ram 1.0 mi to the northwest of the Cove Creek area portion of the project area near Triumph Mine in 2006. The Ketchum RD was likely historical habitat for bighorn sheep prior to the arrival of Euro-American settlers in the 1800s. Due to the number of bighorn sheep sightings on or near the eastern portions of the RD, an interagency group (IDFG, SNF, Lava Lake and Livestock, and Friends of North American Wild Sheep) have been conducting interviews and field surveys to determine if these sightings are dispersers from bighorn sheep to the north or make up a small, unknown population occurring in the Pioneer Mountains. Currently, IDFG has no plans to reintroduce bighorn sheep onto the Ketchum RD as a result of concerns over potential disease issue with domestic sheep grazing (Toweill 2005).

The nearest known population of bighorn sheep occurs approximately 30 mi to the north of the Ketchum RD route designation area on the SNRA and Challis NF. As no existing bighorn sheep populations exist nor are there any plans to reintroduce bighorn sheep into the Ketchum RD route designation area, the current travel plan map within the area likely has little to no effect on bighorn sheep. It is possible that bighorn sheep dispersers may wander into the project area and be temporarily disturbed by road, trail, and cross-country motorized recreation. It is unlikely that this would affect reproduction or bighorn sheep populations to any degree. It is unknown if the current travel plan map is inhibiting natural recolonization of bighorn sheep into the Ketchum RD.

Suitable habitat for bighorn sheep occurs in the Rock Creek, Dry Creek, and Big Cottonwood drainages of the Cassia Division on the Minidoka RD. From 1986–93, IDFG (GMU 56) released 74 bighorn sheep into the Big Cottonwood and East Fork Dry Creek drainages. The released sheep did well until 1989 when high mortality of ewes and poor lamb survival were documented and the population began to decline (IDFG 2007). Presently, there is a remnant population of approximately 15 bighorns in Cottonwood Canyon. Bighorns have not been observed in Dry Creek or Rock Creek canyons since 2004. All of these drainages remain an IDFG priority for future reintroductions efforts.

Bighorn sheep graze on grasses and browse shrubby plants and seek minerals at natural salt licks. They select habitat in areas with minimal human disturbance and are well adapted to climbing in steep terrain where they live in small herds and seek cover from predators such as coyotes, eagles, and cougars. They appear to do best in areas with low road densities. Bighorn sheep are highly susceptible to certain diseases carried by domestic sheep. Five 6th-level HUs in potential bighorn sheep habitat were analyzed to determine road density affects to bighorn sheep.

Environmental Effects—Bighorn Sheep

No-Action Alternative 1—Direct and Indirect Effects

As no bighorn sheep population occurs in the Fairfield or Ketchum RDs nor are there any plans to reintroduce bighorn sheep into either area, no changes in effects to bighorn sheep would occur if Alternative 1 is implemented. Current travel plan map designations would be maintained. The likelihood of temporarily disturbing dispersing bighorn sheep in the project area would remain at current levels.

Under Alternative 1, no changes to the SNF Forest Plan would occur and existing conditions for bighorn sheep security on the Minidoka RD would continue. The current mileage and density of roads and trails would remain and would likely increase as new user-created routes continue to be established (as cross-country travel throughout the analysis area would still occur). Disturbance to bighorn sheep would likely remain similar to current levels. Five, 6th-Level HU watersheds encompassing bighorn sheep habitat on the Cassia Division were analyzed as the basis for road and trail density in bighorn sheep habitat. The 6th-level HUs are the following: Big Hollow (170402110803), Upper Big Cottonwood (170402110902), Big Cedar Canyon Creek (170402110903), East Fork Dry Creek (170402121605), and Middle and West Fork Dry Creek (170402121606).

Implementing Alternative 1 would not be fully consistent with SNF Forest Plan Wildlife Goal 2, “Reduce human-caused disturbances that cause undesirable effects to wildlife populations during critical stages” (Forest Plan, p. III-25).

Alternatives 2, 3, and 4—Direct and Indirect Effects

Implementing any of the action alternatives would be fully consistent with the direction provided in the SNF Forest Plan. Alternative 2 would reduce potential threats to bighorn sheep to a greater degree than Alternative 3, but less than Alternative 4.

Implementing the proposed route designation changes on the Ketchum RD in accordance with Alternatives 2–4 would have no effect on bighorn sheep populations or the potential to reintroduced bighorn sheep as no bighorn sheep population currently exists in the project area nor are there any plans to reintroduce bighorn sheep onto the RD. A reduction in the likelihood of temporarily disturbing dispersing bighorn sheep in the analysis would occur however due to the elimination of cross-country travel.

On the Minidoka RD, under the action alternatives, motorized cross-country travel is eliminated and route densities are decreased within bighorn sheep habitat (Table 3-70). Some acreage of vehicle use would still be allowed for dispersed camping along roads and trails. Closure of motorized cross-country travel would prevent increases in user-created roads and trails from increasing in the future. Bighorn sheep security will be improved over current conditions by the elimination of cross-country travel and a decrease in road density. This alternative would provide habitat conditions more conducive to future introductions of bighorn sheep.

Table 3-70. Road and trail density in bighorn sheep habitat, Minidoka RD.

Minidoka RD	Alt 1	Alt 2	Alt 3	Alt 4
Analysis area size (acres within 5-6 Level HUs)	59,655	59,655	59,655	59,655
National Forest Land open to cross-country travel (acres)	59,655	0	0	0
System roads (mi)	112	108	108	105
Non-system road (mi)	47	0	0	0
Total road density in project area (mi/mi^2)	1.20	1.16	1.16	1.13
System trails (motorized) in project area (mi)	20	18	21	8
Motorized trail density in project area (mi/mi^2)	0.22	0.19	0.23	0.01
Non-motorized trails (mi)	3	4	4	10
Total density of all trails (mi/mi^2)	0.25	0.24	0.27	0.19
Note: data source is from SNF GIS data.				

Cumulative Effects to Bighorn Sheep

Ketchum RD

No additions to cumulative effects would likely result to bighorn sheep or their habitat within the Ketchum RD or the north end of the SNF under any of the proposed alternatives (Alternatives 1–4) outlined in this EA, as no populations of bighorn sheep occur nor are being proposed for reintroduction. A slight reduction in potential cumulative effects related to temporary disturbance to dispersing bighorn sheep in the analysis would result from implementing any of the action alternatives (Alternatives 2–4). Implementing Alternative 1 could continue these potential cumulative effects.

Minidoka RD

Past and current livestock grazing**,** noxious weeds and invasive species, and substantial increases in motorized recreation have affected bighorn sheep habitat on the Minidoka RD. The current introduced population of bighorn sheep has declined, presumably from disease transmission from interaction with domestic sheep. Additionally, noxious weeds and other invasive species have affected foraging in specific areas.

Recreation use, particularly the single-track motorized trail in Big Cottonwood Canyon, could provide disturbance to bighorn sheep. Currently the trail is non-motorized (3 mi) at the lower end of the trail within IDFG’s wildlife management area (WMA). The trail on the SNF above the WMA permits motorized use. The trail is difficult to ride and is currently not well used. Any improvement to this trail could facilitate increased use and would add cumulatively to affects to bighorn sheep.

Under a separate NEPA action, 82.55 mi of spur and redundant roads have been identified for review and possible closure. Some of these spur roads have been identified within bighorn sheep habitat. If implemented, these closures could benefit bighorn sheep by reducing disturbance within bighorn sheep habitat.

Migratory Bird Species Habitat

EO 13186, signed January 10, 2001 (66 FR 11, 2001), lists several responsibilities of federal agencies to protect migratory birds, among them are the following:

- Support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.

- Identify where unintentional take reasonably attributable to agency actions is having, or is likely to have a measurable negative effect on migratory bird populations, focusing first on species of concern, priority habitats, and key risk factors. With respect to those actions so identified, the agency shall develop and use principles, standards, and practices that will lessen the amount of unintentional take, developing any such conservation efforts in cooperation with the Service. These principles, standards, and practices shall be regularly evaluated and revised to ensure that they are effective in lessening the detrimental effect of agency actions on migratory bird populations. The agency also shall inventory and monitor bird habitat and populations within the agency's capabilities and authorities to the extent feasible to facilitate decisions about the need for, and effectiveness of, conservation efforts.

Additional direction comes from the interim MOU between USFS and USFWS, signed January 17, 2001 (USDI and USDA 2001). The purpose of this MOU is to strengthen migratory bird conservation through enhanced collaboration between the USFS and USFWS, in coordination with state, tribal and local governments. The MOU continues to provide guidance for the two federal agencies until more detailed direction is developed pursuant to the executive order. The MOU identifies specific activities for bird conservation, pursuant to EO 13186 including striving to protect, restore, enhance, and manage habitat of migratory birds, and prevent the further loss or degradation of remaining habitats on NFS lands. This includes identifying management practices that impact populations of high priority migratory bird species, including nesting, migration, or over-wintering habitats on NFS lands, and developing management objectives or recommendations that avoid or minimize these impacts.

High Priority Migratory Bird Species Habitat

This section analyzes the current condition and the effects of the alternatives upon high priority migratory bird species' habitats that occur within the project area (Idaho Partners in Flight, Idaho Bird Conservation Plan, 2000). Priority habitats have been chosen to monitor conditions in primary breeding habitat of high priority migratory bird species that occur in the analysis area. Once high priority bird species have been identified, those species and their habitat can be monitored for trend, allowing conservation efforts to be focused in the area of greatest need (Idaho Partners in Flight 2000).

The high priority migratory bird habitats that have been identified per this guidance and presented in this EA are the following:

Fairfield and Ketchum RDs

- Riparian
- Low-elevation mixed conifer
- Sagebrush
- Aspen.

Minidoka RD

- Riparian
- Sagebrush

- Aspen
- Pinyon-juniper-Mt. mahogany woodlands.

A more detailed listing of these habitats, and associated species and trends are available in the Wildlife Specialist's Report in the route designation EA project record.

Affected Environment—Riparian Migratory Bird Habitat

Fairfield and Ketchum RDs

The Fairfield and Ketchum RD route designation areas contain both broad and narrow valley bottomed riparian habitats as defined by the Idaho Bird Conservation Plan (Idaho Partners in Flight 2000). Overall, riparian habitat conditions within the route designation areas are fair to good for migratory birds. Willows are vigorous and plentiful in many riparian areas throughout the analysis area. Willows and sedges dominate most riparian areas in the analysis area; however Kentucky bluegrass has become established within some of these areas. This is an indicator of poorer riparian condition and often associated with grazing or dispersed camping areas. Hiding cover for ground nesting birds has been reduced in many riparian areas within the project areas, generally where annual cattle grazing occurs.

Some of the riparian migratory bird habitats within the project areas are dominated by coniferous forest (primarily Douglas-fir with some lodgepole pine and ponderosa pine). These riparian areas also commonly have alder, willows, and aspen associated with the conifers.

Springs, seeps, and wet meadow areas are also important riparian migratory bird habitats. Livestock grazing and the development of livestock watering facilities have affected many of these areas in the project area within cattle allotments. Cattle tend to congregate at these wet sites, and consequently the immediately surrounding area often receives heavy impacts to the soil and vegetation. Several springs have been dug out by heavy equipment to create livestock water ponds. These areas are usually more prone to livestock trampling. It should be noted that elk also use many of these springs as well and will also contribute to their denuded condition.

Human use of roads and trails and cross-country motorized recreation has affected some areas of riparian migratory bird habitat in the Fairfield and Ketchum RD route designation areas, particularly where new travel routes become established in riparian areas. Dispersed camping, pioneering of new routes between camp sites by ATVs, and pioneering new roads with full-sized vehicles for firewood cutting or dispersed camping have occurred in some riparian areas of the project area and contribute to disturbance to nesting migratory birds within riparian areas. In some cases, mortality to individual migratory birds or crushing of nests likely occurs as a result of cross-country motorized travel and/or firewood cutting. In either case, mortality to migratory birds or destruction of their nests is a violation of the Migratory Bird Treaty Act (16 U.S.C. 7 §§703-712, 2006). In general, the lower the densities of road or trails within the riparian migratory bird habitats, the less chance of negative effects to nesting migratory birds.

Minidoka RD

Riparian areas are biologically diverse and are very productive systems compared to adjacent uplands. Nearly half the migratory bird species that breed in Idaho use riparian areas as nesting habitat. Road building, livestock grazing, recreational activity and fire suppression have all affected the current condition of migratory bird habitat within this habitat type.

Low-Elevation Mixed Conifer Migratory Bird Habitat

Fairfield and Ketchum RDs

Low-elevation mixed conifer habitat within the Fairfield and Ketchum RD route designation areas comprises Douglas-fir with other areas of ponderosa pine (Fairfield RD only), lodgepole pine, aspen, or a mix thereof. These stands are mostly north, west, and east-facing. The majority of the stands are of a mature age with some areas of young forest plantations where past clearcuts occurred. Some stands have very closed canopy with very little understory (predominately needles and duff). More open canopied stands have a greater percentage of aspen, chokecherry, ceonothus, snowberry, grass, and forbs. Ground, tree, and cavity nesting migratory birds occur in this habitat, including northern goshawks and several species of woodpeckers.

Potential disturbance effects to nesting migratory birds that use low-elevation mixed conifer habitat can occur where roads and trails occur in this type of habitat or where cross-country recreation occurs in this habitat. Frequency and duration of human use of roads and trails and frequency of cross-country travel dictates the extent of effects that the potential disturbance could have. Effects could include nest abandonment or loss if duration and level of disturbance is sufficient. The extent that this disturbance is currently affecting migratory birds that use low-elevation mixed conifer forest in the project areas is unknown. In general, the greater the road and trail density through this type of habitat the greater the likelihood for potential disturbance effects to nesting migratory birds that use low-elevation mixed conifer forest to occur.

Firewood cutting is common along roads within low-elevation mixed conifer forest in the Fairfield and Ketchum RDs. Standing dead trees (snags) are very important for nesting and foraging for many species of migratory birds that use this type of habitat. The greater the road density through this type of habitat the greater the likelihood firewood cutting will reduce snags and potentially cut down active nest trees, thereby affecting migratory birds in low-elevation mixed conifer forest. Some firewood cutters have been pioneering new roads within this habitat to reach snags previously unreachable, such as what is occurring in many locations along Basalt Creek in the Fairfield RD route designation area.

Sagebrush Migratory Bird Habitat

Fairfield and Ketchum RDs

Sagebrush migratory bird habitat covers the most acreage within the Fairfield and Ketchum RD route designation areas. The most dominant brush species across the project area is mountain big sagebrush (*Artemisia tridentata vaseyana*). Canopy coverage of sagebrush in the project area varies by site and aspect with some areas as thick as >30% to areas previously burned with very low canopy coverage (Lime Creek prescribed fire area, Willow Creek wildfire burn area). Past burns tend to take 10–30 years to reach pre-burn canopy coverage depending on the intensity of the fire. Areas burned over ten years ago such as the Wardrop-Sampson Prescribed Fire area in the Soldier Creek drainage already show areas of sagebrush canopies in the greater than 10% range.

Cheatgrass invasion and subsequent increased fire frequency is a very serious threat to sagebrush migratory bird habitat as sagebrush can be eliminated by frequent fires. Only a small portion of the project areas really has this potential threat as higher elevation sagebrush areas that experience higher precipitation levels generally are less susceptible to cheatgrass invasion and subsequent altering of fire frequency. Some steep, south-facing slopes in the southern portion of the project area could potentially be affected by this threat. Some portions of the Willow Creek wildfire area has seen considerable cheatgrass invasion, particularly on BLM and private lands, and sagebrush may or may not recover in these areas.

Presently, there are some areas of noxious weed invasion into sagebrush migratory bird habitat in the project areas. Although quite sparse, areas of spotted knapweed and Rush skeletonweed occur in drier sites in the Fairfield RD route designation area. Leafy spurge can be found on the northwest side of the Fairfield RD route designation area close to some riparian areas. Although quite sparse, areas of spotted knapweed also occur in the Ketchum RD route designation area. Noxious weeds can impact the quality of sagebrush migratory bird habitat.

Livestock grazing in sagebrush migratory bird habitat has altered species composition and abundance of some species of native grasses and forbs in some areas of the project areas. Residual grass heights may be insufficient for some species of ground nesting migratory birds on some years to provide adequate nesting hiding cover.

Cross-country motorized recreation and use of roads and trails within sagebrush migratory bird habitat can potentially increase the likelihood of human-caused wildfire and noxious weed spread into this sagebrush habitat in the Fairfield and Ketchum RD route designation areas. Cross-country travel and use of roads and trails in sagebrush habitat during the nesting season can also create disturbance effects to nesting migratory birds. In general, the greater the density of roads and trails through this habitat, the greater likelihood human-caused wildfire or noxious weed spread may affect sagebrush migratory bird habitat.

Minidoka RD

Sagebrush and the native perennial grasses and forbs of the shrub-steppe, are important sources of food and cover for wildlife and several sagebrush obligates, including sage-grouse. Sagebrush communities have undergone fragmentation and conversion to annual grasses due to wildfires in southern Idaho since 2000. Sagebrush stands within the project area are primarily mountain big sage and are for the most part in mid- to late-seral stage. These stands are valuable to sage-dependent migratory birds. Road building, livestock grazing, recreational activity, rock quarries, and fire suppression have all affected the current condition of migratory bird habitat within this habitat type.

Aspen Migratory Bird Habitat

Fairfield and Ketchum RDs

Several species of migratory birds rely heavily on aspen including sapsuckers and woodpeckers. Aspen stands exist within the Fairfield and Ketchum RDs and support migratory birds. These stands are scattered throughout the project areas and generally are not extensive in size (generally 5 acres or less of contiguous aspen).

Aspen across the project areas and across the western United States as a whole is thought to be declining. Some factors affecting this decline includes livestock browsing of young aspen suckers, fire suppression, and conifer encroachment.

Cross-country motorized recreation and use of roads and trails within aspen migratory bird habitat can potentially increase disturbance effects to nesting migratory birds. Although most of this disturbance is likely short term and relatively benign, dispersed camping or other activities that occur for longer duration may reduce nesting success of migratory birds in aspen stands. In addition, the presence of these roads and trails in aspen stands can indirectly lead to cross-country motorized use, dispersed camping, and off-road firewood gathering and subsequent potential effects to migratory birds. Many of the migratory birds using aspen stands for nesting use cavities in dead trees. Standing, dead aspen trees found in the vicinity of roads or dispersed camp sites are sometimes cut for firewood. In general, the lower the densities of road or trails within the aspen migratory bird habitat, the less chance of negative effects to nesting migratory birds.

Minidoka RD

Aspen stands are distributed within mixed conifer stands throughout the Minidoka RD as well as existing as stand-alone stable aspen communities. They are particularly valuable to cavity nesting bird species. Ruffed grouse depend on aspen for cover and frequently utilize aspen buds during adverse weather. Aspen understory attracts insects that are important to many insectivores. In many locations throughout the RD, aspen are being encroached upon by subalpine fir and other species. Road building, livestock grazing, recreational activity and fire suppression have all affected the current condition of migratory bird habitat within this habitat type.

Juniper-Pinyon Pine-Mt. Mahogany Migratory Bird Habitat

Minidoka RD

Juniper and pinyon pine woodlands in the project area include, Utah and Rocky Mountain juniper, and single leaf pinyon pine with curl leaf mountain mahogany. Both pinyon nuts and juniper berries are important foods for birds and mammals. Juniper berries remain on the trees a large part of the year. Pinyon and juniper habitat is important habitat for Pinyon jay, Gray flycatcher, and Ferruginous hawk. Current conditions of juniper dominance have been maintained in many areas due to fire suppression. Lack of wildfire has allowed young junipers to fill in the interspaces within old growth stands, resulting in a closed canopy that probably occurred pre-European settlement. Road building, livestock grazing, recreational activity, rock quarries, and fire suppression have all affected the current condition of migratory bird habitat within this habitat type.

Environmental Effects—Migratory Bird Habitat

Alternative 1—Direct and Indirect Effects

Implementing Alternative 1 would potentially not be fully consistent with SNF Forest Plan Wildlife Goal 2, “Reduce human-caused disturbances that cause undesirable effects to wildlife populations during critical stages” (Forest Plan, p. III-25).

Fairfield and Ketchum RDs

Under Alternative 1, current travel plan map designations on the project area would remain. Current potential disturbance effects to migratory birds which nest in riparian, low-elevation mixed conifer, sagebrush, and aspen habitats would remain at current levels or potentially increase as new roads and trails are pioneered into these habitats.

Minidoka RD

Under Alternative 1, current conditions for all four migratory bird habitats as related to travel designation would remain the same in the Minidoka RD. Motorized cross-country travel would continue to be allowed on 579,388 acres of potential migratory bird habitat. Direct and indirect effects to migratory birds in riparian, sagebrush, aspen and pinyon-juniper habitat from motorized roads, trails, and cross-country travel would continue. Road and trail densities would likely increase under this alternative due to pioneering of new routes. This would have continued long-term negative effects to migratory birds and their habitat.

Alternative 2, 3, and 4—Direct and Indirect Effects

Implementing any of the action alternatives would be fully consistent with the direction provided in the SNF Forest Plan.

Fairfield and Ketchum RDs

Under Alternatives 2–4, motorized cross-country travel would be eliminated and road and trail densities would be reduced. This would reduce potential disturbance effects to nesting migratory birds within riparian, low-elevation mixed conifer, sagebrush, and aspen habitats, including reduced snag loss from firewood cutting, potential weed invasion, and potential human caused wildfire ignition. Alternative 4 would reduce negative disturbance effects to nesting migratory birds to the greatest degree of the alternatives, followed by Alternative 2 and then 3.

Minidoka RD

Under any of the three action alternatives, a reduction of 579,388 acres of potential motorized cross-country travel would occur on potential migratory bird habitat. Some acreage of vehicle use would still be allowed for dispersed camping along roads and trails. All three alternatives would result in a decrease of open-road density from 1.60 to 1.57 mi/mi^2 within the Minidoka RD. Closure of motorized cross-country travel would prevent increases in user-created roads and trails from increasing in the future and further degrading migratory bird breeding habitat.

Cumulative Effects to Migratory Bird Habitat

Fairfield and Ketchum RDs

On the north end of the SNF activities such as grazing, dispersed recreation, fire suppression, past logging, past mining, and past road building that removed or altered riparian vegetation, low elevation conifer forest, sagebrush, or aspen has added to cumulative effects to migratory bird habitat. Current activities including motorized and non-motorized recreation, dispersed camping, and firewood gathering have lead to disturbance effects as previously described; therefore, added cumulatively to effects to migratory birds. Past and current urbanization of riparian areas on private land within or adjacent to the north end of the SNF (Wood River Valley, Soldier Creek and South Fork Boise River inholdings) has added to cumulative effects to migratory birds through disturbance to nesting birds and removal of riparian vegetation (habitat).

Ongoing and foreseeable future projects on the north end of the SNF such as timber harvest (e.g., West-side and Smoky-Pine timber sales on the Fairfield RD and multiple ongoing salvage sales on the SNRA) and prescribed fire (e.g., Soldier Creek Hazardous Fuels Reduction Project and Barker Marsh Hazardous Fuels Reduction Project) have mitigation measures protecting riparian habitat and timing restrictions to protect nesting migratory birds. These projects would minimally add to cumulative effects to migratory bird habitat where incidental prescribed fire may creep back into riparian zones. These projects have timing restrictions to protect nesting migratory birds and snags. Prescribed fire projects on the Fairfield RD have acreage limitations such that at least half the acres of this habitat will be maintained at current conditions. Some incidental loss of snags (burn up) would likely occur along with creation of new snags as well. Overall, long-term habitat improvements from prescribed fire projects are expected, but short-term changes in distribution and use of this habitat by migratory birds will likely add to cumulative effects.

Several projects have been conducted or are in planning stages to increase or protect aspen stands. These projects include the Lime Creek prescribed burn on the Fairfield RD and the planned Aspen Protection Project (conifer encroachment removal) scheduled for the Fairfield and Ketchum RDs and the SNRA.

Implementation of any of the action alternatives (Alternatives 2–4) would result in a reduction of cumulative effects to migratory bird habitat where road and trail densities would be reduced within migratory bird habitats (reduced firewood cutting and disturbance to nesting migratory birds). Implementing Alternative 1 would, however, continue these potential cumulative effects at current levels.

Under a separate NEPA action, some of the proposed 8.66 mi of future ATV trail on the Fairfield RD would go through low-elevation mixed conifer, sagebrush, and aspen migratory bird habitat. Although this would increase trail mileage through these types of migratory bird habitat on the north end of the SNF, the mileages would still be lower than current levels if an action alternative is selected.

Minidoka RD

Past and current livestock grazing**,** past mining, past timber harvest and associated road building, noxious weeds and invasive species, and substantial increases in motorized recreation, and recreational activities in general have affected migratory bird habitat on the Minidoka RD.

Riparian habitats provide multiple layers of vegetative cover for bird species. These different layers provide support for nests, territorial singing perches, invertebrate populations and seeds for foraging. Grazing affects riparian habitat by decreasing the vigor of riparian shrubs, and alters species composition and diversity in riparian communities. Continued grazing adds to the cumulative affects of all other activities authorized on the Minidoka RD.

Throughout their range south of the Snake River, migratory birds have been affected by large-scale wildfires. There have been several large wildfires on the Minidoka RD in the past 7 years affecting both sagebrush and pinyon–juniper habitats. Wildfire removes both foraging and nesting habitat until these areas recover. While some cheatgrass and noxious weeds have developed in these areas, likely affecting foraging, most of the occurrences are along roads and SNF access points. As drier weather conditions prevail, wildfires are likely to continue in migratory bird habitat and add to the cumulative effects of all other authorized activities on the Minidoka RD.

Past timber harvest, firewood cutting, and road building have likely affected nesting and perching opportunities for migratory birds.

Over the past two decades, increasing motorized recreation and establishment of user-created routes on the Minidoka RD has likely added to the disturbance and disruption of migratory bird nesting, cover, and foraging habitat.

In the foreseeable future, there are timber sales proposed. There is generally less than 1.0 mi of road reopening or construction associated with these proposals. These roads will be eliminated once the project is completed. Prescribed fire activities may take place but the majority of these will be proposed to enhance wildlife habitat and are usually implemented out side of the breeding season. Typically, no road construction occurs with prescribed fire. Up to 2.5 mi of road construction associated with rock quarries may be built if operations plans are approved in the future. These roads are required to be reclaimed once quarrying activities cease.

In a separate NEPA action, 82.55 mi of spur and redundant roads have been identified for review and possible closure. These closures, if executed, will be an improvement to migratory bird habitat.

Heritage Resources

Introduction

Archaeological and ethnographic sources indicate the historic and prehistoric utilization of the SNF route designation area for camping, hunting, fishing, gathering, grazing, mining, harvesting timber, and traveling. Archaeological investigations of known and as yet undiscovered cultural resources may offer insights into the historic and prehistoric land uses and settlement patterns of the area. One of the goals of land managers is to protect and preserve cultural resources within an agency’s jurisdiction. To fulfill this responsibility, an inventory of these resources is essential. Once site locations are identified, this information can then be provided to planners so that management decisions can be made to avoid or mitigate the effects of proposed project activities.

Statement of Issue

- Designating user-created travel routes as system routes has potential to affect heritage resources.
- Closing and decommissioning user-created routes and system routes has potential to affect heritage resources.
- Cross-country travel has a potential to affect heritage resources.

Analysis Area

The analysis area for direct and indirect and cumulative effects is the portions of the SNF within the route designation area on the Fairfield, Ketchum, and Minidoka RDs.

Considerations Common to All Alternatives

Areas of high probability within proposed ground disturbing areas associated with this route designation project will be surveyed and evaluated by an archaeologist, in an effort to locate and record any historic and/or archaeological properties. In the event that significant archaeological and/or historical resource sites are discovered to be present, and any proposed action will have an adverse effect on the site, mitigation will occur in consultation with the Idaho SHPO, Shoshone-Bannock Tribes, and Shoshone-Paiute Tribes. Analysis methods will include pedestrian transects and visual assessments of the projected area of potential effects (APE) for all site-specific undertakings. The percentage of the assessment area to be surveyed will be dependant upon identified site location probability and actual areas affected by the proposed action. Because the decision, in and of, itself does not have the potential to cause effects to heritage resources, the effects must be addressed as they are encountered on the ground. Coverage of such previously unsurveyed areas will be performed in compliance with the NHPA Section 106 process (16 U.S.C. §470w-3, 2000). One hundred percent (100%) of high cultural site probability areas will be inventoried. Cultural resources property significance, i.e., National Register of Historic Places (NRHP) eligibility, shall be determined by the SNF cultural resources specialist in consultation with the SHPO. If significant cultural resource properties fall within the APE or impact areas of site-specific undertakings, mitigation measures will be recommended to achieve a “no adverse effect” determination. All inventory reports will be submitted to the SHPO in completion of the NHPA Section 106 process.

Affected Environment

Evidence of prehistoric occupation and use, spanning the last 11,000 years, are present on the SNF and include significant open sites. Important archaeological evidence including, open prehistoric camp sites, rock art panels, and potential rock shelter locations are located in various locations throughout the SNF. Significant historical sites also present throughout the SNF include homesteads, mining sites, Civilian Conservation Corp camps, wagon trails and other developments.

Fairfield RD

Currently approximately 10,288 acres of the 217,800 acres within the route designation area of the Fairfield RD have undergone previous archaeological survey. The Fairfield RD currently has approximately 79 recorded historical/archaeological sites.

Ketchum RD

Currently approximately 3,237 acres of the 76,821 acres of the route designation area within the Ketchum RD have undergone previous archaeological survey. The Ketchum RD currently has approximately 43 recorded historical/archaeological sites.

Minidoka RD

Since the passage of the NHPA in 1966, the SNF has been actively identifying, evaluating, and documenting archaeological and historical resources throughout the SNF. Currently approximately 92,791 acres of the 611,073 acres of the route designation area within the Minidoka RD have undergone previous archaeological survey. The Minidoka RD currently has approximately 694 recorded historical/archaeological sites.

Environmental Consequences

Common to All Alternatives

Laws and Regulations

Cultural resources may be identified as those resources either directly or indirectly related to the material life ways of a cultural group, or groups as specified by the Protection of Archaelogical Resources regulations (36 CFR 296.3, 2007). Cultural resources may refer to sites, areas, buildings, structures, and objects that possess scientific, historic, and social values. The significance or the NRHP eligibility of cultural resources is determined by the SNF archaeologist in consultation with the SHPO.

Cultural resource site locations are not disclosed in this document. To protect and preserve cultural resources, detailed description and locations are exempt from disclosure under the Freedom of Information Act as stated in USFS policy (USFSH 6209.13, section 11.12) in accordance with the Archaeological Resources Protection Act (ARPA) of 1979 (16 USC 170hh) and the NHPA (16 USC 470w-3). Such information is disclosed in full to the SHPO to facilitate decisions on which sites should be included on the NRHP or which sites should be designated as significant.

Notification and involvement of the Shoshone-Bannock Tribes and Shoshone-Paiute Tribes concerning Native American cultural resource matters will be carried out as specified by 36 CFR 296.7, 36 CFR 800 Section 101(d)(6)(B)(2007), and in accordance with the Presidential Executive Order 13175 concerning Government-to-Government consultation signed Nov. 6, 2000 (65 FR 218, 2000). Cultural resources are non-renewable resources. As such, federal regulations have been passed that prohibit destruction of significant cultural sites and obligate federal agencies, including the USFS, to protect and manage cultural resource properties. The Antiquities Act of 1906, the Historic Sites Act of 1935, the NHPA with its 1992 Amendments, the Archaeological and Historic Preservation Act of 1974, the Archaeological Resources Protection Act of 1979, and the Native American Graves Protection and Repatriation Act of 1990 exemplify the long and progressive history of regulations concerning the protection of significant archaeological resources.

Management Direction

The SNF Forest Plan (USDA 2003a) provides goals, objectives, standards, and guidelines that relate to heritage resources within the route designation area. The following management direction applies to the route designation process:

- **HPGO01**—Identify archaeological and historic properties on the SNF

- **HPST01**—Review undertakings that may affect cultural resources to identify potential impacts. Compliance with Sections 106 and 110 of the NHPA shall be completed before the responsible agency official signs the project decision document.

Effects Common to All Alternatives

New and existing roads or trails present the possibility of having an affect in areas containing cultural resources. If additional sites are discovered during on the ground layout and design of actions associated with any action alternatives or other on-going survey activities, the SNF archaeologist will consult with the SHPO, as required by law, to document and determine the significance of the discovery and the effects of the project on it. Interested Native American Tribes will be consulted regarding Native American sites.

Mitigation of effects to other identified cultural resource sites could be accomplished through complete avoidance or scientific removal of the resource. If cultural resources are discovered during future ground disturbing activities, such activities will be stopped until the cultural materials are properly documented and evaluated by the SNF archaeologist in compliance with 36 CFR 800.11.

Within the proposed route designation areas, the SNF in consultation with the Idaho SHPO will monitor all significant historical and archaeological resources to determine if adverse effects are present due to road or trail activities. All proposed road and trail improvement or decommissioning projects will be reviewed prior to implementation to assess the effect of the proposed activity to significant historic and prehistoric resources. If it is determined that motorized or non-motorized activities are adversely affecting significant historic and/or archaeological resources, a variety of mitigation measures will be employed. Examples of relevant mitigation measures to the route designation project that would be considered follow:

- Placement of natural barriers (rocks, logs or other woody debris, or other natural materials) to deter vehicles from accessing the areas.

- Excavation and data recovery of historic and/or archaeological material. Excavation would only be utilized in an extreme condition and as a last viable option. Excavations are not only costly but permanently destroy a site.

There are additional mitigation measures, in addition to these examples, that may be required as part of the mitigation(s) for culture resources encountered during route designation activities. These measures would be developed by the SNF heritage resources staff in consultation with the Idaho SHPO, travel managers, and interested parties so that all mitigation measures that will preserve and protect these non-renewable resource will be considered.

Fairfield RD

Alternative 1—Direct and Indirect Effects

Under Alternative 1, no changes to the current SNF Travel Plan Map (USDA 2002) would occur. The current mileage and density of roads and trails would remain and would likely increase as new user-created routes continue to be established. Direct and indirect affects to known and as yet undiscovered cultural resource sites would likely occur. The Fairfield RD currently has approximately 79 recorded historical/archaeological sites. Unregulated cross-country use has a very high potential to have direct adverse effects to heritage resources. Indirect effects to heritage resources as a result of unregulated travel is also probable. Unregulated travel creates a potential for increased access through, across, and to heritage resource areas that may create a high potential for subsequent effects to specific culture resources.

Alternatives 2, 3, and 4—Direct and Indirect Effects

Under Alternative 2, motorized cross-country travel would no longer be allowed. Although there may be potential to affect heritage resources, there is also a higher likelihood that any potential effects could be mitigated.

Cumulative Impacts

The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of whether an agency or person(s) undertakes such action (43 FR 5600 §1508.7). The potential impacts to cultural resources may include the proposed project, recreation, trail and road construction or decommissioning projects. The effect of all impacts will require complete cultural resources review prior to additional undertakings which have the potential to affect cultural resources either independently or cumulatively.

Ketchum RD

Alternative 1—Direct and Indirect Effects

Under Alternative 1, no changes to the SNF Travel Plan Map would occur. The current mileage and density of roads and trails would remain and would likely increase as new user-created routes continue to be established. Direct and indirect affects to known and as yet undiscovered cultural resource sites would likely occur. The Ketchum RD currently has approximately 43 recorded historical/archaeological sites. Unregulated cross-country use has a very high potential to have direct adverse effects to heritage resources. Indirect effects to heritage resources as a result of unregulated travel is also probable. Unregulated travel creates a potential for increased access through, across, and to heritage resource areas which may create a high potential for subsequent effects.

Direct and Indirect Effects Common to Alternatives 2, 3, and 4

Under the Proposed Action, motorized cross-country travel would no longer be allowed. Although there may be potential to affect heritage resources, there is also a higher likelihood that any potential affects could be mitigated. By regulating travel routes, potential uses could be analyzed for potential effects.

Cumulative Impacts

The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of whether an agency or person(s) undertakes such action (43 FR 5600 §1508.7). The potential impacts to cultural resources may include the proposed project, recreation, trail and road construction or decommissioning projects. The effect of all impacts will require complete cultural resources review prior to additional undertakings (site-specific projects) which have the potential to affect cultural resources either independently or cumulatively.

Minidoka RD

Alternative 1—Direct and Indirect Effects

Under Alternative 1, no changes to the SNF Travel Plan Map (USDA 2002) would occur. The current mileage and density of roads and trails would remain and would likely increase as new user-created routes continue to be established. Direct and indirect affects to known and as yet undiscovered cultural resource sites would likely occur. The Minidoka RD currently has approximately 694 recorded historical/archaeological sites, which is the highest site density on the SNF. The Minidoka RD also has the highest unregulated cross-country use. Unregulated cross-country use has a very high potential to have direct adverse affect to heritage resources. Indirect affects to heritage resources resulting from unregulated travel is also probable. Unregulated travel creates a potential for increased access through, across, and to heritage resource areas which may create a high potential for subsequent effects directly to the resource.

Alternatives 2, 3, and 4—Direct and Indirect Effects

Under Alternative 2, motorized cross-country travel would no longer be allowed. Although there may be potential to affect heritage resources, there is also a higher likelihood that any potential effects could be mitigated.

Cumulative Impacts

The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of whether an agency or person(s) undertakes such action (43 FR 5600 §1508.7). The potential impacts to cultural resources may include the proposed project, recreation, trail and road construction or decommissioning projects. The effect of all impacts will require complete cultural resources review prior to additional undertakings which have the potential to affect cultural resources either independently or cumulatively.

Economics

On November 2, 2005, the USFS announced the release of the travel management rule (36 CFR part 212), which governs the use of motor vehicles on NFS lands. This new direction stated:

> *(a) General criteria for designation of National Forest System roads, National Forest System trails, and areas on National Forest System lands. In designating National Forest System roads, National Forest System trails, and areas on National Forest System lands for motor vehicle use, the responsible official shall consider effects on National Forest System natural and cultural resources, public safety, provision of recreational opportunities, access needs, conflicts among uses of National Forest System lands, the need for maintenance and administration of roads, trails, and areas that would arise if the uses under consideration are designated; and the availability of resources for that maintenance and administration.* (36 CFR 212.55, 2007)

Road and Trail Maintenance

In compliance with 36 CFR 215.55 (a) (2007), this section presents the results of the analysis to anticipate the economic effects of route designation activities on the SNF to road and trail maintenance funds and the changes in actual maintenance to roads and trails that can be expected. First, budget trends of road and trail maintenance funds from the fiscal years (FYs) 2001–2007 will be reviewed.

Budget Trends

The final budget allocation for CMRD (construction and maintenance, roads) and CMTL (construction and maintenance, trails) is shown in Table 3-71 and Figure 3-5. The amounts shown do not include dedicated funds, which are designated for specific projects, or the amount of each allocation that covers common costs. The amount shown was actually available for use in construction and maintenance for roads and trails.

As shown in Figure 3-5, road funding has been fairly steady from year to year with the average allocation being $807,000. The budget has been adequate for routine yearly maintenance of native- and gravel-surfaced passenger car roads for road grading, some spot surfacing, and some dust abatement activities. Current funding doesn’t allow for routine maintenance of high-clearance vehicle roads, adequate maintenance of paved roads, or allow bridge replacement on a systematic basis. The result of current funding levels is the slow deterioration of the road system. In some cases, pavements will deteriorate to the point that reconstruction or routine maintenance will not be possible. Some roads may need to be reduced to lower maintenance levels.

Table 3-71. Route funding Fiscal Years 2001–2007.

Fiscal Year	CMRD	CMTL
2001	$857,171	$337,016
2002	$824,266	$198,945
2003	$745,553	$200,705
2004	$774,605	$316,335
2005	$872,219	$382,304
2006	$788,994	$507,525
2007	$787,248	$417,573

Figure 3-5 shows that trail funding has been much more variable than road funding since 2001. From 2003 to 2006 there was a steady upward trend in funding. This reversed in FY 2007.

Figure 3-5 also does not take into account trail maintenance completed by volunteer groups such as the Big Wood Back Country Trails, Backcountry Horsemen, Magic Valley Trail Machine Association, and other groups. The work these groups do on system trails extends the reach of our allocated trail funds. There are no volunteer groups who do road maintenance, although we have cooperative road maintenance agreements with various counties and local road agencies. Under these agreements, the USFS can do maintenance on cooperating agencies' roads and the cooperating agencies may perform maintenance on the USFS road system. These trades allow the agencies to more efficiently complete their work, but they don't add miles of maintenance the way in which the volunteer trail maintenance organizations do.

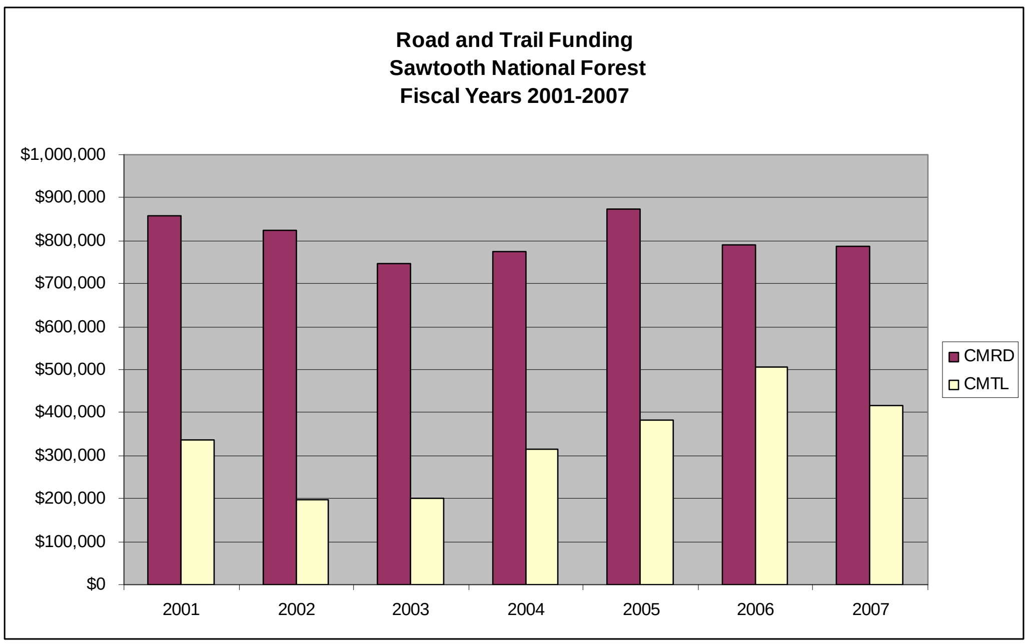

Figure 3-5. Road and trail funding Fiscal Years 2001–2007.

Changes to the Route System

Proposed changes to the SNF route system can be categorized as follows:

- System road changed to system trail
- Non-system road changed to system road
- Non-system trail changed to system trail
- Remove road from system
- Remove trail from system.

Additions to the Trail System are broken down into the following 4 categories:

- Trails open to all vehicles
- Trails open to vehicles 50 in. or less (wide)
- Trails open to motorcycle, bike, horse, and foot traffic
- Trails open to bike, horse, and foot traffic.

Table 3-72 shows the changes to the route system under the proposed action and alternatives. To put these changes in perspective, Table 3-73 shows the current miles of system roads on the SNF and the resulting miles after route designation by alternative. Table 3-74 shows the current miles of system trails on the SNF and the resulting miles after route designation by alternative. Route maintenance money is budgeted at the SNF level. Changes to the road and trail systems due to route designation will affect the entire SNF, so the entire SNF system needs to be considered in this analysis.

Table 3-72. Changes to route system, by alternative, for the route designation EA.

Route category	Alternative 1 (mi)	Alternative 2 (mi)	Alternative 3 (mi)	Alternative 4 (mi)
System road changed to system trail[a]				
Trails open to all vehicles	0	3.6	3.6	3.0
Trails open to vehicles 50 in. or less (wide)	0	13.1	15.3	13.3
Trails open to motorcycle, bike, horse, and foot traffic	0	0	1.3	0
Trails open to bike, horse, and foot traffic	0	0	0	0
Total system road changed to system trail	0	16.7	20.2	16.3
Non-system road changed to system road[a]	0	1.0	2.5	0.8
Non-system trail change to system trail[a]				
Trails open to all vehicles	0	35.3	44.4	13.9
Trails open to vehicles 50 in. or less (wide)	0	55.7	98.9	48.7
Trails open to motorcycle, bike, horse, and foot traffic	0	38.9	60.1	35.7
Trails open to bike, horse, and foot traffic	0	1.3	0	0.6
Total non-system trail changed to system trail[a]	0.0	131.1	203.3	98.8
Remove road from system[a]	0	3.6	2.3	24.0
Remove trail from system[a]	0	15.2	13.1	21.4
Net change to system roads	0	-19.3	-20.1	-39.5
Net change to system trails	0	132.6	210.4	93.7

a. Totals compiled from GIS – Sawtooth National Forest.

Table 3-73. Miles of system roads before and after route designation by alternative.

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Current system roads[a] (mi)	1878	1878	1878	1878
Net change in roads (mi)	0	-19.3	-20.1	-39.5
System roads after route designation (mi)	1878	1858.7	1857.9	1838.5
Change to road system (%)	0	-1.0	-1.1	-2.1
a. USDA 2007b.				

Table 3-74. Miles of system trails before and after route designation by alternative.

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Current system trails[a] (mi)	2174	2174	2174	2174
Net change in trails (mi)	0	+132.6	+210.4	+93.7
System trails after route designation (mi)	2174	2306.6	2384.4	2267.7
Change to trail system (%)	0	+6.1%	+9.7%	+4.3%
a. USDA 2007b.				

It should be noted that while the road system currently contains 1878 mi of road, 141 mi are designated as operational maintenance level 1, which means that they are closed to motorized travel. According to USFS Handbook 7709.58 Level 1 is “assigned to intermittent service roads during the time they are closed to public vehicular travel. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities.”

Effects of Route Designation on Route Maintenance

Table 3-73 shows that all action alternatives will reduce the miles of system roads on the SNF. The difference among the alternatives is very minor. System roads that are converted to system trails will continue to receive maintenance, although that maintenance will be funded differently. Each action alternative changes a small number of non-system roads to system roads, but this is more than offset by the decrease in system road mi due to either conversion to trails or removal from the system. The decrease is not significant enough that changes in road maintenance will be noticeable. Because the direct and indirect effects to route maintenance are so minor, this creates very minor cumulative effects. Thus, cumulative effects are not expected.

The primary road maintenance concern is updating and maintaining route markers and signs. Although the legal mechanism for enforcing route designation will be the MVUM, proper use of signs will be important so that public users will be able to correctly determine which routes are open or closed. Purchasing and installing route markers and signs on both roads and trails should receive more funding and emphasis for the next 3–5 years. After that, funding needs will decrease, but sign maintenance will require steady funding for the long term. Increased funding for sign purchase and maintenance from the USFS allocation will decrease funding available for actual maintenance of routes.

Another maintenance concern of route designation is the number of miles of road that will be removed from the system. As they will no longer be maintained, the roads removed from the system will need to be monitored for erosion and considered for decommissioning if erosion becomes a problem. Alternatives 2 and 3 remove 3.6 and 2.3 mi of road from the system, respectively. Alternative 4 removes 24 mi of road from the system.

Table 3-74 shows that all action alternatives will increase the miles of system trails on the SNF. The budget trend from FYs 2003–2006 could easily support the increase in trail miles for all the action alternatives. The SNF has no way of knowing what future funding trends will be or whether FY 2007 was a funding anomaly. There are opportunities for grants to do trail maintenance, and much of our current trail maintenance is completed by volunteer groups, as previously mentioned. During a lean budget year, fewer miles can be maintained, and the cycle between maintenance may have to increase by a year or two. The current cycle of trail maintenance, on average, for motorized trails is an annual safety maintenance (clearing downed trees) with the trails receiving drainage and tread maintenance every three years. Alternative 3 adds the most miles of trail. Under Alternative 3, if funding remains at 2007 levels, motorized trails would still receive the annual safety clearing while drainage and trail maintenance could be expected to occur on average of every four years. Alternatives 2 and 4 add fewer miles of trail. The majority of trails would still be maintained on a 3-year cycle, while a handful of trails would end up on a 4-year maintenance cycle.

Route designation is anticipated to concentrate motorized use on designated roads and trails as a result of no longer allowing cross-country travel (except in designated areas). Increased route use will increase the needed frequency of maintenance; however, this need is not quantifiable. Some of results of concentrated use will be the need to grade on an increased basis and to conduct spot surfacing of routes.

Table 3-75 shows the anticipated maintenance, by alternative, for the route designation EA.

Table 3-75. Summary of maintenance effects by alternative.

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Road and trail maintenance	No Change	Minor decrease in miles of road requiring maintenance; will NOT be noticeable.	Minor decrease in miles of road requiring maintenance; will NOT be noticeable.	Minor decrease in miles of road requiring maintenance; will NOT be noticeable.
Updating and maintaining route markers and signs.	No Change	Purchasing and installing route markers and signs on both roads and trails should receive more funding and emphasis for the next 3–5 years. After that funding needs will decrease, but sign maintenance will require steady funding for the long term.	Purchasing and installing route markers and signs on both roads and trails should receive more funding and emphasis for the next 3–5 years. After that funding needs will decrease, but sign maintenance will require steady funding for the long term.	Purchasing and installing route markers and signs on both roads and trails should receive more funding and emphasis for the next 3–5 years. After that funding needs will decrease, but sign maintenance will require steady funding for the long term.
Routes removed from system to be monitored for erosion and considered for decommissioning if erosion becomes a problem.	No Change	Future decommissioning needed to prevent resource damage may need to be funded by allocation other than road maintenance	Future decommissioning needed to prevent resource damage may need to be funded by allocation other than road maintenance	Future decommissioning needed to prevent resource damage may need to be funded by allocation other than road maintenance
Increased route use caused increased maintenance needs	No Change	Case-by-Case. Increased grading and possible need for spot surfacing of routes	Case-by-Case. Increased grading and possible need for spot surfacing of routes	Case-by-Case. Increased grading and possible need for spot surfacing of routes

Road Management

Maintenance levels are assigned to all USFS system roads to describe in general terms the type of traffic that uses each road and the level of maintenance intended for the road. The following are excerpts from USFS Handbook 7709.58, 12.2:

- Level 2. Assigned to roads open for use by high-clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level. Appropriate traffic management strategies are either to (1) discourage or prohibit passenger cars or (2) accept or discourage high-clearance vehicles.

- Level 3. Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Roads in this maintenance level are typically low speed, single lane with turnouts and spot surfacing. Some roads may be fully surfaced with either native or processed material. Appropriate traffic management strategies are either "encourage" or "accept." "Discourage" or "prohibit" strategies may be employed for certain classes of vehicles or users.

- Level 4. Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated. The most appropriate traffic management strategy is "encourage." However, the "prohibit" strategy may apply to specific classes of vehicles or users at certain times.

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

Idaho Statutes Sections 49 and 67 (Idaho State Legislature 2007a,b) contain requirements for ATV and motorbike registration and use on and off highways in Idaho, including use on paved and unpaved federal lands. Users who operate ATVs and motorbikes on paved USFS roads must abide by the following requirements:

- Operators must have a valid driver's license

- Vehicle must have valid registration

- Vehicle must display a valid license plate

- Vehicle/driver must be covered by valid liability insurance and proof of liability insurance must be carried in vehicle

- Vehicle must have operating brake light

- Vehicle must use headlight and taillights after dark or during conditions of poor visibility

- Operators under age 18 must wear a helmet

- Vehicle must be equipped with a mirror showing roadway 200 ft behind the vehicle

- Vehicle must be equipped with a horn that is audible at 200 ft.

Users who operate ATVs and motorbikes on unpaved USFS roads must abide by the following requirements:

- Operators must have a valid driver's license
- Vehicle must have valid motorbike/ATV off road sticker OR have valid registration and license display a valid license plate
- Vehicle/driver must be covered by valid liability insurance and proof of liability insurance must be carried in vehicle
- Operators under age 18 must wear a helmet
- Vehicle must be equipped with a muffler and USFS-approved spark arrestor
- Vehicle must use headlight and taillights after dark or during conditions of poor visibility.

All alternatives, including Alternative 1, will require compliance with Idaho law. No mixed use beyond what is currently allowed by the State of Idaho is proposed. Operators on designated roads who are operating within the law are licensed and, therefore, familiar with the rules of the road and safe driving practices. The type of traffic that may legally use USFS roads currently will not change by route designation. ATV and motorcycle traffic on designated roads and trails is expected to increase under Alternatives 2–4 because cross-country travel will be prohibited. The majority of this increased traffic is expected to occur on Level 2 and 3 roads, which are low speed, low traffic roads where the probability of an accident involving a highway vehicle and non-highway vehicle is low. Some of the increased traffic will occur on Level 4 and 5 roads. These are higher speed roads, and they may be paved. Under Idaho law, ATVs and motorbikes that only have an off-road sticker are not allowed on paved roads. This leaves "street legal" vehicles traveling on Level 4 and 5 roads, so the situation is no different than when "street legal" ATVs or motorcycles travel on county roads. ATVs and motorcycles that are not "street legal" but have off-road stickers should only be present on unpaved roads. The road surface is compatible with these types of machines.

Because the SNF is following State law, route designation will not increase threats to public safety. The speed of traffic will not change due to route designation. Volume, composition, and distribution are expected to change, but increases in volume, change in composition of the traffic, and the distribution of these vehicles are expected to occur primarily on Level 2 and 3 roads. These roads are designed for low speeds and have very low traffic levels currently. Route designation will increase the traffic on these roads; however, traffic is not anticipated to increase to levels that will adversely affect public safety.

Access

Of the roads and trails proposed for removal from the system by Alternatives 2, 3, and 4, only one road will affect access to private land. Road 60009 on the Raft River Division of the Minidoka RD currently provides access to private land in T. 14 N., R. 12 W., Section 7; however, this area can also be accessed from private land outside the SNF boundary.

Roads and trails proposed to be added to the system will preserve access currently provided by cross-country travel.

Cross-country motorized use will continue to be authorized, on a case-by-case basis, for activities that are exempt from the Final Rule for Travel Planning (70 FR 216, 2005), such as limited administrative use, emergency and law enforcement response, national defense purposes, and uses specifically authorized under a written authorization (e.g., firewood cutting permit, grazing permit, special use authorization, and mining plans of operations).

The SNF-scale roads analysis completed in conjunction with the SNF Forest Plan identified 84 roads with right-of-way acquisition needs across the SNF. The SNF is not acquiring any right-of-way through route designation, but the public response received during the comment period may help prioritize the needs. As opportunities arise, right-of-ways on the roads identified will continue to be pursued. Methods that the USFS can use to acquire access include easement, purchase, exchange, donation, reciprocal arrangements, cooperative agreements, and condemnation.

Designated routes may be used by users of and residents within SNF boundaries for ingress and egress to and from their property subject to seasonal closures shown on the MVUM and emergency closures put in place to protect resources or provide for public safety.

CHAPTER 4—CONSULTATION AND COORDINATION

The USFS consulted the individuals, federal, state, and local agencies, tribes and non-FS persons identified in Tables 4-1 and 4-2 during the development of this environmental assessment:

Table 4-1. Route designation environmental assessment interdisciplinary team members.

Contributor	Education and Experience	Contribution
Kim Pierson	BSc, Biology, and an MSc, Ecology/Botany, and 7 years with the U.S. Forest Service (USFS)	ID Team Leader and Vegetation Analysis
Ann Frost	BSc, Recreation Resource Management/Geography, and 14 years in Recreation—Minnesota Department of Natural Resources, and 6 years with the USFS	ID Team Leader and Recreation Analysis
Joe Miczulski	BSc, Wildland Recreation Management, and 28 years with the USFS	Recreation Analysis
Zeke Zimmerman	BSc, Recreation, and 29 years with the USFS	Recreation Analysis
Terry Clark	BSc, Forestry, and 30 years with the USFS	Recreation Analysis
Sarah Lau	BSc, Civil Engineering, Licensed Professional Engineer in Idaho, and 17 years with the USFS	Engineering/Roads and Economic Analysis
Terry Hardy	BSc, Soil Science, and 22 years with the USFS	Soils Analysis
Dena Santini	BSc, Biology, Wildlife Emphasis, Graduate work—Biology, 23 years with the USFS	Wildlife Analysis
David Skinner	BSc, Wildlife Resources, and 10 years with the USFS	Wildlife Analysis
Ed Waldapfel	BSc, Forest Management, and 37 years with the USFS (retired)	Public Affairs
Brenda Geesey	BSc and MSc, Forestry, and 19 years with the USFS	GIS/Maps
Jill Kuenzi	BSc, Mathematics and Natural Science, MSc, Wildlife Biology, and 15 years with the USFS	GIS/Maps
John Chatel	BSc, Environmental Biology, MSc, Environmental Biology, and 10 years of professional experience.	Fisheries Analysis
Randy Thompson	MSc, Anthropology, archaeologist for the Caribou-Targhee National Forest 1999–2005, Forest Archaeologist Sawtooth National Forest, August 2005 to present	Heritage Analysis
Sharon LaBrecque	BSc, Wildlife Management, and 26 years with the USFS	National Environmental Policy Act (NEPA) Coordination, EA Reviewer
Carol Brown	BSc, Forestry, and 27 years with the USFS	NEPA Coordination, Contracting Officer’s Representative

Table 4-2. Route designation environmental assessment federal, state, and local agency contributors.

Contributors	Education and Experience	Contribution
Jeff Cook, Outdoor Recreation Analyst	BSc, Wildland Recreation Management, and 16 years with Idaho Department of Parks and Recreation	Recreation
Randy Smith, Wildlife Biologist	BSc, Wildlife Management 1979; MSc, Wildlife Management, 1982, and 23 years with the Idaho Department of Fish and Game	Wildlife Biologist

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APPENDIX A
MAPS