BIOLOGICAL ASSESSMENT
for
THREATENED, ENDANGERED AND PROPOSED SPECIES
on the
FOREST PLAN AMENDMENTS
for
MOTORIZED ACCESS MANAGEMENT
within the
SELKIRK & CABINET-YAAK GRIZZLY BEAR
RECOVERY ZONES

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SUMMARY OF FINDINGS

Implementation of the proposed federal action ***is likely to adversely affect*** grizzly bear and bull trout, ***may affect, but is not likely to adversely affect*** woodland caribou, Canada lynx, gray wolf, and would have ***no effect*** on White Sturgeon, Water Howellia and Spalding's Campion. The proposed action would have ***no effect*** on designated critical habitat for Canada lynx or White Sturgeon, but ***is likely to adversely affect*** critical habitat for bull trout.

CONSULTATION REQUIREMENTS AND HISTORY

In accordance with the Endangered Species Act and its implementing regulations, and FSM 2671.4, the Forest Service (FS) is required to initiate consultation with the U.S. Fish and Wildlife Service (USFWS) with respect to the determination of potential effects on listed species.

The record of consultation for this Forest Plan Amendment is found in Appendix A.

NEED FOR RE-ASSESSMENT BASED ON CHANGED CONDITIONS

The findings of this programmatic BA are based on the best data and scientific information available at the time of preparation. If new information reveals effects that may impact threatened, endangered or proposed species or their habitats, or designated critical habitat in a manner or to an extent not considered in this assessment; if the proposed action is subsequently modified in a manner that causes an effect that was not considered in this assessment; or if a new species is listed or habitat identified that may be affected by the action; a revised Biological Assessment should be prepared and consultation with USFWS reinitiated.

INTRODUCTION

This programmatic Biological Assessment (BA) addresses the effects of amending wheeled motorized access standards and guidelines for the Kootenai (KNF), Idaho Panhandle (IPNF), and Lolo (LNF) National Forests Land and Resource Management Plans (Forest Plans) on all threatened, endangered, and proposed species within-and-around the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones.

Threatened, endangered and proposed species are managed under the authority of the federal Endangered Species Act (PL 93-205, as amended) and the National Forest Management Act (PL 94-588). The Endangered Species Act (ESA) of 1973 declares that all Federal agencies … " utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species listed pursuant to section 4 of this Act." The ESA (Section 7) requires federal agencies to ensure that any actions authorized, funded, or carried out by the agency are not likely to jeopardize the continued existence of any threatened, endangered, or proposed species, or adversely modify critical habitat.

General life history information on these species is provided by a number of scientific papers that are incorporated by reference into this BA. The analyses are based on a review of Forest and District records, a thorough review of the best relevant scientific information, a consideration of responsible opposing views, an acknowledgment of incomplete or unavailable information and recognition of relevant scientific uncertainty.

BACKGROUND

The purpose and need for action for the Forest Plan amendment originates from several directives to update objective and standards for access management within grizzly bear recovery areas. The overall purpose is to amend Forest plans to include a set of wheeled motorized access and security guidelines to meet our responsibilities under the Endangered Species Act to conserve and contribute to recovery of grizzly bears.

In July 1994, the Interagency Grizzly Bear Committee (IGBC) issued a Task Force Report which directed the IGBC subcommittees from each recovery zone to develop recommended parameters for road densities and core habitat using the best biological information and considering the social and economic impacts. In 1995 and 1996, the USFWS issued an amended Biological Opinion (BO) and Incidental Take Statement on the KNF and LNF Forest Plans, respectively (U.S. Fish and Wildlife Service 1995 and 1996).

The Selkirk/Cabinet-Yaak Subcommittee chartered the Access Management Task Group in July 1996. The Task Group was directed to complete access recommendations by January 1997. This task group met nearly monthly for well over a year. The task group used research by local grizzly bear research scientists Wayne Kasworm (USFWS) and Wayne Wakkinen (Idaho Department of Fish and Game (IDFG)) held several public meetings to discuss the research and understand the social concerns, and completed an effects analysis looking at the social and management impacts to implementing a new access strategy.

The Access Management Task Group presented the final effects analysis from the Wakkinen and Kasworm (1997) report to the Subcommittee in February 1998. The parameters being considered were:

- Open Road Density > 1 mile/square mile (must be 33 percent or less of a Bear Management Unit or BMU),
- Total Road Density > 2 miles/square mile (must be 26 percent or less of a BMU),
- Core Habitat must be at least 55 percent of the BMU, and
- Administrative Use would be restricted to no more than one trip per day on restricted roads.
- The road density calculations would be done by using the "Moving Windows" analysis method.

The Subcommittee put together an Implementation Group to determine how the Forests would proceed with the implementation of the new Rule Set. In September 1998, the Subcommittee decided not to make "final" changes to the Forest Plans at that time, but rather to implement "interim" guidelines to be in place for three years and/or until Forest Plan revisions were completed. The Subcommittee approved the Interim Access Rule Set in December 1998 (Selkirk Cabinet-Yaak Subcommittee of the Interagency Grizzly Bear Committee 1998) and began implementation in January 1999.

In the spring of 1999, the Alliance for the Wild Rockies filed a lawsuit challenging the Kootenai and Idaho Panhandle National Forests implementation of the Interim Rule Set without amending their Forest Plans. The Forests settled the lawsuit in March 2001 and agreed to amend their respective Forest Plans to address grizzly bear management. The Lolo National Forest was not included in this lawsuit; however, they requested to be included in the amendment process so as to update their Forest Plan to provide consistent direction within the Cabinet-Yaak recovery zone.

In April of 2001, the USFWS issued an amended Biological Opinion (BO) and Incidental Take Statement on the IPNF Forest Plan (U.S. Fish and Wildlife Service 2001a). In general, the BO grizzly bear Terms and Conditions adopted the Rule Set access parameters (i.e. OMRD≤33%:TRMD≤26%:Core≥55) for Bear Management Units with >75% Federal ownership and spelled out timelines for implementation, administrative use, and reporting requirements (ibid).

On March 2002, the FS issued a final Environmental Impact Statement (EIS) for amending access standards to the Forest Plans for the KNF, IPNF, and LNF (i.e. the "Access Amendment") (U.S. Forest Service 2002a). In May 2002, the Biological Assessment was sent to the USFWS (U.S. Forest Service 2002b) requesting formal consultation. This document used 2000 data for its baseline information in the individual Bear Management Units. In February 2004, the USFWS produced a BO in response to the request for formal consultation. The BO presented the baseline in the BMUs using more recent 2002 information supplied by the KNF, IPNF, and LNF. In March of 2004, the Record of Decision for the EIS was signed which amended the Forest Plans for the three forests.

Two subsequent lawsuits were filed against the Forest Service and USFWS in November and December of 2004. In August 2006, the Montana District Court ruled in favor of the Forest Service for one of the lawsuits. However, the District Court ruled against the Forest Service in December 2006 on one issue and remanded the matter back to the Forest Service for preparation of a new environmental analysis. That ruling effectively removed the habitat parameter standards established in the March 2004 Record of Decision. Consequently, the standards and analyses in place prior to this Record of Decision (i.e. 2001 BO) again became the levels for effects analysis. These will remain in place until a new amendment EIS and ROD are completed. The USFWS subsequently withdrew its BO in May of 2007 (U.S. Fish and Wildlife Service 2007).

This new Biological Assessment updates the original assessment completed in 2002 using the latest available information. This includes the use of a 2009 road and trail layer, grizzly bear mortality information from 1982-2009, new designations of critical habitat for Canada lynx and bull trout, as well as the most recent biological information for all listed threatened and endangered species.

DESCRIPTION OF PROPOSED ACTION

Alternative E Updated[1], the proposed action, would amend the KNF, IPNF, and LNF Forest Plans to include new wheeled motorized access standards within the Recovery Zone Bear Management Units (BMUs) along with administrative use levels[2] and timelines for implementation. Alternative E Updated removes the existing Forest Plan standards regarding linear open road density and habitat effectiveness and replaces these standards with limits on Open Motorized Road Density (OMRD), Total Motorized Road Density (TRMD), and Core Area. In addition, Alternative E Updated sets linear miles of open and total road standards for areas outside the Recovery Zones that are experiencing recurring use by grizzly bears, i.e. Bears Outside of Recovery Zones or BORZ.

The proposed action also allows for increases in route densities and decreases in core habitat within individual BMUs that exceed the standards for these parameters, but only after all BMUs within the respective Ecosystems included in the Action Area have met their individual access standards.

The proposed action access standards for individual BMUs were developed to provide increased grizzly bear habitat security while allowing management flexibility in response to issues related to public and administrative access, economics, and access and potential development of private inholdings. These standards were determined through consultation with USFWS and grizzly bear research scientists, and reflect the unique biological features and social factors found within specific BMUs. Constraints accounted and deducted for, as they were considered to affect an individual BMUs ability to achieve specific levels of core habitat and total and open motorized route densities included: 1) non-federal land, including corporate timber land, and private land contained within towns and municipalities; 2) public, county, and private roads; 3) some forest roads that function as “through” roads, and therefore, could not be closed without significantly increasing public travel distances between destination points, and popular recreational destinations; and 4) historically and culturally popular recreation destinations (e.g. campgrounds, concentrated fishing locations) with high human use.

Design Elements

I. The following access management standards apply to individual BMUs within the Selkirk Recovery Zone on the IPNF and Cabinet-Yaak Recovery Zone on the KNF, IPNF and portion of the LNF:

   A. The following OMRD, TMRD, and Percent Core standards are established for the BMUs in the Cabinet-Yaak (Table 1) and Selkirk (Table 2) Grizzly Bear Ecosystems:

[1] Please see the Final Environmental Impact Statement (pages 2-15 and 2-16, U.S. Forest Service 2002) for a synopsis of Alternative E.
[2] Administrative use is quantified according to the active Bear Year. Based on local grizzly bear research, the CYRZ Bear Year = April 1 – November 30; SYRZ Bear Year = April 1 – November 15, per Johnson et al. 2008.

Table 1. The proposed action access standards for the Cabinet-Yaak Grizzly Bear Recovery Zone, Kootenai, Idaho Panhandle, and Lolo National Forests.

Bear Management Unit	Access Parameter	Alternative E-Updated Standard	Bear Management Unit	Access Parameter	Alternative E-Updated Standard
1 Cedar	OMRD(%)	15	**12 Newton**	OMRD(%)	45
	TMRD(%)	15		TMRD(%)	31
	CORE(%)	80		CORE(%)	55
2 Snowshoe	OMRD(%)	20	**13 Keno**	OMRD(%)	33
	TMRD(%)	18		TMRD(%)	26
	CORE(%)	75		CORE(%)	59
3 Spar	OMRD(%)	33	**14 NW Peaks**	OMRD(%)	31
	TMRD(%)	26		TMRD(%)	26
	CORE(%)	59		CORE(%)	55
4 Bull	OMRD(%)	36	**15 Garver**	OMRD(%)	33
	TMRD(%)	26		TMRD(%)	26
	CORE(%)	63		CORE(%)	55
5 St. Paul	OMRD(%)	30	**16 E Fork Yaak**	OMRD(%)	33
	TMRD(%)	23		TMRD(%)	26
	CORE(%)	60		CORE(%)	55
6 Wanless	OMRD(%)	34	**17 Big Creek**	OMRD(%)	33
	TMRD(%)	32		TMRD(%)	26
	CORE(%)	55		CORE(%)	55
7 Silver Butte-Fisher	OMRD(%)	26	**18 Boulder**	OMRD(%)	33
	TMRD(%)	23		TMRD(%)	29
	CORE(%)	63		CORE(%)	55
8 Vermillion	OMRD(%)	32	**19 Grouse** (54% Federal)	OMRD(%)	59
	TMRD(%)	21		TMRD(%)	55
	CORE(%)	55		CORE(%)	37
9 Callahan	OMRD(%)	33	**20 North Lightning**	OMRD(%)	35
	TMRD(%)	26		TMRD(%)	20
	CORE(%)	55		CORE(%)	61
10 Pulpit	OMRD(%)	44	**21 Scotchman**	OMRD(%)	34
	TMRD(%)	34		TMRD(%)	26
	CORE(%)	52		CORE(%)	62
11 Roderick	OMRD(%)	28	**22 Mt. Headley**	OMRD(%)	33
	TMRD(%)	26		TMRD(%)	35
	CORE(%)	55		CORE(%)	55

Table 2. The proposed action access standards for the Selkirk Grizzly Bear Recovery Zone, Idaho Panhandle and Kootenai National Forests.

Bear Management Unit	Access Parameter	Alternative E Updated Standard
Blue Grass	OMRD(%)	33
	TMRD(%)	26
	CORE(%)	55
Long-Smith	OMRD(%)	25
	TMRD(%)	15
	CORE(%)	67
Myrtle	OMRD(%)	33
	TMRD(%)	24
	CORE(%)	56
Ball-Trout	OMRD(%)	20
	TMRD(%)	13
	CORE(%)	69
Lakeshore	OMRD(%)	82
	TMRD(%)	56
	CORE(%)	20
Kalispell-Granite	OMRD(%)	33
	TMRD(%)	26
	CORE(%)	55
Sullivan-Hughes	OMRD(%)	24
	TMRD(%)	19
	CORE(%)	61
Salmo-Priest	OMRD(%)	33
	TMRD(%)	26
	CORE(%)	64

B. Parameters for establishing and managing Core habitat in all BMUs:

1. In accordance with IGBC (1998) and S/C-YE Subcommittee (1998) direction, Core areas shall be established for the purpose of providing secure habitat for grizzly bears.

   a. Core Areas[3] include high quality habitat within a BMU that contains no motorized travel routes or high use trails.

   b. Core Areas do not include any gated or restricted roads but may contain roads that are impassable due to re-growth of vegetation, effective barriers other than gates, or placement of logging or forest debris so as to no longer function as a motorized route.

[3] Percent Core Area is the sum of individual "blocks" or polygons of Core Area that are separated spatially from other Core Areas with the BMU. Their distribution and tenure are dependent on the existing transportation system and the history of access management activities within the BMU (e.g. road closures and decommissioning and/or changes from motorized road to non-motorized trail).

c. When possible, Core Areas will be delineated by identifying and aggregating the full range of seasonal habitats that are available in the BMU.

d. The IGBC anticipated that minimum Core Area size might be determined for each recovery zone. For the Selkirk/Cabinet-Yaak Grizzly Bear Recovery Zones, no scientifically-based minimum effective size polygon for Core Area has been determined (Wakkinen and Kasworm 1997), though minimum block sizes of 2-8 mi^2 were suggested. Therefore, discounting small or narrow blocks of Core Area is not prudent at this time. Individual project analyses will disclose the percent and size of Core Areas in each BMU.

e. Once route closures to create Core Areas are established and effective, these Core Areas should remain in place for at least 10 years. Therefore, except for emergencies[4] or other unforeseen circumstances[5] requiring independent section 7 consultation, newly created Core Area shall not be entered for at least 10 years after creation.

f. From the Record of Decision date forward, roads that are closed, decommissioned, or barriered to create Core Area will be put in a condition such that a need for motorized access for maintenance is not anticipated for at least 10 years. Until such closed roads are placed in the above described condition, they will not be considered as contributing to Core Area.

2. Entering Core Area blocks for road decommissioning or stabilization activities:

a. Without further section 7 consultation on grizzly bears, the Forest Service may affect underlying Core Area habitat (i.e., any core habitat that is affected by the subject road and its buffer) within a BMU once per 10-year time frame, and not to exceed one bear year for the sole purpose of completing road decommissioning/stabilization activities on existing closed or barriered roads in Core habitat[6].

b. Subsequent needs to re-enter individual Core Areas within a BMU more frequently than once per decade for reasons other than emergencies shall be handled on a case-by-case basis through standard section 7 consultation procedures. The effects of additional entries will be analyzed pursuant to such project level consultation. Pending the outcome of each analysis, additional measures to minimize potential effects to grizzly bears may be required.

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[4] "Emergencies" as defined by ESA regulations [50 CFR 402.05] and associated policy and handbook direction.

[5] "Unforeseen circumstances" means changes in the circumstances affecting the geographic area covered by the Access Amendment that could not reasonably have been anticipated by the ID Team. Unforeseen circumstances are not intended to include timber harvest, including salvage harvest.

[6] Previous to this direction, some Core Areas were established containing impassable, closed, or barriered roads exhibiting hydrologically unstable conditions such as undersized culverts. This creates a pending resource issue for watershed and fishery concerns. The intent of this Design Element is to respond to these resource threats and to improve the integrity of Core Areas so as not to require future management entry.

3. Routine forest management may be proposed in a Core Area block after 10-years of Core area benefit. However, BMU's must remain at or above the Core standard. Therefore potential losses to existing Core must be compensated with in-kind replacement concurrently or prior to incurring the losses. Such in-kind replacement of Core will be established within the affected BMU in accordance with the direction in Part I.B.1. above. For exceptions, see specialized circumstances outlined in Part I.D. concerning BMUs that exceed standards. Following management, core areas must subsequently be managed undisturbed for 10 years.

C. Parameters for BMUs currently not meeting Core Area, OMRD, and/or TMRD standards:

1. These BMUs are anticipated to be brought up to standards in the following manner: 33 percent of those BMUs currently not meeting one or more standard within each ecosystem are estimated to meet all standards within *three* years of the amendment decision date; 66 percent of those BMUs currently not meeting one or more standard within each ecosystem are estimated to meet all standards within *five* years of the amendment decision date, and 100 percent of those BMUs currently not meeting one or more standard within each ecosystem are estimated to meet all standards within *eight* years of the amendment decision date.

D. For those BMUs currently meeting or exceeding (being better than) the standards for Core Area:

1. Except as provided above for road stabilization projects or emergencies, no reductions in Core habitat without in-kind replacements will be proposed until all BMUs administered by the IPNF, KNF and LNF in the respective ecosystems are up to standard (Tables 1 and 2; which do not include the LeClerc BMU or the Idaho State Lands BMU in the Selkirk Recovery Zone.)

2. Once all BMUs meet standards then subsequent projects which propose to permanently reduce Core Area by roads shall undergo independent section 7 formal consultation.

3. Reductions of Core Area within individual BMUs shall not reduce the Percent Core Area below the standards for the affected BMU without compensating with in-kind replacement concurrently or prior to incurring the losses (see Part I.B.3.)

E. Road use associated with conducting administrative activities:

1. In the Selkirk Ecosystem:

a. Administrative use shall not exceed 57 vehicle round trips per active bear year per road, apportioned as follows: ≤19 round trips in spring (April 1 through June15); ≤23 round trips in summer (June 16 through September 15); and ≤15 round trips in fall (September 16 through November 15).

b. If the number of trips exceeds 57 trips per active bear year in the Selkirk ecosystem, then that road will be considered "open" for analysis and reporting purposes. Likewise, if the number of trips exceeds the allowable ecosystem-specific *seasonal* (spring, summer, fall) vehicle round trips per road, then that road will be considered "open" for analysis and reporting purposes.

2. In the Cabinet-Yaak Ecosystem:

a. Administrative use shall not exceed 60 vehicle round trips per active bear year per road, apportioned as follows: ≤18 round trips in spring (April 1 through June15); ≤23 round trips in summer (June 16 through September 15); and ≤19 round trips in fall (September 16 through November 30).

b. If the number of trips exceeds 60 trips per active bear year in the Cabinet-Yaak ecosystem, then that road will be considered "open" for analysis and reporting purposes. Likewise, if the number of trips exceeds the allowable ecosystem-specific *seasonal* (spring, summer, fall) vehicle round trips per road, then that road will be considered "open" for analysis and reporting purposes.

II. The following access management applies to seven grizzly bear recurring use areas (i.e. BORZ areas) located <u>outside of the Cabinet-Yaak Grizzly Bear Recovery Zone (KNF and IPNF) and Selkirk Grizzly Bear Recovery Zone (IPNF)</u>:

A. The Forests shall ensure no increases in permanent linear miles of open road[7] on National Forest System lands in any individual BORZ, above the baseline conditions identified in Table 3, except in cases where the USFS lacks discretion to prevent road building across USFS lands due to legal or other obligations (examples include, but are not limited to, ANILCA claims, identification of RS2477 thoroughfares). Potential increases in linear miles of open roads must be compensated for with in-kind reductions in linear miles of open road concurrently with, or prior to, project implementation within the same BORZ.

Temporary increases in linear miles of open roads are acceptable under the following conditions:

1. Roads that are closed[8] to public motorized use or roads created or reconstructed to facilitate land management activities that are otherwise closed to public use may be "opened" to the public immediately following completion of all mechanized harvest and post-harvest slash activities requiring use of the road, to allow motorized public use during the bear summer season prior to the fall bear hunt (i.e. June 16 – August 31) for activities such as personal firewood collection. This public access would only be provided in cases where the mechanized harvest and/or post-harvest slash activities occurred during the same active bear year.

[7] Open roads are roads that are open for all or part of the active bear year.
[8] Closed with a closure order and/or some type of closure device such as a gate.

B. The Forest shall ensure no net permanent increases in linear miles of total roads[9] in any individual BORZ area above the baseline conditions identified in Table 3, except in cases where the USFS lacks discretion to prevent road building across USFS lands due to legal or other obligations (examples include, but are not limited to, ANILCA claims, identification of RS2477 thoroughfares, etc.). Otherwise, potential increases in linear miles of total roads must be compensated for with in-kind reductions in linear total road miles concurrently with, or prior to, new road construction or reconstruction of currently bermed or barriered roads.

Temporary increases (not off-set) in linear miles of total roads are acceptable under the following conditions:

1. Newly constructed roads will be effectively gated and will be restricted with a CFR closure clarifying they are not open for public use.

2. These roads[10] shall be closed immediately upon completion of activities requiring use of the road, except as described in Part II. A.1., above. Roads must be closed with a berm, guardrail or other measure that effectively prevents motorized access, and put in a condition such that a need for motorized access for maintenance is not anticipated for at least 10 years.

3. Upon completion of a land management project, linear miles of total roads will be returned to or below the baseline levels contained in Table 3.

C. Timber harvest activities that will occur within multiple watersheds shall be scheduled such that disturbance of grizzly bears resulting from road use is minimized. The appropriate scale for scheduling harvest activities will be determined pursuant to project level consultation.

Table 3. Existing motorized access conditions for Bears Outside of Recovery Zone (BORZ) areas situated on the Idaho Panhandle and Kootenai National Forests.

BORZ Name	Grizzly Bear Ecosystem	Total Size (Acres)	NFS[1] Lands (Acres)	Total Linear Miles of Roads on NFS Lands	Total Linear Miles of Open Roads on NFS Lands
Priest	Selkirk	80,733	75,793	316.4	314.4
Pack River	Selkirk	33,869	28,097	41.9	37.9
Mission-Moyie	Cabinet-Yaak	71,545	58,472	200.3	167.3
Clark Fork	Cabinet-Yaak	101,701	100,223	256.1	176.9
Cabinet Face	Cabinet-Yaak	27,140	26,177	164.1	128.0
West Kootenai	Cabinet-Yaak	173,122	169,705	615.3	315.9
Tobacco	Cabinet-Yaak	287,240	266,947	1,123.9	867.0

[1]National Forest System Lands

III. To ensure the effective implementation of the open road density parameter, at least 30 percent of closure devices (gates and barriers) will be monitored annually within

[9] Includes roads that do not have restrictions on motorized use and roads that are closed to public motorized use.
[10] Includes temporary roads built to facilitate the completion of the project and not intended to be left on the landscape—i.e. typically for 10 years or less) as well as the re-opening of existing bermed or barried road prisms.

the respective ecosystems. Monitoring techniques may include visual checks as well as road counters.

Location

The Selkirk (SRZ) and Cabinet-Yaak (CYRZ) Recovery Zones are two of six grizzly bear recovery zones identified in the Grizzly Bear Recovery Plan (U.S. Fish and Wildlife Service 1993). Located in northwestern Montana, northern Idaho, northeastern Washington, and British Columbia, the two ecosystems encompass approximately 4,560 square miles of habitat. Portions of the KNF, IPNF, LNF and Colville National Forest (CNF), and the Kootenay Lakes Forest District (British Columbia) are included in the two recovery areas. In addition, seven BORZ have been identified as supporting some level of recurring grizzly bear use over the past 15 years. These areas encompass an additional 1,212 square miles of habitat.

This programmatic BA addresses the amendment of the Forest Plans for the KNF, IPNF, and LNF. Therefore, only those portions of the SRZ and CYRZ and their associated BORZ that lie within the boundaries of these three National Forests are analyzed in this document (Figures 1 and 2). This means that the LeClerc BMU[11], the Idaho Department of Lands (IDL) BMU[12], and British Columbian portions of the Selkirk Recovery Zone are not affected by this decision, although grizzly bear habitat and motorized access data is included in this document as supplemental information when available. Likewise the NCDE portion of the KNF, east of Eureka, Montana, is not analyzed or managed by this Forest Plan amendment.

Time Period

This programmatic BA will be valid unless otherwise rescinded by the Forest Service or the USFWS. If a species becomes federally listed or new information becomes available regarding the effects of the proposed activities before the annual review, this BA will be reviewed by appropriate specialists.

[11] The majority of the LeClerc BMU is situated on the CNF, which is responsible for consulting with the USFWS regarding motorized access standards (USDI Fish and Wildlife Service 2001b). Stimson Lumber Company manages approximately 21,000 acres of the land within the LeClerc BMU and has entered into a Conservation Agreement with CNF and the USFWS to minimize adverse affects to grizzly bears (USDI Fish and Wildlife Service 2001c). The 2001c Biological Opinion included Terms and Conditions for no net decrease in Core or increase in TMRD on NFS lands.

[12] The 160,000 square mile Idaho Department of Lands (IDL) BMU is situated east of Priest Lake and is under state jurisdiction. IDL received $563,000 from the USFWS in 2003 to develop a Habitat Conservation Plan (HCP) for this area (USDI Fish and Wildlife Service 2003a). This HCP would take into consideration all threatened and endangered species that may occur in the area (ibid). According to the USFWS, this effort is currently underway (USFWS 2008), with IDFG assisting IDL in efforts to quantify existing road status in 2010 (W. Wakkinen pers. comm. 2010a).

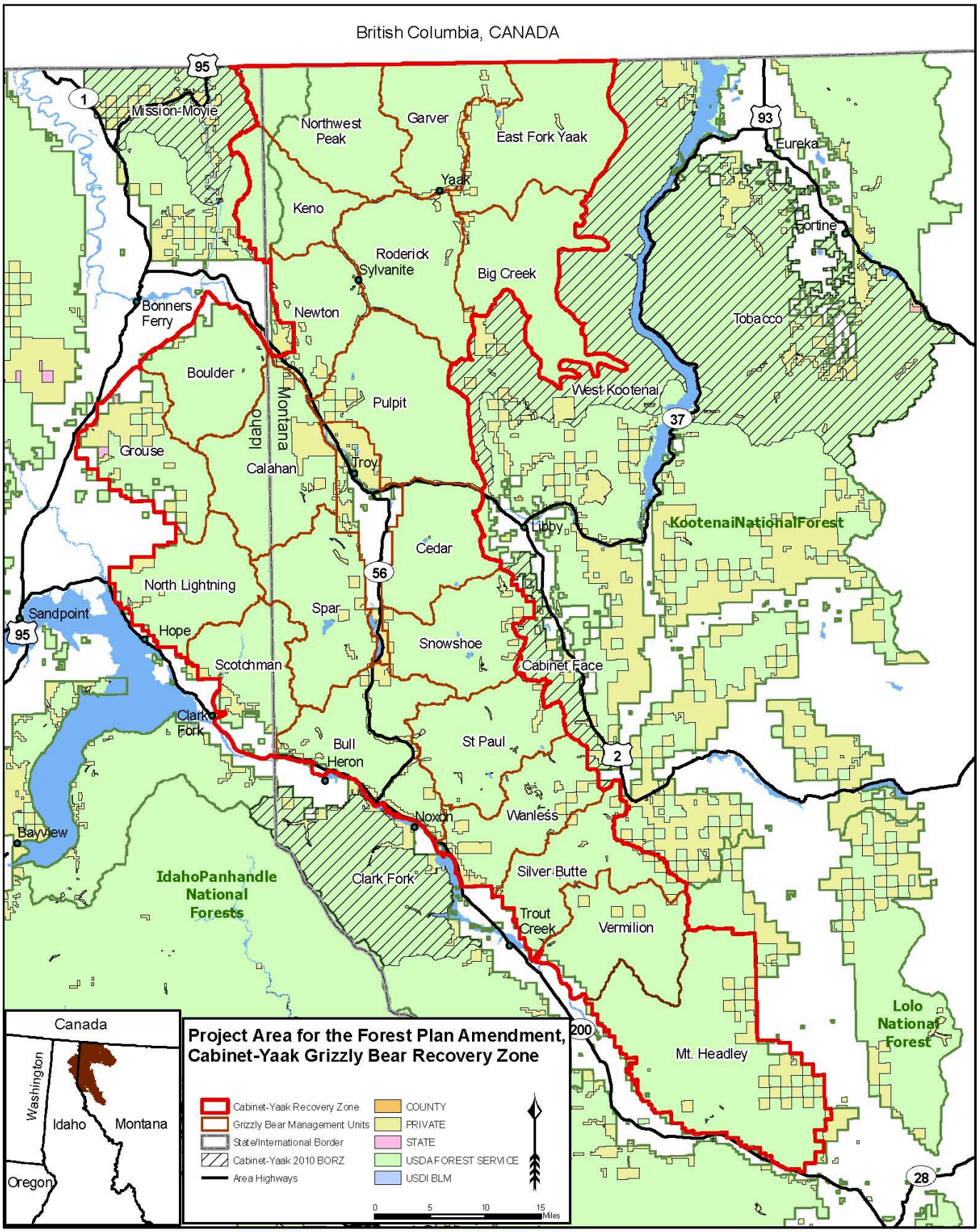

Figure 1. Project Area for the Forest Plan Grizzly Bear Access Amendment, Cabinet-Yaak Grizzly Bear Recovery Area.

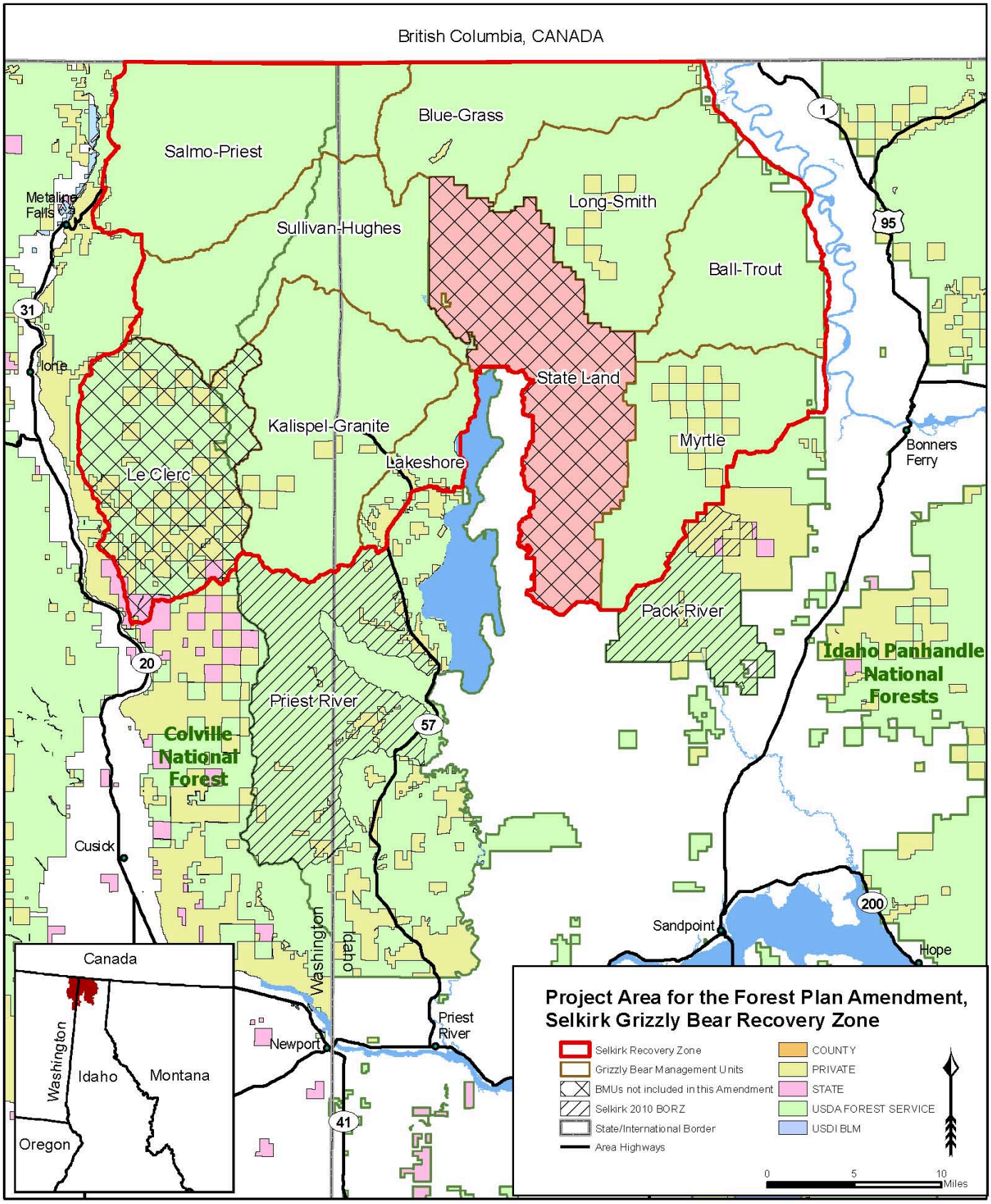

Figure 2. Project Area for the Forest Plan Grizzly Bear Amendment, Selkirk Grizzly Bear Recovery Zone.

SPECIES LIST

A current species list for the KNF and LNF was obtained from the FWS website (http://montanafieldoffice.fws.gov) on August 10, 2010. On February 9, 2009, the U.S. Fish and Wildlife Service issued a list of threatened and endangered species that may be present on the Idaho Panhandle National Forests within the evaluation area (U.S. Fish and Wildlife Service 2009)[13]. This list included the woodland caribou, grizzly bear, gray wolf, and Canada lynx. Species status in the influence area of the proposed project is shown in Table 4.

Table 4: Threatened and Endangered Species found with the Kootenai, Idaho Panhandle, and Lolo National Forests.

SPECIES	ESA STATUS	STATUS IN ANALYSIS AREA[1]
Grizzly Bear (*Ursus arctos horribilis*)	Threatened	Suitable habitat exists and species is known to occur within project area.
Canada Lynx *(Lynx canadensis)*	Threatened	Suitable habitat exists and species is known to occur within project area. Designated critical habitat within the project area.
Gray Wolf *(Canis lupus)*	Endangered	Suitable habitat exists and resident and transient wolves are known to occur within project area.
Woodland Caribou *(Rangifer tarandus caribou)*	Endangered	Suitable habitat exists and species is known to occur within project area.
Bull Trout *(Salvelinus confluentus)*	Threatened	Suitable habitat exists and species is known to occur within project area. Designated critical habitat within the project area.
White Sturgeon *(Acipenser transmontanus)*	Endangered	Suitable habitat exists in the Kootenai River. Majority of habitat outside grizzly bear recovery zones. All critical habitat is located outside recovery zones.
Water Howellia *(Howellia aquatilis)*	Threatened	Suitable habitat exists but species is not known to occur within project area.
Spalding's Campion *(Silene spaldingii)*	Threatened	Currently known to occur on non-National Forest System Lands (NFS) within the KNF boundary. Suspected to occur on NFS Lands.

[1]See Figures 1 and 2 for analysis area.

WILDLIFE SPECIES

Grizzly Bear

Populations of grizzly bears persist in those areas where large expanses of relatively secure habitat exist and where human-caused mortality is low. Grizzly bears are habitat generalists, using a variety of habitats including the coniferous forests of northwestern Montana and northern Idaho. Habitat is generally dictated by food availability and distribution, as well as security from human disturbance and mortality. Because grizzly bears have large home ranges, large areas of secure habitat are required. Grizzlies occupy low-elevation riparian areas, snow chutes, and meadows in the spring and late fall, and move up to higher sub-alpine forests in the summer, early fall and winter. Natural caves or excavated dens, generally above 5,000 feet, are entered after the first snowfall and occupied for four to five months. A majority of their diet is composed of vegetation (forbs, sedges, grasses, roots, berries, pine nuts) but also includes fish,

[13] No changes and still accurate per Bryon Holt, pers. comm. 10/13/2010.

rodents, ungulates and insects. Although relatively long-lived (20-25 years in the wild), the grizzly bear has a low reproductive rate due to the late age of first reproduction (4-7 years), small litter size (typically two cubs), long intervals between litters (three years), and limited cub survival (less than 50 percent).

Additional information on population ecology, biology, habitat description and relationships are described in the Grizzly Bear Recovery Plan (U.S. Fish and Wildlife Service 1993a).

Reference Condition

The grizzly bear was listed as Threatened in 1975. It was originally distributed in various habitats throughout western North America. Today, it is confined to less than two percent of its former range and is represented in five population centers south of Canada, including the Selkirk and Cabinet-Yaak ecosystems which are located in northeastern Washington, northern Idaho, southern British Columbia, and Montana. Its decline is associated with habitat loss and direct and indirect human-caused mortality (ibid). In 1993 and 1999, the USFWS found that reclassification from threatened to endangered in the Cabinet-Yaak and Selkirk ecosystems, respectively, was warranted. However, this reclassification was precluded by work on higher priority species (U.S. Fish and Wildlife Service 1993b and 1999).

A Grizzly Bear Recovery Plan was approved in 1982 and revised in 1993 (U.S. Fish and Wildlife Service 1993a). The recovery plan identified three population status indicators to be used as the basis for recovery in each ecosystem. These indicators focused on ensuring sufficient reproduction to offset existing levels of human-caused mortality, limiting total human-caused mortality, and providing adequate distribution of breeding animals throughout the area. The specific parameters include: (1) number of unduplicated females with cubs seen; (2) the distribution of females with young or family groups throughout the ecosystem; and (3) the number of known human-caused mortalities (ibid). According to the Recovery Plan, the minimum population goal for the Selkirk and Cabinet-Yaak ecosystems is 90 and 100 bears, respectively (ibid).

The recovery zones were divided into areas known as Bear Management Units or BMUs, to facilitate population monitoring and habitat evaluation with each ecosystem. These BMUs assist in characterizing grizzly bear numbers and distribution within each ecosystem as well as analyzing and tracking cumulative effects (Christensen and Madel 1982).

Affected Environment

Recovery Zones

USFWS delineated recovery zones for grizzly bears in the Grizzly Bear Recovery Plan (USFWS 1993a) (Figure 2). The approximately 2,582 square mile CYRZ includes portions of the Kootenai (KNF), Lolo (LNF), and Idaho Panhandle (IPNF) National Forests (Kasworm et al. 2009). The approximately 2,200 square mile SRZ includes portions of the IPNF and Colville National Forests (CNF) as well as 1,034 square miles of habitat in British Columbia (B.C.), Canada. While the CYRZ does not formally extend into Canada, some bears in the CYRZ are known to cross the border during their annual movements. State and private lands are included within both recovery zones, with the SRZ incorporating 174 square miles of habitat on the Idaho Department of Lands (Wakkinen et al. 2009). The Recovery Zones were established to identify the areas needed for recovery of grizzly bears within the 48 conterminous states. (U.S. Fish and

Wildlife Service 1993a). A recovery zone is defined as the area in each grizzly bear ecosystem within which the population and habitat criteria for achievement of recovery will be measured.

Population Status

In the CYRZ, Kasworm et al. (2009) calculated a 2008 minimum population estimate of 47 bears, including a minimum of 18 individuals in the Cabinet Mountains portion of the recovery zone and 29 individuals the Yaak portion of the recovery zone[14]. The population had a 78 percent probability of a downward population trend for this year. Data for the period from 1983 to 1998 suggested an increasing population trend (Wakkinen and Kasworm 2004). However, recent human-caused mortality in and near the CYRZ has been a significant issue and is causing the decline in the rate of increase (Kasworm et al. 2009). Causes of grizzly bear mortality have generally been due to hunter mistaken identity, defense of life, poaching, and management removal due to food attractant on private land (Table 5). Proctor et al. (2004) emphasized that improving survival by reducing human-caused mortality is crucial for recovery of this population.

In the SRZ, the U.S. Fish and Wildlife Service (1999) estimated that there were approximately 46 bears in 1999 by extrapolating previous research (Weilgus et al. 1994) completed on the British Columbia portion of the recovery zone. Wakkinen and Kasworm (2004) estimated that the SRZ grizzly bear population has a 67 percent probability that it is increasing. Wakkinen et al. 2010 states that grizzly bears appear to be increasing in the Selkirk recovery zone both in numbers and distribution based on an increase of sightings of bears, and changes in the distribution of credible sightings (i.e. documented grizzly bear use in areas not previously documented).

More recent estimates for population abundance and density in the SRZ includes efforts using DNA-based hair snares north and south of B.C. Highway 3, in 2005 (Proctor et al. 2007) and 2007 (Wakkinen et al. 2010), respectively. Proctor et al. (2007) estimated an abundance of 58 bears with a density of 16.1 bears/386 square miles for entire the South Selkirk Grizzly Bear Population Unit[15]. Wakkinen et al. (2010) detected fifteen different grizzly bears (nine females, six males) during this effort, including three individuals (one female, two males) that had been previously detected in the 2005 Proctor sampling effort in B.C. They estimated an abundance of 18 bears with a (conservative) density of 9.7 bears/386 square miles[16] for this 466 square mile portion of the recovery zone (ibid).

In the summer of 2010, a five-year DNA-based hair snare effort aimed at quantifying distribution, abundance, and genetic connectivity of grizzly bears, wolves, lynx, fisher and wolverine in the Selkirk Mountains south of the international border was initiated (U.S. Forest Service Rocky Mountain Research Station 2009). This large interagency[17] effort includes the entire SRZ area located in the United States and will provide a robust estimate of distribution, occupancy, abundance, and genetic characteristics of grizzly bears within the ecosystem (ibid).

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[14] Proctor et al. reported a population estimate of 20 grizzlies in the Yahk Grizzly Bear Population Unit north of the international border but outside of the official CYRZ. This work was based on his 2005 DNA-based hair snare project.

[15] The Grizzly Bear Population Unit is larger (=1,571 square miles) than the 752 square mile study area used to sample bears. Proctor et al. (2007) did not include a population estimate for the original study area, but Wakkinen (2010) reported an abundance of 33 individuals with a density estimate of 16.5 bears/386 square miles (16.5 bears/1000 square kilometers) for this 2005 research north of B.C. Highway 3.

[16] Reported as 9.7 bears/1000 square kilometers

[17] U.S. Forest Service Rocky Mountain Research Station, Idaho Department of Fish and Game, Washington Department of Fish and Wildlife, U.S. Forest Service IPNF and CNF, and U.S. Fish and Wildlife Service.

Bear Augmentation: As part of an effort to maintain the existing small population of bears in the Cabinet Mountains, four subadult female grizzly bears were captured in British Columbia and released into the Cabinet Mountains from 1990 to 1994 (USFWS 1990, Servheen et al. 1987). Three of the four bears remained within the area for at least one year. The success of this initial effort resulted in additional augmentations of seven grizzly bears (six females and one male) from 2005-2010 from the North and South Fork of the Flathead River (U.S.) and the Whitefish Mountain Range (Kasworm et al. 2006, Kasworm et al. 2009, Kasworm 2009, and W. Kasworm pers. comm. 2010a, W. Kasworm pers. comm. 2010b). Two of the female grizzlies returned to their capture area in the Whitefish Mountains in 2010 (W. Kasworm pers. comm. 2010c). Augmented animals had no prior history of conflicts with humans (ibid).

Kasworm et al. (2009) also conducted DNA hair-snare work from 2002-2008 in order to examine the fates of the four bears transplanted into the area from the 1990-1994 effort. The results indicated that a two year-old bear released into the ecosystem in 1993 produced at least four offspring and two of those female offspring have also reproduced. Please refer to Kasworm et al. (2006) and Kasworm et al. (2009) for details on the fate of the augmented grizzly bears through 2008.

Augmentation has not been used in the SRZ to date.

Bear Mortality: Grizzly bear mortalities, both natural and human-caused, are important factors limiting the growth of bear populations in the SRZ and CYRZ (U.S. Fish and Wildlife Service 1993a). The mortality goal for both SRZ and CYRZ is zero human-caused mortality (ibid). This goal has not been reached as the number of mortalities has been exceeded during many years since research began in the SRZ and CYRZ in the early 1980s. Table 5 below displays all documented grizzly bear mortalities and their causes for the past 28 years (K. Annis pers. comm. 2010, W. Kasworm pers. comm. 2010d, Wakkinen et al. 2010b)[18] (Appendix B – Grizzly Bear Mortalities for Cabinet-Yaak and Selkirk Recovery Zones, 1982 - 2009). Wakkinen and Kasworm 2004 and Kasworm et al. 2009 provide detailed summaries of the causes and timing of known grizzly bear mortalities by age and sex for the CYRZ (including Canada) for various time periods from 1983-2002 and 1982-2008, respectively.

Of the 90 human-caused mortalities that have been documented within-and-around the SRZ and CYRZ since 1982, 76 percent (68 total) were ascribed a known cause of death. Management removal of bears involved in human health and safety issues and bears killed due to sanitation issues, poaching, or mistaken identity during hunting accounted for 75 percent (51 total) of this subset of 68 known human-caused mortalities. Seventy-six percent of grizzly bears killed under the management removal category occurred in British Columba, with at least seven of these mortalities associated with food attractants. Mortalities on NFS lands were typically due to mistaken bear identification, poaching, or self defense often associated with big game hunting activities.

[18] This includes mortalities that occurred within the SRZ and CYRZ boundaries and a 10 air-mile area surrounding both the SRZ and CYRZ. This data is largely based on radio-collared animals, and as such, represents an incomplete picture of the total mortality occurring within the populations. For instance, almost all of the natural mortalities are derived from collared bears, while many of the human-caused mortalities represent a combination of radio-collared mortalities and mortalities reported by the public or documented during some law enforcement action (e.g., mistaken identity of poaching). *"We miss both human-caused and natural mortalities, but I'd bet the percentage of natural mortalities we miss is very different (higher) than the percentage of human-caused mortalities".* Therefore, direct comparisons of the percentage of human-caused mortality to total mortality are inappropriate (W. Wakkinen pers. comm. 2008). McLellan et al. (1999) and Cherry et al. (2002) provide methods and rationale for calculating total mortality to account for unreported mortalities.

Table 5. Number of Known Grizzly Bear Mortalities by Cause from 1982 through 2009 (K. Annis pers. comm. 2010, W. Kasworm pers. comm. 2010, W. Wakkinen et al. 2010).

Type of Mortality[1]	Cabinet-Yaak Ecosystem[2]			Selkirk Ecosystem[3]				Total
		United States			United States			
	British Columbia (BC)	KNF LNF IPNF	Other[4]	British Columbia (BC)	IPNF	CNF	Other[4]	
Natural – conspecific predation[5]	0	3	0	2	0	0	0	5
Natural - other	4	7	0	2	3	0	0	16
Subtotal (natural)	4	10	0	4	3	0	0	21
Human - poaching	0	2	6	2	2	3	0	15
Human – mistaken identity	0	3	2	0	4	0	0	9
Human – self defense	2	4	0	1	0	0	0	7
Human - management removal/sanitation	0	0	4	16	0	0	1	21
Human-legal hunting (BC only)	3	0	0	6	0	0	0	9
Human – trapping (for other spp)	1	0	0	0	0	0	0	1
Human-research	1	1	0	0	0	0	0	2
Human-train collision	0	0	3	0	0	0	0	3
Human-motor vehicle	0	0	0	1	0	0	0	1
Human-unknown	1	3	2	6	5	1	4	22
Subtotal (human)	8	13	17	32	11	4	5	90
Unknown	0	1	0	1	1	0	0	3
Total	12	24	17	37	15	4	5	114

[1] Type of Mortality – some of these mortalities could be categorized into more than one type of human-caused mortality. See Appendix B for details.
[2] The official recovery zone is located in the United States only.
[3] The official recovery zone includes habitat in the United States and British Columbia.
[4] Includes private, state, and railroad lands
[5] Conspecific = grizzly bears killing grizzly bears

Mortality Trends and Access Management: A review of grizzly bear mortality over time provides some insights into the question of whether or not grizzly bear mortality has decreased since the implementation of access management strategies on NFS lands (Table 6 and 7). Known grizzly deaths were categorized into three separate time periods to represent significant changes in access management approaches on NFS lands: 1) pre-1987, which reflects a lack of any access management strategies associated with the Forest Plans; 2) 1987 to 1998, which reflects implementation of respective Forest Plan habitat security measures (i.e. habitat effectiveness attained via a gate closure program instituted in the late 1980's and early 1990's)

and associated limits on administrative use behind these gates; and 3) 1999 to 2009, which reflects the time period after implementation of the Interim Rule Set (SCYE IGBC Subcommittee 1998). The latter resulted in more permanent road closures and additional miles of gated (restricted) roads.

Three human-caused grizzly bear mortalities were recorded for the CYRZ between 1982 and 1986, prior to the application of wheeled motorized vehicle access strategies (Table 6). During the next 12-year period (1987 to 1998), nine of the twelve grizzly bear mortalities were determined to be human-caused, while 26 of the 38 deaths within the last eleven years (1999 to 2009) were categorized as human-caused (K. Annis pers. comm. 2010, W. Kasworm pers. comm. 2010). Over the last 28 years, the average number of known grizzly bear mortalities per year and time period has increased from 0.66 during 1982 to 1986, to 2.91 bears per year during 1999 to 2009. Mortalities resulting from human causes averaged 0.60 bears killed per year during 1982 to 1986, to 2.36 bears killed per year during 1999 to 2009 (Table 6). Most human-caused mortalities occurred during the fall season.

Table 6. History of known grizzly bear mortalities within-and-around the CYRZ, by time period and land ownership, 1982-2009 (K. Annis pers. Comm. 2010, W. Kasworm pers. Comm. 2010).

Time Period	Known Grizzly Bear Mortalities Total # / Ave. # Killed Per Year		Human-Caused Mortalities by Land Ownership Total # / Average # Killed Per Year (Percent of Total # of Human-Caused Mortalities) [1]		
	Overall	Human Caused	NFS Lands	Non-NFS Lands	Canada[2]
1982-1986	4 / 0.66	3 / 0.60	3 / 0.60 (100%)[3]	0 / 0 (0 %)	0 / 0 (0 %)
1987-1998	12 / 1.00	9 / 0.75	5 / 0.42 (56%)[4]	1 / 0.08 (11%)[5]	3 / 0.25 (33%)
1999-2009	37 / 2.91	26 / 2.36	5 / 0.46 (19%)	16 / 1.46 (62%)	5 / 0.46 (19%)
Totals	53 / 1.89	38 / 1.36	13 / 0.34 (34%)	17 / 0.61 (45%)	8 / 0.29 (21%)

[1] Percentages are useful for comparing *within time periods only*, due to differences in the length of time represented by each of three time periods.
[2] Includes private and public lands. The official Cabinet-Yaak Recovery Zone does not extend into Canada.
[3] Includes one (1) mortality that occurred outside of the CYRZ.
[4] Includes two (2) mortalities that occurred outside of the CYRZ.
[5] Includes one (1) mortality that occurred outside of the CYRZ.

There is an apparent decreasing trend in mortalities occurring on NFS lands over time. This is true both in terms of the average number of bears killed per year among time periods, and the percentage of human-caused mortality within each time period. Conversely, there is a corresponding increase in both of these parameters on non-NFS lands (Table 6) (Figure 3). Additionally, human-caused mortality in Canada immediately north of the official CYRZ has also increased in terms of the average number of bears killed per year, with at least 19 percent of the mortality occurring there during the last two time periods under review (Table 6) (Figure 3). Since 1999, 81 percent of the known human-caused grizzly bear mortality has occurred on non-NFS lands in this ecosystem.

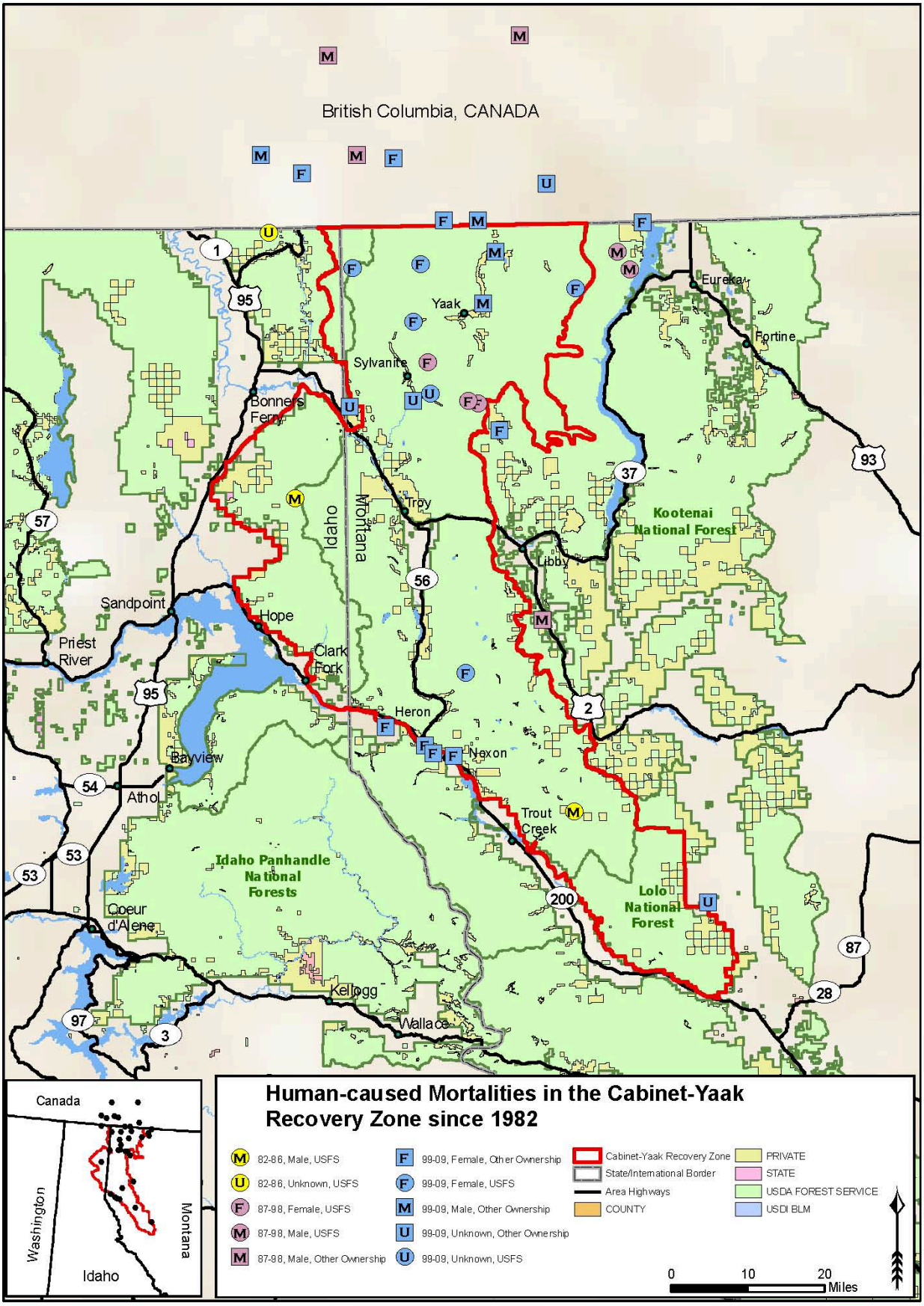

Figure 3. Human-caused Grizzly Bear mortalities in the Cabinet-Yaak Recovery Zone since 1982

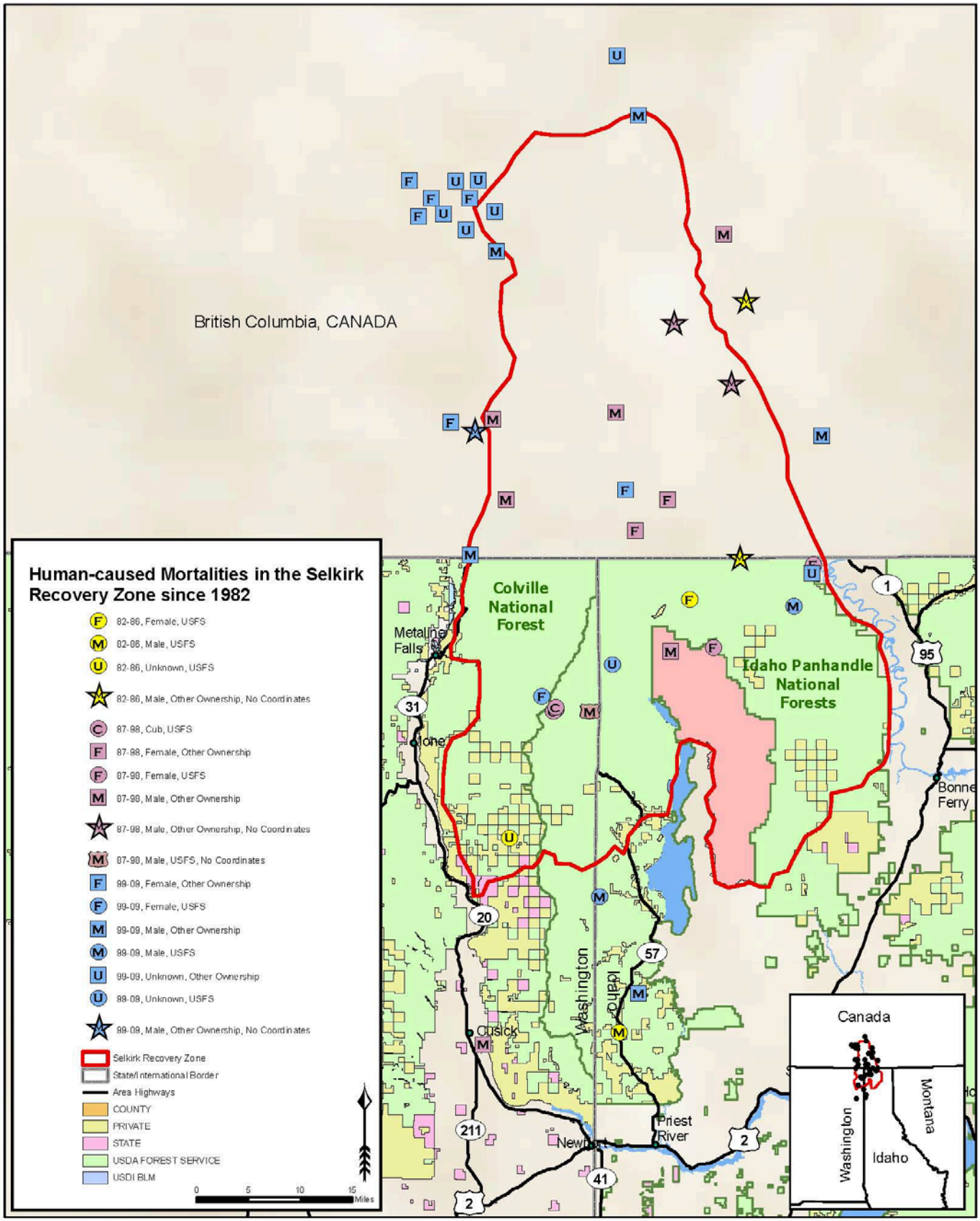

Figure 4. Human-caused Grizzly Bear mortalities in the Selkirk Grizzly Bear Recovery Zone.

These observations are consistent with grizzly bear survival modeling in the Greater Yellowstone Ecosystem which suggested that survival was highest in the National Park followed by areas in the Recovery Zone outside the park (primarily NFS lands), and lowest outside the Recovery Zone (Haroldson et al. 2006). A subsequent modeling effort demonstrated that the survival of grizzly bears was best explained by the amount of human development and ungulate hunting that occurred within the home ranges of bears (Schwartz et al. 2010).

Five human-caused grizzly bear mortalities were recorded for the SRZ between 1982 and 1986, prior to the application of any wheeled motorized vehicle access strategies (Table 7). During the next 12-year period (1987 to 1998), 21 of the 27 grizzly bear mortalities were categorized as human-caused, while the last eleven years (1999 to 2009) saw 26 of the 28 known grizzly deaths determined to be human-caused (Wakkinen pers. comm. 2010). Over the last 28 years, the average number of known grizzly bear mortalities per year and time period has increased from 1.20 during 1982 to 1986, to 2.55 bears per year during 1999 to 2009. Mortalities resulting from human causes resulted in an average of 1.00 bears killed per year during 1982 to 1986, to 2.36 bears killed per year during 1999 to 2009.

Table 7. History of known grizzly bear mortalities within-and-around the SRZ, by time period and land ownership, 1982-2009 (W. Wakkinen et al. 2010).

Time Period	Known Grizzly Bear Mortalities Total # / Ave. # Killed Per Year		Human-Caused Mortalities by Land Ownership Total # / Average # Killed Per Year (Percent of Total # of Human-Caused Mortalities)[1]		
	Overall	Human Caused	NFS Lands	Non-NFS Lands	Canada[2]
1982-1986	6 / 1.20	5 / 1.00	4 / 0.80 (80%)	0 / 0 (0%)	1 / 0.20 (20%)
1987-1998	27 / 2.25	21 / 1.75	7 / 0.58 (33%)	1 / 0.33 (5%)	13 /1.08 (62%)
1999-2009	28 / 2.55	26 / 2.36	4 / 0.36 (15%)	4 / 0.36 (15%)	18 / 1.64 (70%)
Totals	61 / 2.18	52 / 1.86	15 / 0.55 (29%)	5 / 0.19 (10%)	32 / 1.19 (62%)

[1] Percentages are useful for comparing *within time periods only*, due to differences in the length of time represented by each of three time periods.
[2] Includes private and public lands. The SRZ grizzly bear population and recovery zone extends into Canada.

Like the CYRZ, there is an apparent decreasing trend in mortalities occurring on NFS lands during the three time periods for the SRZ. This is true both in terms of the average number of bears killed per year by time period, and the percentage of human-caused mortality within each time period. And, like the CYRZ, there is a corresponding increase in these two parameters on non-Forest Service lands (Table 7) (Figure 4). Additionally, human-caused mortality on the Canadian side of the SRZ increased in terms of the average number of bears killed per year with more than 62 percent of the mortality occurring there since 1987 to 1998 time period (Table 7) (Figure 4). At least one-third of this British Columbia mortality is from female grizzly bears. Since 1999, 85 percent of the known human-caused grizzly bear mortality has occurred on non-NFS lands in this ecosystem.

This mortality data may indicate that grizzly bear habitat conditions, as related to roads, have improved in the SRZ and CYRZ since the application of wheeled motorized vehicle access strategies began. This is likely one factor contributing to the apparent shift in average bears

killed per year and overall percentage of grizzly bear mortalities from NFS lands to private lands and areas immediately north in British Columbia. Implementing wheeled motorized vehicle access management standards, even if more restrictive, will not completely remove grizzly bear mortality risk in the SRZ and CYRZ due to the presence of other risk factors such as big game[19] hunting, sanitation and agricultural food attractants, and human attitudes toward the grizzly bear. Please see pages 50-51 for details on these topics as part of the environmental baseline.

Mortality and Distance from Open Roads: The relationship between grizzly bears and roads has been studied extensively (i.e., Aune and Kasworm 1989, Kasworm and Manley 1990, Mace and Manley 1993, Mace et al. 1996, Mace and Waller 1997, Mattson et al. 1987, McLellan and Shackleton 1988, Wakkinen and Kasworm 1997, Schwartz et. al 2010). Roads can have several effects on grizzly bears, including contributing to direct mortality from vehicle strikes. Of the 90 known human-caused mortalities that have occurred within the SRZ and CYRZs, 71 percent (64 total) have occurred near open roads (less than 500 meters), while another 14 percent (13 total) occurred in areas away from open roads (greater than 500 meters) (Table 8). The remaining 14 percent (13 total) human-caused mortalities were not ascribed a known distance from an open road[20].

Table 8. Proximity of known human-caused mortalities (total = 90) to open roads by distance category land ownership, and recovery zone, from 1982 through 2009 (K. Annis pers. comm. 2010, W. Kasworm pers. comm. 2010, and W. Wakkinen et al. 2010).

Distance from Open Road (meters)	Total Human Caused Mortalities	NFS within Recovery Zones		NFS outside Recovery Zones		British Columbia		Private, State, & Railroad Lands	
		CYRZ	SRZ	CYRZ	SRZ	CYRZ	SRZ	CYRZ	SRZ
< 500	64	5	6	4	0	10	24	12	3
>500	13	5	5	0	0	0	2	1	0
Unknown	13	0	4	0	0	0	6	1	2
Total	90	10	15	4	0	10	32	14	5

However, while management of roads is one of the tools available to balance the security needs of grizzly bears with the activities of humans (U.S. Fish and Wildlife Service 1993a), it is important to note that tighter access restrictions on NFS lands would not have prevented the vast majority of past human-caused mortalities that occurred in-and-around the SRZ and CYRZs. For instance, 71 percent (64 total) of all documented human-caused grizzly bear mortalities occurred in British Columbia, on private, state, or railroad lands, or areas on the National Forest that were outside of the recovery area boundaries. A closer look at the available data reveals that 71 and 82 percent of known human-caused mortality occurring within 500 meters of an open road within the CYRZ and SRZ, respectively, takes place on private and Crown lands in British Columbia, and private or state lands within the United States that provide no or only limited restrictions on motorized access. These mortalities often include other contributing factors such as attractants for bears from human foods, garbage, and/or agricultural operations (Table 8). Another 13 percent (4 total) of human-caused mortalities occurred within 500 meters of open roads on NFS lands located outside of the CYRZ boundaries.

[19] Including ungulate and black bear

[20] Only 9 percent (1 total) of natural mortalities occurred within 500 meters of an open road, while another 36 percent (4 total) occurred at distances greater than 500 meters. However, most (55 percent or 6 total) natural mortalities were of an unknown distance from an open road. A comparison of human-caused versus natural mortality distance from open roads is inappropriate due to the differences in how data was collected for these two categories of mortality data (see Footnote 2).

This data supports Mace et al. (1996) contention that "*access management through road use restrictions on multiple-use lands will be of limited mitigative value if habituation and mortality levels are not minimized on or adjacent to private lands*". In the case of these two grizzly bear ecosystems, mortality on non-federal lands and in British Columbia, contributes to the majority of bear deaths for the CYRZ and SRZ, respectively.

Demographic Recovery Plan Targets – **Cabinet-Yaak Recovery Zone:** Tables 9 and 10 display the annual population and known human-caused mortality data for the CYRZ based on the 1993a grizzly bear recovery plan criteria including: (1) minimum unduplicated counts of females with cubs; (2) distribution of females with young; and (3) known human-caused mortalities (U.S. Fish and Wildlife Service 1993a). Data was provided by Kasworm pers. comm. 2010e. A status report of all captured grizzly bears in the Cabinet-Yaak ecosystem from 1999-2008 is included in Kasworm et al. 2009 and Kasworm 2009.

Table 9. Annual grizzly bear population and mortality data for the Cabinet-Yaak Recovery Zone, 1988-2008 (from Kasworm pers. comm. 2010e).

Year	Annual Females w/Cubs	Annual Adult Female Mortality	Annual All Female Mortality	Annual Total Mortality	4% Total Mortality Limit[1]	30% All Female Mortality Limit	Total Mortality 6-Year Average	Female Mortality 6-year Average
1988	1	1	1	1	0	0	-	-
1989	0	0	1	1	0	0	-	-
1990	1	0	0	1	0	0	-	-
1991	1	0	0	0	0	0	-	-
1992	1	0	0	0	0	0	-	-
1993	2	0	0	0	0.9	0	0.5	0.3
1994	1	0	0	0	0.9	0.5	0.3	0.2
1995	1	0	0	0	0.9	0.3	0.2	00
1996	1	0	0	1	0.7	0.2	0.2	0
1997	3	0	0	1	1.2	0.2	0.3	0
1998	0	0	0	0	0.9	0.3	0.3	0
1999	0	0	0	1	0.7	0.3	0.5	0
2000	2	0	1	1	0.5	0.5	0.7	0.2
2001	1	1	2	2	0.5	0.7	1.0	0.5
2002	4	1	4	5	1.2	1.0	1.7	1.2
2003	2	0	0	0	1.2	1.7	1.5	1.2
2004	1	0	0	0	1.4	1.5	1.5	1.2
2005	1	0	2	3	0.9	1.8	1.8	1.5
2006	1	0	0	0	0.7	1.7	1.7	1.3
2007	4	1	1	1	1.2	1.5	1.5	1.2
2008	3	0	0	1[2]	1.6	0.8	0.8	0.5
2009	2	1	1	1	1.6	0.5	1.0	0.7

[1]Grizzly bear numbers are currently so small in this ecosystem that the mortality goal should be zero known human-caused mortalities.
[2]The sex of this mortality was not known at the time of Kasworm et al.'s report.

Table 10. Status of the Cabinet-Yaak Recovery Zone from 2004 to 2009 in relation to the demographic recovery targets (Kasworm pers. comm. 2009e).

Delisting Parameter	Delisting Target	2009 Status
Females w/Cubs (6-year average)	≥6.0	2.0
Mortality Limit (4% of minimum estimate & 6-year average)	1.6	1.0
Female Mortality Limit (30% of total mortality & 6-year average)	0.5	0.5
Distribution of Females w/Young	18 of 22 BMUs[1]	11 of 22 BMUs[2]

[1]BMUs = Bear Management Units. Please see page 28 for details.
[2]Snowshoe (2), Spar (3), Bull (4), St. Paul (5), Wanless (6), Roderick (11), Keno (13), NW Peak (14), East Fork Yaak (16), Big Creek (17), and Boulder (18) BMUs were occupied by family groups in 2009.

Demographic Recovery Plan Targets – Selkirk Recovery Zone: Tables 11 and 12 display the annual population and known human-caused mortality data for the SRZ from 1995 – 2009 based on the updated grizzly bear recovery plan (U.S. Fish and Wildlife Service 1993a) criteria including: (1) minimum unduplicated counts of females with cubs; (2) distribution of females with young; and (3) number of known, human-caused mortalities (U.S. Fish and Wildlife Service 1993a). Data was provided by Wakkinen et al. 2009 who noted "*that the ability to monitor the population has declined due to funding limitations and the reduction in trapping and radio collaring activities"* in the recovery area. A status report of all captured grizzly bears in the Selkirk Mountains from 2000-2009 is included in Wakkinen et al. 2010.

Table 11. Annual grizzly bear population and mortality data for the Selkirk Recovery Zone, 1988-2008 (from Wakkinen and Johnson 2003 and Wakkinen et al. 2010).

Year	Annual Females w/Cubs	Annual Adult Female Mortality	Annual All Female Mortality	Annual Total Mortality	4% Total Mortality Limit	30% All Female Mortality Limit	Total Mortality 6-Year Average	Female Mortality 6-year Average
1988	0	0	1	2	-	-	-	-
1989	4	0	0	0	-	-	-	-
1990	1	0	1	2	-	-	-	-
1991	1	0	0	0	-	-	-	-
1992	1	1	1	2	-	-	-	-
1993	1	1	2	5	0.2	0.1	1.8	0.8
1994	1	0	0	1	0.2	0.1	1.7	0.7
1995	1	0	1	2	0.4	0.1	2.0	0.8
1996	1	0	0	1	0.6	0.2	1.8	0.7
1997	1	0	0	1	0.6	0.2	2.0	0.7
1998	1	0	0	1	0.6	0.2	1.8	0.5
1999	1	0	0	3	0.4	0.1	1.5	0.2
2000	2	0	0	0	0.6	0.2	1.3	0.2
2001	2	0	0	1	0.8	0.2	1.2	0
2002	0	1	2	6	0.6	0.2	2.0	0.2
2003	1	1	3	4	0.2	0.1	2.5	0.8
2004	1	0	0	1	0.2	0.1	2.5	0.8
2005	1	0	0	1	0.2	0.1	2.3	0.8
2006	0	1	2	4	0.2	0.1	3.0	1.2
2007	0	2	2	3	0	0	3.3	1.5
2008	0	0	0	1	0	0	2.5	1.2
2009	0	0	0	0	0.0	0.0	1.8	0.7

Table 12. Status of the Selkirk Recovery Zone from 2004 to 2009 in relation to the demographic recovery targets (Wakkinen et al. 2010).

Delisting Parameter	Delisting Target	2009 Status
Females w/Cubs (6-year average)	≥6.0	0.3
Mortality Limit (4% of minimum estimate & 6-year average)	0	1.8
Female Mortality Limit (30% of total mortality & 6-year average)	0	0.7
Distribution of Females w/Young	7 of 10 BMUs[1]	0 of 10 BMUs[2]

[1]BMUs = Bear Management Units. Please see page 28 for details.
[2]There were no observations of family groups in the BMUs in 2009 due in part to the lack of radio-collared grizzly bears in the U.S. portion of the recovery zone. However, Myrtle, Sullivan-Hughes, Long-Smith, and Kalispell-Granite BMUs were occupied by family groups in 2008 (Wakkinen et al. 2009).

Active Bear Year

The "active bear year" (time when a grizzly bear is active – i.e. not in the den) for the CYRZ will be April 1 through November 30. The "active bear year" was previously established as April 1 through November 15 for both the Selkirk and Cabinet-Yaak Recovery Zones. The date of November 15th was a management decision that reflected road closure dates in place at that time (SCYE IGBC Subcommittee Interim Rule Set 1998). A recent review of chronology data on den entrance and exit dates resulted in a refinement of the definition for the Cabinet-Yaak ecosystem. Specifically, a review of the data revealed that 82 percent of all bears were in the den by November 30th while 92 percent of all bears were in the den by December 14th. When just females are considered, 77 percent and 95 percent are in the den by 11/30 and 12/7, respectively (Johnson 2008). While a date at the end of the first week of December would be in line with 95 percent of the female den entry dates, using the date of November 30th would provide protection during the hunting season, when human-caused mortality risk would be higher. That date matches well with existing hunting seasons and the current start date for use of motorized over-snow vehicles on roads otherwise closed to motorized vehicles on the Montana portion of the CYRZ (i.e. December 1st). This change is expected to protect an additional 44 percent of females from potential disturbance immediately prior to denning (ibid).

The Yellowstone and Northern Continental Divide ecosystems use November 30th as the ending date for their bear year. Using this ending date would make it consistent across three ecosystems. Making the active bear year consistent throughout the entire Cabinet-Yaak ecosystem (both in Montana and Idaho) affects the way that administrative use on restricted roads is calculated and administered. See page 32 for details on administrative use.

A review of the available grizzly bear denning data in the Selkirk ecosystem indicated that 89 percent (23 out of 25 denning events) of all female grizzlies were in the den by 11/15. The remaining two female denning events occurred by 11/30 and a decision was made not to change the date. Therefore, the "active bear year" for the Selkirks remains at April 1 – November 15th (U.S. Forest Service and U.S. Fish and Wildlife Service 2008a and 2008b).

Bear Management Units (BMUs)

To facilitate management, each recovery zone is divided into BMUs, each of which is approximately the home range size of an adult female grizzly bear (average size about 100 square miles) (Christensen and Madel 1982) (Figure 5). Development of individual BMUs takes into consideration five different management situation designations. The direction for the

different management situation designations is summarized as follows (U.S. Forest Service 1986 and U.S. Fish and Wildlife Service 1993a):

- Management Situation I (MS 1) areas are to be managed for grizzly bear habitat maintenance and improvement and the minimization of grizzly-human conflict. Management decisions will favor the needs of the grizzly bears when grizzly bear habitat and other land use values compete.
- Management Situation II (MS2) areas are where grizzly bear are an important, but not necessarily the primary use of, the area. In some cases, habitat maintenance and improvement may be important management considerations. Minimization of grizzly bear-human conflict potential is a high management priority.
- Management Situation III (MS3) areas contain no suitable habitat for grizzlies, and their presence is possible but infrequent. Grizzly bear habitat maintenance and improvement are not management considerations. Grizzly bear use of such areas will be discouraged, and management within these areas will encourage measures that minimize the potential for human-bear conflict. These areas include developments, such as campgrounds, resorts or other high human use associated with facilities where human presence results in conditions which make grizzly presence untenable for humans and/or grizzlies.
- Management Situation IV (MS4) areas contain potentially suitable habitat for grizzly occupancy and the area is needed for the survival and recovery of the species. Grizzlies do not currently occur in the area. Habitat and human conditions making the area suitable for grizzly occupancy will not be degraded pending decisions regarding reestablishment of grizzlies.
- Management Situation V (MS5) areas contain unsuitable or unavailable habitat for grizzlies but grizzlies do not occur or only rarely occur. The area lacks survival and recovery values for the species or values are unknown.

The Forest Service identified only Management Situations (MS) 1, 2, and 3 throughout the two Recovery Zones during their forest planning efforts in the 1980s. In the SRZ, the U.S. Forest Service and U.S. Fish and Wildlife Service delineated MS 1, 2, and 3 in the newly created Kalispell-Granite and Lakeshore BMUs in 1991 (Servheen et al. 1991). The Interagency Grizzly Bear Guidelines lists eight elements on how to minimize grizzly bear-human conflict potential as it relates to wildlife management (U.S. Forest Service 1986). If the guidelines are met, then the management direction for each management situation is met. Appendix C displays these elements for MS 1 through 3.

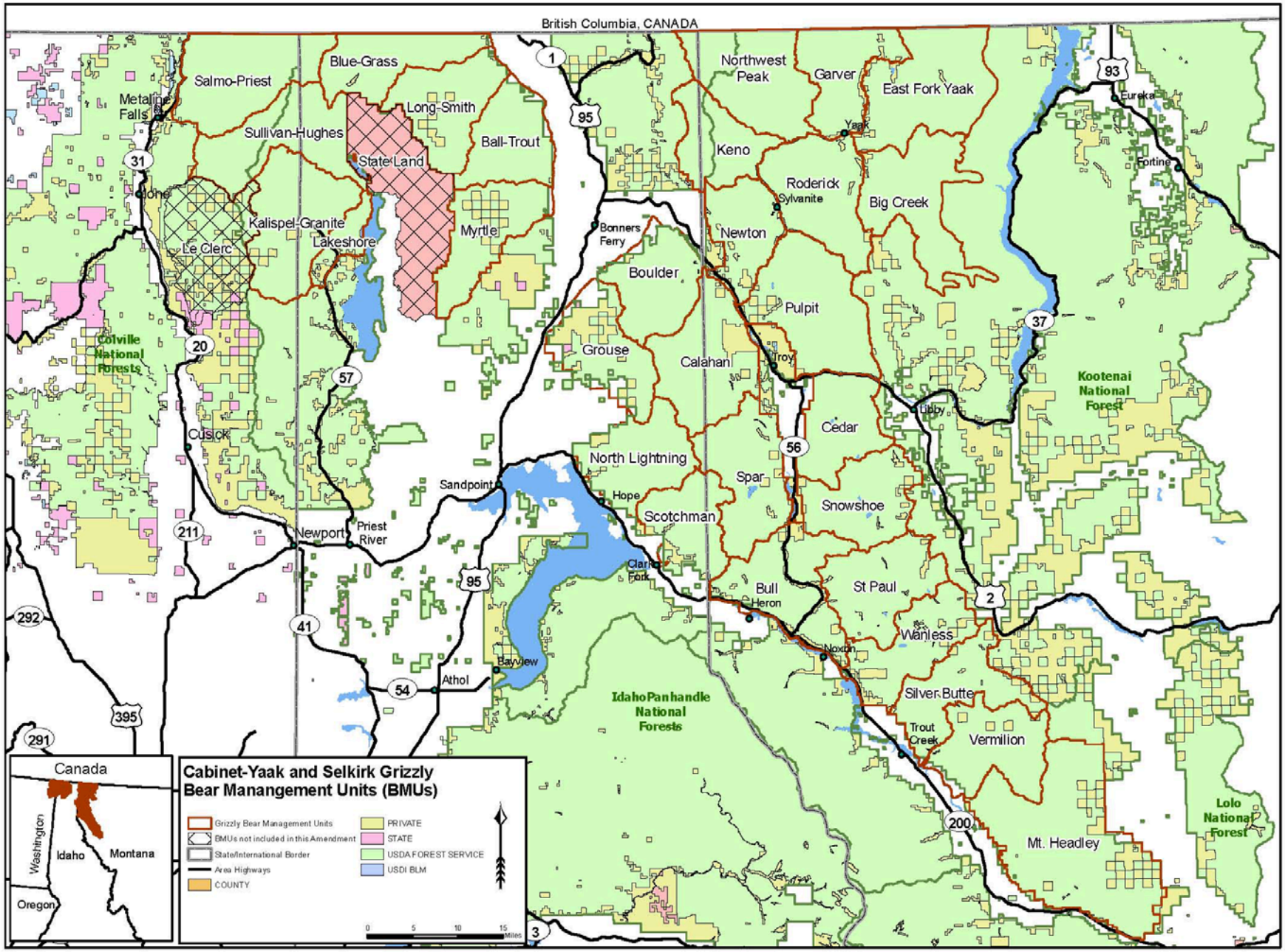

Figure 5. Cabinet-Yaak and Selkirk Grizzly Bear Management Units (BMUs).

There are twenty-two BMUs contained within the CYRZ, including 15 BMUs on the KNF, one BMU on the LNF, four BMUs on the IPNF, and two BMUs shared between the KNF and IPNF. The Grouse BMU on the IPNF is less than 75 percent Federal ownership.

The U.S. portion of the SRZ is comprised of ten BMUs, including five on the IPNF, four shared between the IPNF and CNF, and one BMU located on the Idaho Department of Lands. One of these BMUs, LeClerc, (which is primarily on the CNF with a minor portion on the IPNF) is less than 75 percent Federal ownership. The LeClerc and Idaho Department of Lands BMU are not within the scope of the proposed federal action and are not addressed further in this BA. Although portions of the SRZ are within British Columbia, Canada, BMUs have not been formally designated in British Columbia.

Lakeshore BMU in the SRZ is somewhat of an anomaly in that it is small (about 28 square miles or 17,972 acres) and contains a higher percentage of developed lands than most BMUs. The need for its creation was recognized in the mid-1980s as a result of spring bear use that was found to be occurring in Bismark Meadows. It was formally added to the recovery zone when the Recovery Plan was revised in 1993 (Servheen et al. 1991; U.S. Fish and Wildlife Service 1993a). The Lakeshore BMU has been designated as a combination of MS2 and MS3 habitat. MS3 designation is used when developments such as campgrounds, resorts, or other high use human facilities or human presence results in conditions which make grizzly bear presence untenable. The area mapped as MS3 in Lakeshore BMU totals approximately 8,093 acres and is located along the eastern edge of the unit. The remaining 9,872 acres of the BMU is designated as MS2.

Habitat Security Management for Grizzly Bears: The Grizzly Bear Recovery Plan (U.S. Fish and Wildlife Service 1993a) identifies adequate effective habitat as the most important element in grizzly bear recovery. Effective habitat is a reflection of an area's ability to support grizzly bears based on the quality of the habitat and the type/amount of human disturbance imposed on it. Security habitat allows for sufficient space for grizzly bears to roam and effectively use available habitats. By definition, security habitat is an area or space outside or beyond the influence of high levels of human activity. Open roads, vegetation and fuel projects, and high-use recreational areas such as trails or campgrounds are examples of activities that reduce the amount of secure habitat that is available and may result in displacement of bears.

Controlling and directing motorized access is one of the most important tools in achieving habitat effectiveness and managing grizzly bear recovery (ibid). By controlling motorized access, certain objectives can be achieved including minimizing human interactions and potential grizzly bear mortality, reducing displacement from important habitats, and minimizing habituation to humans. The following includes a review of the types of habitat security parameters that have been use in the past as well as newer measures that were developed in the 1990s.

> **Habitat Effectiveness:** The KNF and IPNF Forest Plans direct that grizzly bear management emphasize maintaining adequate security while providing seasonal habitat components. The two Forest Plans specify that management for grizzly bear recovery strive for a minimum of 70 percent (KNF) or 70 square miles (mi^2) (IPNF[21]) of security

[21] Selkirk RZ: Minimum security habitat standards for the Kalispell-Granite BMU were established at 70% of the BMU (U.S. Forest Service 1995) as opposed to 70 mi^2, as this was felt to be more appropriate for the size of the BMU (130 mi^2) and better met the intent of the cumulative effects process outlined by Christensen and Madel (1982). When the Lakeshore BMU was delineated, it was recognized as atypical since it is significantly smaller than most other BMUs (28 square miles) and would not be able to meet the 70 square miles of security standard (U.S. Forest Service 1995).

habitat or other established thresholds within each grizzly bear management unit (BMU) based on a BMU size of approximately 100 mi^2 (i.e. Christensen and Madel 1982 cumulative effects analysis process). Habitat effectiveness is calculated by buffering all open roads, timber harvest activities, and high use recreational features by 0.25 miles. Habitat outside of the buffer is considered secure. This measure would be eliminated with implementation of the Proposed Action and replaced with OMRD, TRMD, and Core Area standards which the best available science indicates are the appropriate measures of habitat effectiveness for grizzly bears. Tables 13 and 14 include Habitat Effectiveness for each BMU from 2002 to 2009.

Linear Open Route Density: The KNF and LNF Forest Plans included a linear open road density standard to be applied on a Bear Analysis Area (BAA) or Bear Management Area (BMAA), respectively. BAAs and BMAAs are subdivisions of a BMU. This measure is not part of the Proposed Action. Table 15 includes the 2009 data on Linear Road Density for the BMUs located on the KNF and LNF in the CYRZ.

Administrative Use: The three Forests have varying standards to address the level of motorized use on restricted roads (i.e. behind gates). This parameter is applied on an individual road basis, with those roads that exceed the use limits being treated as “open” for purposes of calculating OMRD. The 1998 Interim Access Rule provided for low intensity up to an average of one vehicle/day for the season (or 100 vehicle round trips), including the following administrative use levels: Spring (April 1 – June 15) = 38 round trips; Summer (June 16 – September 15) = 31 round trips; and Fall (September 16 – November 15) = 31 round trips (SCYE IGBC Interim Rule Set 1998). Administrative use needs change from year to year.

Subsequent review of Mace et al. (1996 and 1999) research data by researchers W. Wakkinen and W. Kasworm resulted in a suggested change to the Interim Rule Set to be applied to the SCYE as follows: Spring = 19; Summer = 23 round trips; and Fall = 15 round trips for an Active Bear Year from April 1 – November 15 for a total of 57 round trips (Wakkinen and Kasworm 1999). Administrative use for 2009 is provided in Appendix D.

However, the best available science suggests that a change in defining the active bear year definition for the CYRZ is warranted at this time (See page 28 of this document and Johnson 2008). This lengthening of the active bear year for the CRZ necessitated a recalculation for inclusion into this Forest Plan amendment. The resulting review dictates administrative use levels of 60 round trips for the active bear year in the CYRZ as follows: Spring = 18 trips; Summer=23 trips; and Fall = 19 trips (W. Kasworm and W. Wakkinen pers. comm. 2008). Every vehicle is to be considered towards the allowable seasonal trip limits (US Forest Service 2008).

OMRD, TMRD, and Core Area: Research completed after the development of the Forest Plans indicated that open road density and security habitat calculations alone are not a complete measure of the effects of motorized access on grizzly bear habitat use, since grizzly bears tend to avoid closed roads as well as open roads (Mace and Manley 1993, Mace et al. 1996, Mace et al. 1999). Results from those studies demonstrated that grizzly bear use of an area declines as total route densities (open and closed routes) exceed 2.0 mi/mi^2 and open route densities exceed 1.0 mi/mi^2 (Mace and Manley 1993). In addition, if motorized routes are located in or next to key habitat components such as riparian areas, snow chutes and shrub fields, important resources within these areas

may be used less than expected by bears because of their avoidance behavior, resulting in significant habitat loss. Core Area habitats are defined as areas of secure habitat within a BMU that contain no motorized travel routes or high use non-motorized trails during the active bear year and are more than 0.31 miles (500 meters) from a drivable route. These areas are an important component for adult female grizzly bears that have successfully reared and weaned offspring (IGBC 1994 and 1998).

Within the Selkirk and Cabinet-Yaak ecosystems, Wakkinen and Kasworm (1997) found that grizzly bears used the following conditions in regards to motorized routes: 1) areas having total route densities (TMRD) greater than 2.0 miles per square mile less than expected; 2) areas having open route densities (OMRD) greater than 1.0 mile per square mile less than expected; and 3) used core habitat more than expected, while non-core habitat was used less than expected. This research found that within six female grizzly bear home ranges the amount of area having a total route density greater than 2.0 miles per square mile averaged 26 percent, the amount of area having an open route density greater than 1.0 mile per square mile averaged 33 percent, and the home ranges were comprised of an average 55 percent core habitat (ibid). It should be noted that four of the six bears sampled had core percents clustered around the 55 percent level (55.3, 53.4, 53.7, and 53.3) with the two remaining bears creating the range (with core area values of 40 and 71.5 percent).

The researchers did not determine if bears selected home ranges with fewer roads relative to road densities across the entire ecosystem (e.g. second order selection) because a complete access route map for the ecosystem was not available during the study period. Instead they determined bear use of areas greater or less than expected within existing home ranges relative to access route density (third order selection). The above selection orders are referred to as first and second order, respectively, in Wakkinen and Kasworm (1997). Please see Allen and Lyndaker (2010) for a review of Wakkinen and Kasworm (1997) and comparison with the South Fork Flathead River study.

Per the 1995, 1996, and 2001 Biological Opinions for the KNF, LNF, and IPNF, respectively, standards were set for each BMU (greater than ≥75 percent federal ownership) with regards to OMRD, TMRD, and Core Area in order to maintain the unit in a condition that promotes viability of the grizzly bear population. It's important to note that between 1999 and 2002[22], 36,355 acres of core was created throughout the project area (i.e. SRZ=10,120; CYRZ=26,235 acres). Table 13 and 14 displays the history of OMRD, TMRD, and Core Area in each BMU for the last eight years in relationship to the standards in the Proposed Action.

The 2009 information in these tables represents the current existing conditions for grizzly bears. It is assumed that if each individual BMU were maintained in a condition conducive to use by a female grizzly bear, then the recovery area, which is the total of all the bear management units, would also promote species viability (U.S. Forest Service 1982). Additional information regarding the amount of Core Area on private and state lands versus National Forest System lands is provided in Appendix E.

[22] Represents the time period one year after the respective national forests began considering core area in their cumulative effects analysis per IGBC direction (1998) up until the date of the environmental baseline (i.e. 2002) used the last time motorized access standards were consulted on with the U.S. Fish and Wildlife Service (U.S. Fish and Wildlife Service 2004).

Table 13. Summary of changes in access parameters for the Cabinet-Yaak Recovery Zone, 2002-2009. The 2002 EIS and Biological Assessment were based on 2000 BMU numbers, while the subsequent Biological Opinion (U.S. Fish and Wildlife Service 2004) reflected 2002 conditions.

BMU	Access Standard Type	Alt. E Updated Standard	YEAR							
			2002	2003	2004	2005	2006	2007	2008	2009
1 Cedar 56,818	OMRD(%)	15	12	12	13	14	12	12	14	14
	TMRD(%)	15	10	11	10	8	8	9	9	10
	CORE(%)	80	83	83	84	85	85	83	83	83
	HE	NA	89	88	88	Not Available	88	88	88	88
2 Snowshoe 65,241	OMRD(%)	20	17	17	17	19	20	19	19	20
	TMRD(%)	18	14	14	14	14	15	16	15	16
	CORE(%)	75	77	78	78	77	77	76	76	76
	HE	NA	83	83	83	Not Available	79	79	79	79
3 Spar 75,701	OMRD(%)	33	27	24	25	26	27	27	27	27
	TMRD(%)	26	26	26	24	24	24	27	27	26
	CORE(%)	59	62	62	63	63	62	60	60	62
	HE	NA	70	70	70	Not Available	73	73	73	74
4 Bull 81,750	OMRD(%)	36	36	36	37	37	36	37	37	37
	TMRD(%)	26	26	26	26	26	26	26	26	29
	CORE(%)	63	62	62	63	63	63	62	63	62
	HE	NA	65	65	65	Not Available	64	64	64	62
5 St. Paul 70,210	OMRD(%)	30	26	27	26	27	27	28	28	28
	TMRD(%)	23	21	21	21	23	23	23	24	23
	CORE(%)	60	63	60	60	59	60	58	60	58
	HE	NA	76	75	76	Not Available	72	71	71	71
6 Wanless 64,148	OMRD(%)	34	33	37	33	34	35	32	30	29
	TMRD(%)	32	32	32	31	32	33	33	33	34
	CORE(%)	55	55	54	56	54	54	53	54	53
	HE	NA	70	70	70	Not Available	66	68	70	70
7 Silver Butte-Fisher 63,151	OMRD(%)	26	23	23	23	24	23	25	27	32
	TMRD(%)	23	20	20	20	20	21	23	23	23
	CORE(%)	63	66	66	66	67	67	62	63	62
	HE	NA	80	80	80	Not Available	77	76	75	71
8 Vermillion 68,567	OMRD(%)	32	32	32	32	32	32	33	33	33
	TMRD(%)	21	23	23	23	23	23	22	22	24
	CORE(%)	55	56	56	56	56	56	54	55	55
	HE	NA	77	77	77	Not Available	77	77	77	69
9 Callahan 85,617	OMRD(%)	33	32	26	26	28	28	27	27	27
	TMRD(%)	26	27	26	26	26	26	26	26	26
	CORE(%)	55	57	59	60	59	58	58	59	59
	HE	NA	72	78	72	Not Available	76	76	77	76
10 Pulpit 95,924	OMRD(%)	44	41	41	41	42	41	44	44	44
	TMRD(%)	34	32	30	31	29	28	28	28	29
	CORE(%)	52	50	52	52	51	51	52	52	51
	HE	NA	65	65	65	Not Available	64	62	63	62
11 Roderick 77,746	OMRD(%)	28	31	30	29	28	28	28	28	28
	TMRD(%)	26	28	28	29	29	28	29	28	28
	CORE(%)	55	54	53	53	53	52	52	54	54
	HE	NA	71	71	71	Not Available	75	74	74	74

BMU	Access Standard Type	Alt. E Updated Standard	YEAR							
			2002	2003	2004	2005	2006	2007	2008	2009
12 Newton 51,562	OMRD(%)	45	43	41	41	42	42	42	42	42
	TMRD(%)	31	30	31	31	31	30	31	30	29
	CORE(%)	55	57	56	56	56	56	56	57	58
	HE	NA	60	60	60	Not Available	62	62	62	62
13 Keno 51,235	OMRD(%)	33	33	33	33	34	34	34	34	34
	TMRD(%)	26	24	24	23	24	25	25	25	25
	CORE(%)	59	62	61	61	61	59	59	59	59
	HE	NA	72	72	72	Not Available	64	71	71	71
14 NW Peak 83,027	OMRD(%)	31	28	27	28	28	28	28	28	28
	TMRD(%)	26	26	25	26	26	26	26	26	26
	CORE(%)	55	56	57	57	56	55	55	56	56
	HE	NA	75	75	75	Not Available	76	76	76	76
15 Garver 58,842	OMRD(%)	33	31	31	29	33	30	30	29	29
	TMRD(%)	26	30	29	29	34	33	32	25	25
	CORE(%)	55	50	50	48	46	45	46	54	55
	HE	NA	70	70	70	Not Available	71	71	72	72
16 E F Yaak 97,586	OMRD(%)	33	29	28	31	28	28	29	31	29
	TMRD(%)	26	38	30	25	26	26	27	27	27
	CORE(%)	55	45	49	55	54	53	53	54	54
	HE	NA	72	72	72	Not Available	73	73	71	73
17 Big Creek 83,724	OMRD(%)	33	31	31	31	29	31	30	30	30
	TMRD(%)	26	26	25	25	25	20	18	15	16
	CORE(%)	55	50	50	50	49	54	55	59	58
	HE	NA	74	73	73	75	74	74	74	74
18 Boulder 62,379	OMRD(%)	33	29	31	31	29	29	31	31	31
	TMRD(%)	29	35	35	35	35	35	35	35	35
	CORE(%)	55	49	49	49	49	50	50	50	50
	HE	NA	60	Not Available	Not Available	Not Available	Not Available	73	73	66
19 Grouse 65,086	OMRD(%)	59	59	59	59	61	60	60	60	60
	TMRD(%)	55	59	59	59	59	59	59	59	59
	CORE(%)	37	32	32	32	32	32	32	32	32
	HE	NA	60	Not Available	Not Available	Not Available	Not Available	51	52	50
20 North Lightning 68,724	OMRD(%)	35	38	38	39	39	40	37	36	36
	TMRD(%)	20	20	20	20	21	21	19	20	20
	CORE(%)	61	61	61	61	61	60	62	62	62
	HE	NA	69	Not Available	Not Available	Not Available	Not Available	72	72	73
21 Scotch-man 62,288	OMRD(%)	34	35	35	35	35	35	35	35	35
	TMRD(%)	26	27	27	26	26	26	27	27	27
	CORE(%)	62	63	63	63	63	63	63	63	63
	HE	NA	70	Not Available	Not Available	Not Available	Not Available	67	67	67
22 Mt. Headley 162,917	OMRD(%)	33	38.7	37.9	38	38	38	38	38	38
	TMRD(%)	35	42.0	36.1	37	37	37	37	37	37
	CORE(%)	55	46.8	51.6	51	51	51	51	51	51
	HE	NA	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

[1]Not Available—with the signing of the 2004 Record of Decision (U.S. Forest Service 2004) habitat effectiveness became obsolete until the decision was remanded in the winter of 2006.

Table 14. Summary of changes in access parameters for the Selkirk Recovery Zone, 2002-2009. The first EIS and Biological Assessment (U.S. Forest Service 2002) was based on 2000 BMU numbers, while the subsequent Biological Opinion (U.S. Fish and Wildlife Service 2004) reflected 2002 conditions.

BMU	Access Standard Type	Alt. E Updated Standard	YEAR							
			2002	2003	2004	2005	2006	2007	2008	2009
Blue Grass 57,325	OMRD(%)	33	27	33	31	28	30	28	33	33
	TMRD(%)	26	30	30	31	28	28	28	28	28
	CORE(%)	55	50	50	51	51	50	50	50	50
	HE	NA	77	Not Available[1]	Not Available	Not Available	Not Available	69	65	72
Long-Smith 65,735	OMRD(%)	25	23	21	22	21	21	21	21	21
	TMRD(%)	15	13	13	14	14	14	14	14	14
	CORE(%)	67	73	73	73	73	73	73	73	73
	HE	NA	78	Not Available	Not Available	Not Available	Not Available	85	85	85
Ball-Trout 57,907	OMRD(%)	20	18	17	17	17	17	17	17	17
	TMRD(%)	13	11	11	11	11	11	11	11	11
	CORE(%)	69	72	72	72	72	72	72	72	72
	HE	NA	84	Not Available	Not Available	Not Available	Not Available	77	77	77
Myrtle 63,781	OMRD(%)	33	30	30	31	32	31	31	33	29
	TMRD(%)	24	19	21	21	21	21	21	20	20
	CORE(%)	56	60	57	58	58	58	58	60	60
	HE	NA	70	Not Available	Not Available	Not Available	Not Available	73	70	74
Salmo-Priest 87,115	OMRD(%)	33	31	31	30	30	30	31	31	30
	TMRD(%)	26	25	26	26	25	26	25	25	24
	CORE(%)	64	65	65	65	66	66	66	66	66
	HE	NA	102	Not Available	Not Available	Not Available	Not Available	102	102	102
Sullivan-Hughes 78,210	OMRD(%)	24	23	23	24	24	24	24	24	24
	TMRD(%)	19	21	21	21	20	19	19	19	19
	CORE(%)	61	59	59	59	59	61	61	61	61
	HE	NA	92	Not Available	Not Available	Not Available	Not Available	99	99	99
Kalispell-Granite 85,641	OMRD(%)	33	31	28	29	29	29	29	32	31
	TMRD(%)	26	29	27	27	27	27	29	29	28
	CORE(%)	55	48	48	48	48	48	47	48	49
	HE	NA	100	Not Available	Not Available	Not Available	Not Available	102	99	100
Lakeshore 17,972	OMRD(%)	82	78	78	80	81	79	82	82	82
	TMRD(%)	56	50	50	51	51	51	54	54	54
	CORE(%)	20	20	20	20	20	20	19	19	19
	HE	NA	8	Not Available	Not Available	Not Available	Not Available	9	9	9

[1]Not Available—with the signing of the 2004 Record of Decision (U.S. Forest Service 2004) habitat effectiveness became obsolete until the decision was remanded in the winter of 2006.

Table 15. Existing Linear Open Road Density and Habitat Effectiveness for the CYRZ BMUs, administered by the Kootenai and Lolo National Forests, 2009.

Bear Management Unit	Linear Road Density																		Habitat Effectiveness (Percent)
	Kootenai NF Bear Analysis Area (BAA) or Lolo NF Bear Management Analysis Area (BMAA)																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Total	
1-Cedar	0.13	0	0.26	0	0.02	0.61	--	--	--	--	--	--	--	--	--	--	--	0.19	88
2-Snowshoe	0.23	0	0	0	0	0.66	1.0	--	--	--	--	--	--	--	--	--	--	0.31	79
3-Spar	0.90	0.52	0.10	0.90	0.58	0.26	--	--	--	--	--	--	--	--	--	--	--	0.56	73
4-Bull	0.16	0.51	0.71	0	0.05	0.07	0.55	--	--	--	--	--	--	--	--	--	--	0.34	62
5-St. Paul	0.59	0.71	0	0	1.00	0.88	--	--	--	--	--	--	--	--	--	--	--	0.55	71
6-Wanless	0.51	0.03	0	0	0.24	1.12	0.54	--	--	--	--	--	--	--	--	--	--	0.45	70
7-Silver Butte-Fisher	0.71	0.93	0.94	1.06	0.03	0.24	--	--	--	--	--	--	--	--	--	--	--	0.63	71
8-Vermillion	0.76	0.24	0.71	1.01	0.74	0.75	--	--	--	--	--	--	--	--	--	--	--	0.71	69
9-Callahan	0.59	0.72	0.21	0.62	0.75	--	--	--	--	--	--	--	--	--	--	--	--	0.54	76
10-Pulpit	1.34	0.69	0.40	0	0.74	0.90	1.24	1.22	0.91	--	--	--	--	--	--	--	--	0.82	62
11-Roderick	0.41	0.87	0.41	0.32	0.17	0.84	--	--	--	--	--	--	--	--	--	--	--	0.48	74
12-Newton	0.26	0	0.10	0.70	1.46	0.69	--	--	--	--	--	--	--	--	--	--	--	0.54	62
13-Keno	0.71	0.69	1.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.84	71
14-NW Peaks	0.53	0.55	0.70	0.78	--	--	--	--	--	--	--	--	--	--	--	--	--	0.58	76
15-Garver	0.53	0.81	0.48	0.44	0.13	0.57	0.21	--	--	--	--	--	--	--	--	--	--	0.40	71
16-E.F. Yaak	0.01	0.16	0.61	0.24	0.85	0.90	1.64	0.14	0.22	0.31	--	--	--	--	--	--	--	0.53	73
17-Big Creek	0.60	0.89	0.25	0.47	0.73	0.61	0	0	-	--	--	--	--	--	--	--	--	0.54	74
22-Mt. Headley	0.90	0.50	0.20	0	0.10	1.00	0	0.90	0	0.90	1.50	0.60	0.70	0	0	3.10	1.00	0.67	NA

Core Area Block Size and Distribution: The IGBC anticipated that minimum Core Area size might be determined for each recovery zone. For the Selkirk and Cabinet-Yaak ecosystems, Wakkinen and Kasworm (1997) found that use increases as block size increased, especially when size exceeds two miles square (1,280 acres). However, while 97 percent of the use within core by successfully reproducing females in the SCYE occurred in blocks greater than two square miles, actual use occurred in blocks as small as 0.22 square miles (141 acres). Wakkinen and Kasworm (1997) suggested minimum block sizes of 2-8 mi^2 for the Selkirk/Cabinet-Yaak Grizzly Bear Recovery Zones, but no scientifically-based minimum effective size polygon for Core Area has been determined. Other researchers (Schwartz et al. 2010) defined secure habitat in the Greater Yellowstone Ecosystem as any area at least 10 acres (4.05 hectares) that is 500 m from an open or gate road based on recommendations from the IGBC (1998) and U.S. Fish and Wildlife Service (2003).

The existing number, size, and percentage by size of Core Area blocks across the two ecosystems are displayed in Tables 16 and 17. Currently, approximately 97 and 96 percent of Core Area blocks in the Cabinet-Yaak and Selkirk ecosystems, respectively, are larger than 2.0 square miles. Many of the smaller Core Area blocks are located at lower elevations in important potential spring habitat. See Figures 6 and 7 for the existing (2009) distribution and juxtaposition of Core Area blocks within the two ecosystems. Every BMU in both recovery zones contains a portion of a large, interconnected block of core area. Conversely, maintaining scattered small blocks of core habitat provides the starting point for the possibility of building larger blocks of core around those areas in the future and to connect existing core areas.

Table 16: Number of Core Area blocks by size category in the Cabinet-Yaak Recovery Zone, 2009.

Administrative Boundary	Core Area Block Size (square miles)		
	< 2 square miles	2-4 square miles	> 4 square miles
	Total Number/ Acres (Percent of All Core)		
Kootenai National Forest	87 / 16,511 (2.3%)	7 / 14,017 (1.9%)	21 / 695,596 (95.8%)
IPNF portion of CYE	26[1] / 4,739 (3.6%)	1 / 1,302 (1.0%)	5[1] / 126,789 (95.4%)
Lolo National Forest[2]	3 / 243 (0.2%)	0	2[1] / 125,075 (99.8%)
Totals for Cabinet-Yaak Ecosystem	115 / 21,493 (2.2%)	8 / 15,319 (1.6%)	26 / 947,460 (96.3%)

[1]Indicates one core area block shared with KNF
[2]Includes portions of the IPNF BMUs--Northwest Peaks (13) and Keno (14)

Table 17: Number of Core Habitat Blocks by Size Category in the Selkirk Recovery Zone, 2009. This data does not include the LeClerc Bear Management Unit.

Administrative Boundary	Core Area Block Size (square miles)		
	< 2 square miles	2-4 square miles	> 4 square miles
	Total Number/ Acres (Percent of All Core)		
Idaho Panhandle NF Selkirk Ecosystem	46 / 9,471 (3.1%)	2 / 3,298 (1.1%)	8 / 294,467 (95.8%)

Both ecosystems currently meet or exceed the percentage of core habitat in blocks greater than two square miles in size that was preferred by reproducing female grizzly

bears in the Wakkinen and Kasworm (1997) study (i.e. 97 percent). Table 18 displays the amount of core habitat within the home ranges of Wakkinen and Kasworm study animals by size category.

Table 18. Percentage of home ranges by core block size (*from* Table 15 of Wakkinen and Kasworm (1997)).

Area	Size of Core Blocks (square miles)		
	< 2	2-4	> 4
South Selkirk	4.7%	4.7%	90.6%
Yaak	5.9%	10.2%	83.9%

As of the end of the bear year in 2009, 12 of the 30 BMUs in the Selkirk and Cabinet-Yaak ecosystems were fully compliant with the access standards proposed in the Proposed Action (Table 19).

Table 19. Situation summary of the Selkirk and Cabinet-Yaak RZs Bear Management Units in terms of compliance with recommended levels of OMRD, TRMD, and Core Area per the Proposed Action, as of 2009.

2009 BMU Status with Alt. E Standards	Selkirk RZ BMUs=8[1]		Cabinet-Yaak RZ BMUs=22			
	IPNF	CNF & IPNF Shared	KNF	IPNF	KNF & IPNF Shared	LNF
Compliant	3	2	6	0	1	0
Non-Compliant	2	1	9	4	1	1
Total	5	3	15	4	2	1

[1]Does not include the Idaho Department of State Lands or LeClerc BMU which are not part of the Proposed Action.

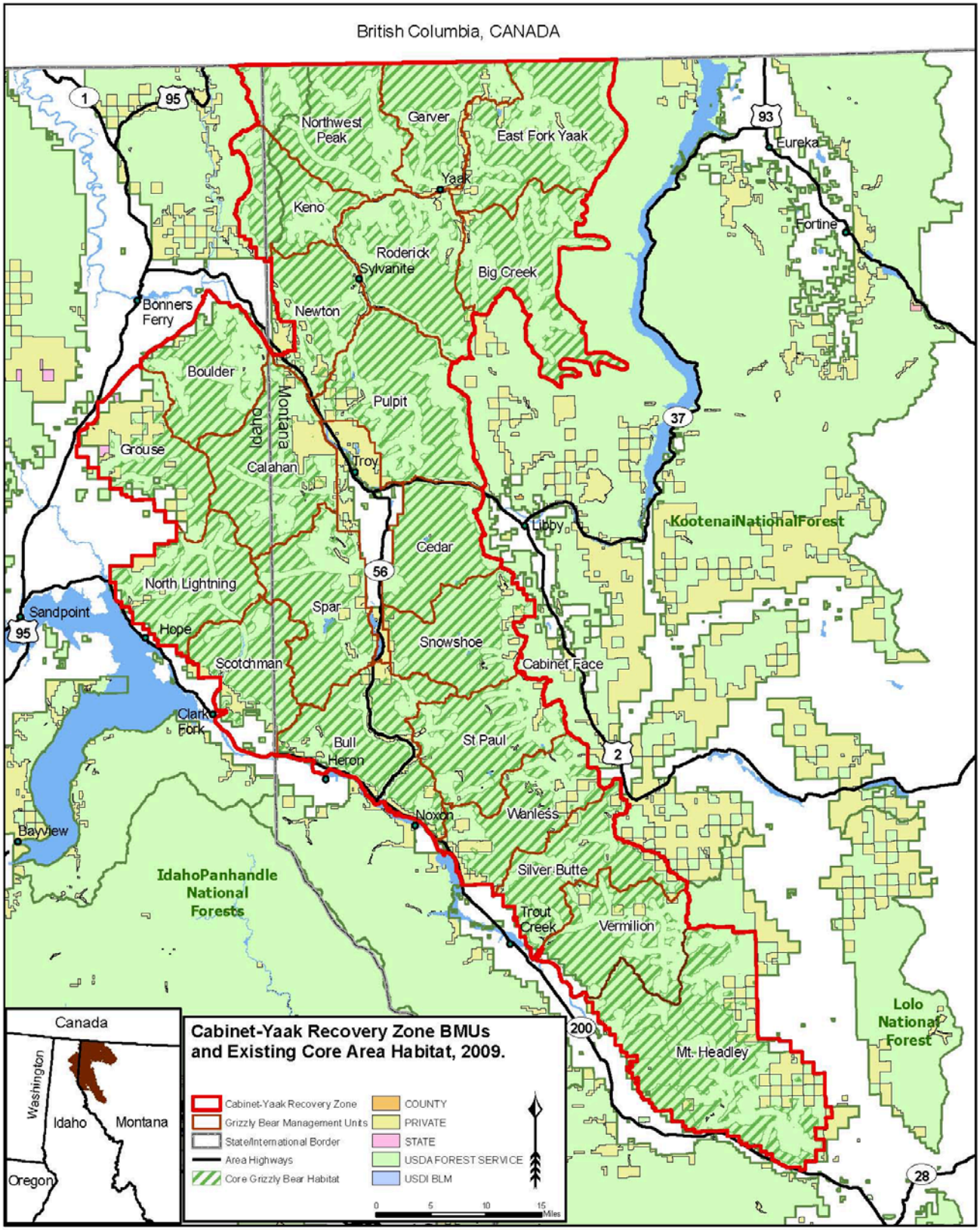

Figure 6. Cabinet-Yaak Recovery Zone Bear Management Units and existing Core Area Habitat, 2009.

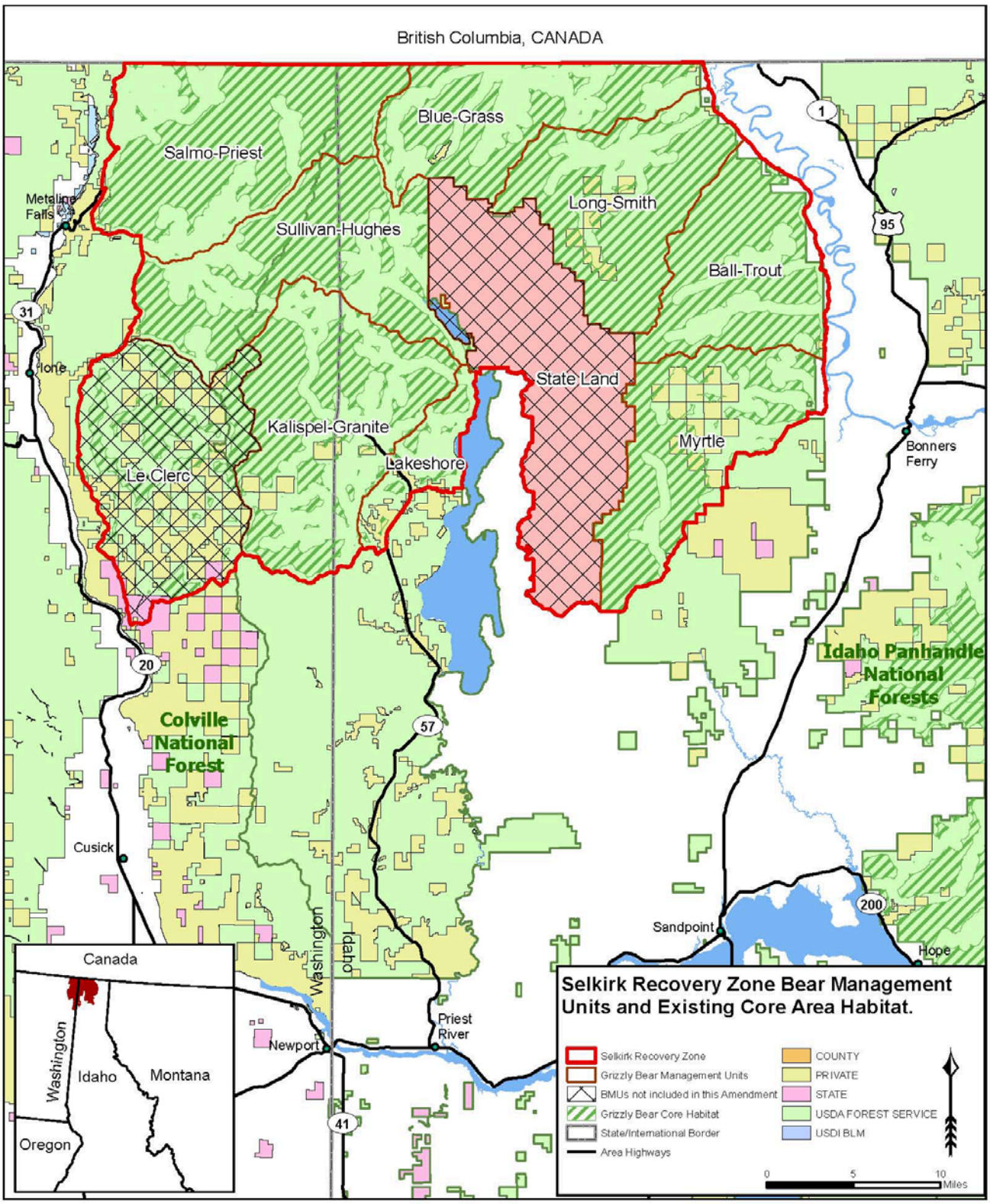

Figure 7. Selkirk Recovery Zone Bear Management Units and existing Core Area habitat, 2009.

Habitat conditions in the CYRZ and SRZs have been improving steadily since 1987 as documented by Summerfield et.al (2004), annual Forest Plan monitoring reports (U.S. Forest Service 1998, 1999, 2002, 2009a, 2010), and the annual monitoring reports sent to the USFWS since 2004 (U.S. Forest Service 2005, 2006, 2008, 2009b).

In the CYRZ, there was an increase of approximately 19,955 acres of designated Core Areas from 2002 to 2009. This translates into an increase from 56 to 57 percent Core Area during this time period. The corresponding Recovery Zone wide OMRD decreased from 37 percent in 2002 to 33 percent in 2009 while TMRD decreased from 29 to 28 percent for the same time period.

In the SRZ affected by the Proposed Action[23], there was an increase of approximately of 3,420 acres in designated Core Area from 2002 to 2009. This translates into an increase from 59 to 60 percent Core Area from 2002 to 2009. The corresponding Recovery Zone wide OMRD decreased from 29 percent in 2002 to 28 percent in 2009 while TMRD decreased from 23 to 22 percent for the same time period.

Tables 20 and 21 include a summary of the land management decisions and implementation activities that have occurred since 2002 or are pending for both ecosystems that have contributed to changes in OMRD, TRMD, and Core Area.

Table 20. Known and anticipated changes in grizzly bear access parameters since 2002 in the Cabinet-Yaak Recovery Zone by Project Name and Bear Management Unit; Kootenai, Idaho Panhandle, and Lolo NFs. This does not include emergency consultation and changes to BMUs due to fire suppression activities. NC = no change in parameter.

Project Name & Decision Date	Bear Management Unit	Motorized Access Parameters			Comments
		OMRD Change (%)[1]	TMRD Change (%)[2]	CORE Change (%)[3]	
Katka Peak EIS -1994	18-Boulder	NC	-2%	+2	Implementation in 2011.
Treasure Urban Interface BA 2002	1-Cedar	NC	-1	NC	Implementation completed
	2-Snowshoe	NC	NC	NC	Implementation completed
Young J EA – October 2002	16-East Fork Yaak	-1.6	-1.1	+0.8	Implementation completed
Garver EIS – 2003	15-Garver	-3.2	-6.8	+8	Implementation completed
Lower Big EIS – June 2004	17-Big Creek	-0.4	-8.5	+6	Numbers shown assume the implementation of Pipestone project on D-5
Pipestone EIS ROD June 2004	11-Roderick	-3	-2	+4	Increase of core from 52 to 56 percent; decrease in OMRD from 30 to 27 percent,; and decrease in TMRD from 26 to 25 percent.
	17-Big Creek	NC	-20	+18	Increase in Core from 38 to 56 percent; OMRD maintained at 30 percent; and decrease in TMRD from 32 to 12 percent.
Obermayer CE-2006	11-Roderick	-1	NC	NC	Project is partially completed; no

[23] The action area for the Proposed Action for the Selkirk Recovery Zone is portrayed on page 13 and Figure 2 of this document, and does not include the LeClerc BMU on the Colville National Forest, the Idaho Department of State Lands BMU, or the 48% of the remaining Recovery Zone located in British Columbia, Canada. IDL personnel do not have data for this BMU for release to the public at this time G. Lech, pers. Comm. 2010). However, data is available for the LeClerc BMU. If Core Area from this BMU is added into the overall calculations, the 2009 OMRD, TMRD, and Core Area habitat available in BMUs located primarily on National Forest System lands would be 31%, 23%, and 56%, respectively.

Project Name & Decision Date	Bear Management Unit	Motorized Access Parameters			Comments
		OMRD Change (%)[1]	TMRD Change (%)[2]	CORE Change (%)[3]	
					completion date available.
Montanore Libby Adit Drilling 2007	5-Saint Paul	-1	-3	+3	Decision on hold—not implemented at this time. OMRD dependent upon Rock Creek mitigation, 27 to 26 percent, TMRD 23 to 20 percent, Core 60 to 63 percent).
Northeast Yaak EIS-2007	16-East Fork Yaak	NC	-2	+2%	Anticipated implementation 2008-2014.
Rebuild Libby Troy FEC BPA powerline 2008	1-Cedar	NC	-1	+1	TMRD decreased from 8 to 7 percent; Core increased from 85 to 86 percent. Implementing mitigation in 2010.
Fishtrap EIS - 2008	22-Mt. Headley	-0.1%	-2.9%	+2.3%	Implementation in 2010-2015
Lightning Creek Restoration EIS - 2009	21-Scotchman	-2%	-1%	+3%	Implementation in 2009-2014.
	20-North Lightning	-6%	-3%	+4%	
Buckhorn Mine Access Management -2009	13-Keno	-1%	NC	NC	New gate installed in fall of 2009 for net decrease in OMRD of 1 percent in 2010.
Miller West Fisher - 2009	6-Wanless	NC	NC	+1	Implementation of the Grizzly Project was enjoined (6/29/10) by U.S District Court for the District of Montana (6/29/2010).
Grizzly Vegetation & Transportation Management Project - 2009	11-Roderick	NC	-4	+4	Implementation of the Grizzly Project was enjoined (6/29/10) by U.S District Court for the District of Montana (6/29/2010).
Young Dodge EIS – 2010	16-East Fork Yaak	N/C	N/C	+1	Anticipated decision in late 2010
Leonia Restoration Project - 2011	18-Boulder	NC	+0.5	+0.4	Anticipated decision 2011

[1] (-) (+) and (NC) indicates a percentage decrease, increase or no change in Open Motorized Road Density
[2] (-) (+) and (NC) indicates a percentage decrease, increase or no change in total Motorized Road Density
[3] It takes 2-6 miles of change in wheeled motorized vehicle access status to achieve a one percent increase in Core (Johnson et al. 2008).

Table 21. Known and anticipated changes in grizzly bear access parameters since 2002 in the Selkirk Recovery Zone by Project Name and Bear Management Unit; Idaho Panhandle NFs. This does not include emergency consultation and changes to BMUs due to fire suppression activities. NC = no permanent change in parameter.

Project Name & Decision Date	Bear Management Unit	Motorized Access Parameters			Comments
		OMRD Change (%)[1]	TMRD Change (%)[2]	CORE Change (%)[3]	
Dusty Peak EIS – 1997	Kalispell-Granite	NC	-0.8%	+1.3%	Additional road decommissioning (6.7 miles) occurred in 2008 from this 1997 decision
Blue Grass Bound EIS – 1999 (+ BOs in 2001, 2004, 2005, 2007)	Blue Grass 1999-2002 Post 2002	 NC -NC	 -3% -2%	 +5% +1%	Series of re-initiations based on modifications, litigation & settlement agreements.
Myrtle Cascade EIS - 2001	Myrtle	NC	-1%	+1%	Project activities creating core in Myrtle

Project Name & Decision Date	Bear Management Unit	Motorized Access Parameters			Comments
		OMRD Change (%)[1]	TMRD Change (%)[2]	CORE Change (%)[3]	
	Ball-Trout	NC	NC	+<1%	BMU took place in 2007 and are scheduled for the Ball-Trout BMU for 2011.
Stimson Access EIS - 2004	Kalispell-Granite	NC	+0.9%	-0.9%	Implemented to provide Stimson Lumber Company access to their private lands under ANILCA involving construction of approximately 0.75 miles of road across NFS lands.
Willow Creek Road Restoration CE - 2004	Sullivan - Hughes	NC	-0.1%	+ < 0.1%	Decommissioned approximately 8.4 miles of road in 2005 resulting in a core gain in the Kalispell-Granite BMU & Sullivan-Hughes BMU.
	Kalispell-Granite	NC	- 1%	+ 1.3%	
Jackson Creek Trail and Trailhead CE	Sullivan- Hughes	NC	- < 1%	+ < 0.1%	Implemented in 2005 and 2006. Converted 1.4 miles of restricted road to trail and created core area.
Upper Pack River Road Rehabilitation CE - 2005	Myrtle	-1.2%	-0.8%	+1%	Implemented conversion of motorized trail 256 to non-motorized trail in 2006.
Hungry Deer Restoration Project EA - 2009	Kalispell -Granite	NC	-1%	+1%	Implementation in 2009 resulted in removal of 6.3 miles of road.
Lakeview Reeder Fuels Reduction Project EIS - 2009	Kalispell –Granite	NC	-5%	+5.3%	Implementation in 2010-2011 will result in removal of over 25 miles of road and increase of core area in Kalispell-Granite and Lakeshore BMUs. Once completed, both BMUs will reach proposed standards.
	Lakeshore	-1.7%	-5%	+1.9%	

[1] (-) (+) and (NC) indicates a percentage decrease, increase or no change in Open Motorized Road Density
[2] (-) (+) and (NC) indicates a percentage decrease, increase or no change in total Motorized Road Density
[3] It takes 2-6 miles of change in wheeled motorized vehicle access status to achieve a one percent increase in Core (Johnson et al. 2008).
[4]The LeClerc BMU is not part of this Forest Plan amendment for motorized access management within the Selkirk Grizzly Bear Recovery Zone. It is included here to complete the record of consultation since 2002 for the Selkirk ecosystem and to include the associated mitigation that occurred in the Kalispell-Granite BMU.

Recurring Use Areas – Bears Outside of Recovery Zones (BORZ)

The 1993 Recovery Plan recognized that grizzly bears will occur outside the recovery zone lines and that the mere presence of bears outside of the recovery zone line is not sufficient reason to change the recovery zone lines (U.S. Fish and Wildlife Service 1993a). In recent years, credible observations of grizzly bears and radio-telemetry research data on collared grizzly bears have documented use in some areas outside of the existing Recovery Zones. While observation data is limited and these habitats have not been evaluated to determine if they are of significant biological value, it is recognized that on-going and future land management activities in these areas could result in adverse effects (e.g. incidental take)[24] of grizzly bears.

By 2002, agency biologists recognized that grizzly bears were occurring and sometimes living in areas outside of established grizzly bear recovery zones and warranted some level of

[24] ESA requires that "incidental take" be considered for each threatened or endangered individual animal, regardless of whether the animal is needed for recovery or not. The Endangered Species Act (ESA Section 9-B) prohibits take of a listed species, however Section 7(o)(2) permits take if any taking is in compliance with a written statement provided under subsection 7(b)(4)(iv). The applicant must show the likely impact resulting from such take and the steps to take that will minimize such impacts.

management consideration (Wittinger 2002 and 2003) [25]. A review of the 1995, 1996, and 2001 Biological Opinions for the continued operation of the respective KNF, LNF, and IPNF Forest Plans indicates that the USFWS did not exempt incidental take for grizzly bears in areas outside of the existing Recovery Zones.

In March of 2003, the Kootenai National Forest, Lolo National Forest, and Idaho Panhandle National Forests responded to this new information (Johnson 2003), in cooperation with the USFWS. Based on direction from Wittinger (2003) each forest determined an estimate of bear numbers and analyzed habitat conditions relative to linear open and total road densities on within identified areas of recurring use (i.e. Bears Outside Recovery Zones or "BORZ" polygons). The Forests also analyzed food attractant and storage issues in each analysis area, and summarized known conflicts between grizzly bears and livestock grazing. In addition, the analysis displayed all steps to minimize "incidental take", based on existing management direction.

This analysis was recognized and included in the 2004 Biological Opinion (U.S. Fish and Wildlife Service 2004) for the original Forest Plan Access Amendment effort for KNF, IPNF, and LNF (FEIS Record of Decision 2004) as well as the 2009 draft SEIS.

The biologists involved in the 2002-2003 BORZ analysis recognized that the mapping may need to be revisited and updated periodically. Consequently, in the summer and fall of 2009, an interagency team of biologists revisited the BORZ for the SRZ and CYRZ to refine the maps of occupied grizzly bear habitat as part of consultation for this Forest Plan Amendment (Appendix A – Consultation History). Delineation was generally based on three or more credible observations[26] within the last 15 years (1994-2009) in individual 6th order watershed HUCs (Appendix E -- Guidelines for Determining Recurring Use Areas for Grizzly Bears). Adjacent HUCs with enough grizzly bear use to be considered recurring use areas were combined to create contiguous areas of recurring use.

A total of seven BORZ areas were identified as part of this process. This includes five BORZ adjacent to the CYRZ and two BORZ adjacent to the SRZ (Figures 7 and 8). The IPNF administers the majority of land included in the Priest Lake, Pack, and Mission-Moyie BORZ (formally called Deer Ridge in the previous Access Amendment), while the KNF administers the majority of land included in the Cabinet Face, Clark Fork, West Kootenai, and Tobacco BORZs. No BORZ areas were identified adjacent to the LNF boundary. The following information and assessment from the 2009 effort supersedes the Johnson (2003) analysis for grizzly bears that occur outside the recovery zones in regards to access management for the three Forests.

BORZ and Credible Bear Sightings: Table 22 displays a summary of the number of credible sightings of grizzly bears documented for the last 15 years (1994-2009) within the seven BORZ (see Appendix B for mortality information and Appendix F for listing of observation data). These sightings do not necessarily represent unique individuals, and in many cases, a single animal is responsible for a number of sightings that occurred across the BORZ area in a given year. However, the information in Table 22 does provide a relative index of the amount of use these areas have received over time and illustrates those BORZ with known use by females with cubs. Available radio telemetry data demonstrates that some bears incorporate portions of

[25] Biologists reviewed grizzly bear female and cub monitoring data, nuisance grizzly bear activity information, radio relocation records, and creditable observations from the previous 5-10 year period, and then delineated those areas on maps where one would reasonably expect to find grizzly bear use occurring during any/most years as of 2002.

[26] Females with cubs given high priority as well as radio collar documentation and other credible sightings, captures, and mortality sites.

these areas within their seasonal home range; however there is no indication of exclusive use of any BORZ from that data source. An estimate of number of animals that may be using these areas is not available at this time.

Table 22. History of bear sightings in the seven BORZ areas situated outside the Selkirk and Cabinet-Yaak Recovery Zones, 1994-2009 (data derived from Appendix F).

Bears Outside Recovery Zone	Grizzly Bear Recovery Zone	National Forest	Total Size (Acres)	Number of Credible Sightings 1994-2009		
				Total	Females with Cubs	Bear Mortality
Priest	Selkirk	IPNF	80,733	17	0	1
Pack River	Selkirk	IPNF	33,869	21	3	0
Mission-Moyie[1]	Cabinet-Yaak	IPNF	71,545	28	2	0
Clark Fork	Cabinet-Yaak	KNF	101,899	14	3	0
Cabinet Face	Cabinet-Yaak	KNF	27,140	14	1	1
West Kootenai	Cabinet-Yaak	KNF	173,122	56	10	3
Tobacco	Cabinet-Yaak	KNF	287,240	55	17	0

[1]Formerly called 'Deer Ridge' (Wittinger 2002).

BORZ and Bear Mortality: There has been one human-caused bear death on National Forest System lands within the identified grizzly bear recurring use area shortly after they were originally mapped by Wittinger et al. (2002). This occurred in the fall on 2002 when a subadult male grizzly bear was killed in Lamb Creek in the SRZ-associated Priest BORZ. Another two grizzlies were killed on non-FS lands within the CYRZ-associated West Kootenai BORZ in 2003 and 2004. Two grizzlies from the Cabinet-Yaak ecosystem were killed in 1996 and 1997 prior to the creation of BORZ in 2002. Table 23 provides a history of human-caused mortality in the seven areas that are now mapped as BORZ from 1994 - 2009. Please see Figures 3 and 4 of known human-caused mortalities for locations.

Table 23. History of human-caused mortality in the seven areas that have been recognized as supporting recurring grizzly bear use, i.e. BORZ, 1994-2009 (data from W. Wakkinen pers. comm. 2010 and W. Kasworm pers. comm. 2010).

Recovery Zone	Bears Outside of Recovery Zones - BORZ	National Forest System Lands	Private, State, and Railroad Lands
Selkirk	Priest	2002-Male	None
	Pack River	None	None
Cabinet-Yaak	Mission - Moyie	None	None
	West Kootenai	1996-Male	2004-Female 2005-Female
	Cabinet Face	None	1997-Male
	Tobacco	None	None in BORZ
	Clark Fork	None	None in BORZ

BORZ and Motorized Access: Table 24 displays the size, land ownership, and linear miles of open and total roads for the BORZ areas, 2010. These areas are characterized by having a high percentage of miles of open road (51 to 100 percent on NFS lands) in relation to the total miles of road.

Table 24. Existing motorized access conditions for Bears Outside of Recovery Zone (BORZ) situated on the Idaho Panhandle (IPNF) and Kootenai National Forests (KNF), 2010.

Bears Outside Recovery Zone	Grizzly Bear Recovery Zone	National Forest	Total Size (Acres)	National Forest Lands			Private and State Lands		
				Total Area (Acres)	Total Roads (Miles)	Open Roads (Miles)	Total Area (Acres)	Total Roads (Miles)	Open Roads (Miles)
Priest	Selkirk	IPNF	80,733	75,793	316.4	314.4	4,940	36.1	33.6
Pack River	Selkirk	IPNF	33,869	28,097	41.9	37.9	5,772	6.9	6.9
Mission-Moyie[1]	Cabinet-Yaak	IPNF	71,545	58,472	200.3	167.3	13,073	112.8	105.7
Clark Fork	Cabinet-Yaak	KNF	101,899	100,421	256.1	176.9	1,478	13.0	10.4
Cabinet Face	Cabinet-Yaak	KNF	27,140	26,177	164.1	128.0	963	6.9	6.9
West Kootenai	Cabinet-Yaak	KNF	173,122	169,705	615.3	315.9	3,417	30.3	16.0
Tobacco	Cabinet-Yaak	KNF	287,240	266,947	1,123.9	867.0	20,291	179.8	168.0

[1]Formerly called 'Deer Ridge' (Wittinger 2002).

In general, these areas have less secure habitat and a higher risk of displacement, disturbance, and mortality to grizzly bears due to the total amount of motorized access and the proportion of open to total roads on the landscape. These conditions are in contrast to areas available to grizzly bears within the respective recovery zones. The observational data indicates that there are very few bears using these areas of higher motorized access outside the recovery zone boundaries. Therefore, it is likely these degraded conditions are affecting very few bears.

The IPNF Forest Plan did not contain specific standards pertaining to the management of grizzly bears or the maintenance of their habitat in areas outside the recovery zone boundaries. However, the KNF Forest Plan does contain Management Area (MA) direction concerning motorized access standards for grizzly bears on a limited number of acres located within two BORZ (i.e. MA 14). Both of these Forest Plans include motorized access standards and/or direction pertaining to the management of other wildlife species which could be beneficial to grizzly bears. In general, MA direction and standards relate to road restrictions and closures to enhance wildlife habitat. See Appendix G for details on the Management Area standards and direction in regards to access management for BORZ areas that may be used to offset the risk of disturbance, displacement, and mortality to grizzly bears.

The Proposed Action includes Design Elements to address access management in these BORZ (see pages 11-12). These include no increases in existing levels of total and open roads and timing restrictions for implementation of projects covering multiple watersheds.

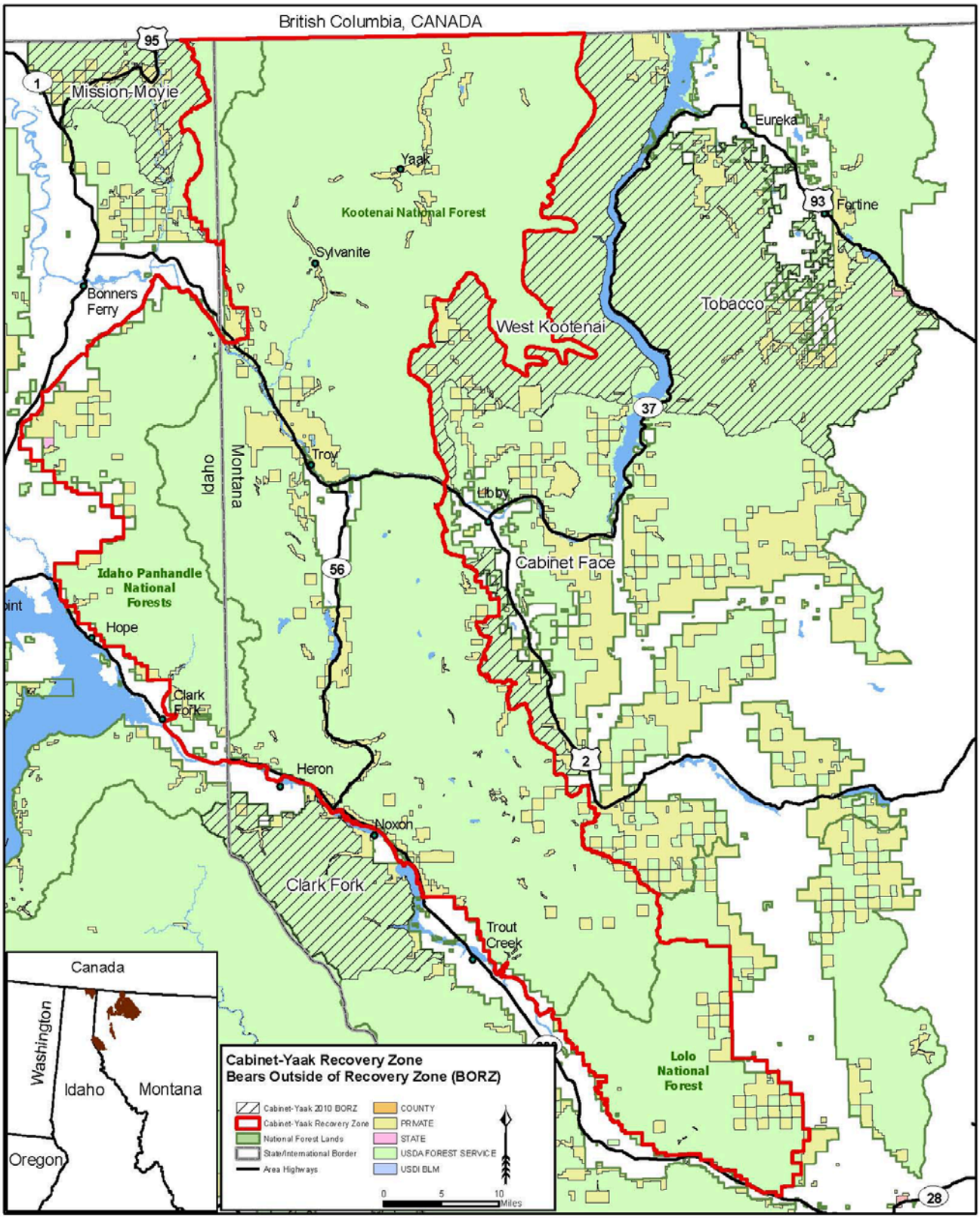

Figure 8. Cabinet-Yaak Bears Outside of Recovery Zones (BORZ) areas, 2010

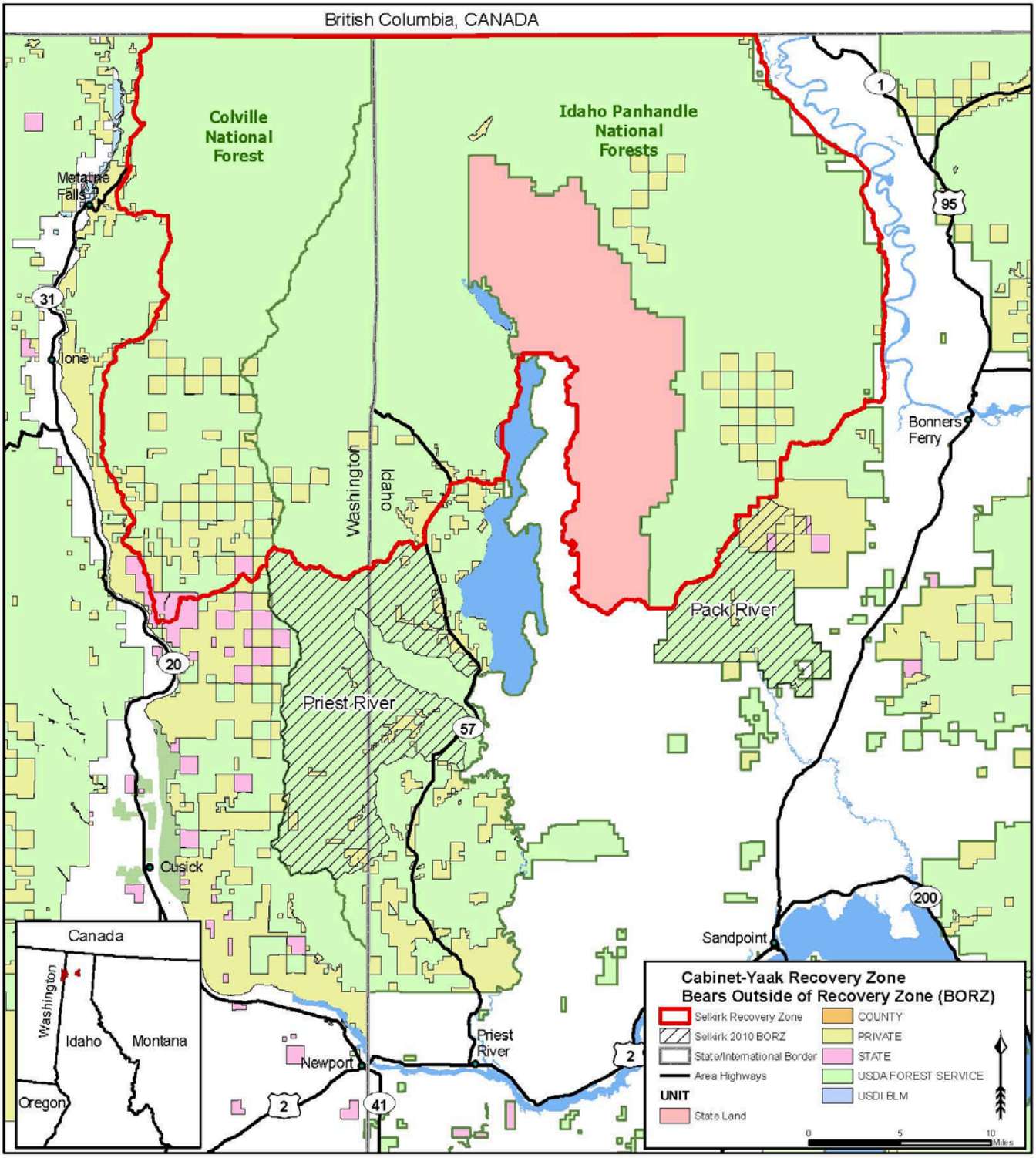

Figure 9. Selkirk Bears Outside of Recovery Zones (BORZ) areas, 2010.

Habitat Connectivity

Habitat connectivity within and between the SRZ and CYRZ has been identified as a possible factor that influences habitat use (Servheen et al. 2003; Proctor et al. 2002 and 2005). Lack of habitat connectivity or "linkage" is associated with major highways and railways and the habitat within the approach zones near these features. The main "fracture zones" identified in Servheen et al. (2003) of concern area as follows: 1) CYRZ - Highways 2 and 56 and the railway lines that parallel Highway 2; 2) SRZ - Highway 3 (in Canada); 3) Between the SRZ and CYRZ - Highway 95 and the parallel railway; 4) Between the CYRZ and the Bitterroot Mountains - Highway 200 and the parallel railway; and 5) Between the CYRZ and the NCDRZ - Highways 2 and 93. Additional work is ongoing throughout the Cabinet-Yaak, Selkirk, and Bitterroot Recovery Zones to further our understanding linkage and movement (Kasworm et al. 2009).

Habitat connectivity was taken into consideration when setting the individual BMUs access parameters (Allen 2010) as well as the development of the BORZ (Appendix F).

Other On-Going Activities within the Project Area

Hunting in the United States and Canada: The province of British Columbia and the states[27] of Montana, Idaho, and Washington continue to allow hunting for black bears, as well as other wildlife species, on both sides of the border within-and-around the SRZ and CYRZ[28], although black bear hunting seasons have also been shortened in recent years. Idaho prohibits baiting and hunting bear with hounds in grizzly bear recovery zones[29], and has supported a grizzly bear law enforcement and education position in the SRZ to facilitate public education and hunter awareness since 1990 (Allen-Johnson 1991, Wakkinen et al. 2009). Hunting of grizzly bears in British Columbia is no longer permitted in the areas north of the SRZ and CYRZ (G. Mowat pers. comm. 2008, British Columbia Ministry of Environment 2008, Mowat 2007).

Montana Fish, Wildlife and Parks instituted a voluntary bear identification course for hunters in 2001 and made it mandatory in 2002 to assist with reducing grizzly bear mortality within the state. The states agencies for Idaho and Washington recently agreed to a request to institute similar programs in their respective states (SCYE IGBC 2009a and 2009b).

Sanitation: In many cases, management removals of grizzly bears are the result of bears becoming habituated to unnatural food sources such as human food or garbage. The following is a summary of sanitation measures that have taken place within the KNF, LNF, and IPNF in recent years:

In the KNF portion of the CYRZ, there has been a reduction of potential unnatural food sources. In 1987, there were no bear resistant garbage containers in any of the developed recreation sties on the KNF portion of the CYRZ. Currently, 27[30] developed recreation sites[31] include such devices, and 12 others are slated to have them installed in 2011 (M. Laws pers. comm. 2010). In addition, the KNF has 12 recreation sites with food storage containers with another 22 sites planned in 2011 (ibid). In 2001, the KNF implemented Forest-wide voluntary food storage

[27] State fish and game agencies include Montana Fish, Wildlife and Parks, Idaho Department of Fish and Game, and Washington Department of Fish and Wildlife.
[28] The states complete consultation with the USFWS for these activities.
[29] IDF&G is allowing 15 permit holders to hunt with dogs in portions of Unit 1 that include Priest Lake and Mission-Moyie BORZ areas in 2010.
[30] 14 of these sites have contract services for weekly garbage pick-up.
[31] Includes campgrounds, picnic sites, lookout/cabins, and boating ramp sites.

guidelines to encourage national forest users to store food in a manner that reduces human-bear conflicts.

The LNF portion of the CYRZ includes four developed campgrounds that have a pack-it-in/pack-it-out policy so unnatural food attractants are not likely to be found at these sites (D. Wrobleski pers. comm. 2010). In addition, bear resistant dumpsters were installed in the Cascade campground in 2010, although this campground is located outside the CYRZ boundary (ibid).

On the IPNF prior to the development of the 1987 Forest Plan, no bear resistant hardware was installed within any of the recreational sites. In 1996, all developed campgrounds on the Priest Lake Ranger District were outfitted with bear resistant trash containers. These were later upgraded to bear resistant dumpsters. In 1998, the four boat-or-hike-only campgrounds along the shoreline of the Upper Priest Lake were outfitted with eight bear resistant food storage lockers. By 2008, this number increased to 20. In 2004, bear resistant dumpsters were installed at the administrative site at the Priest Lake Ranger District and at the Kalispell boat launch. In 2005, 12 bear resistant food storage lockers were installed at designated campsites accessed by boat-or-hike-only located in another Priest Lake BMU. In 2006, a food storage order was implemented along the shoreline of Priest Lake and a voluntary food storage order was implemented over the remainder of the IPNF. Both of these orders remain in effect within the IPNF. In 2009 14 bear resistant food storage lockers were installed at additional campsites around Priest Lake.

In 2005 the Priest Lake Marina and Hills Resort were required to transition to bear resistant trash containers and dumpsters. In 2008, Elkins Resort transitioned to bear-resistant dumpsters and trash cans. Both of these resorts operate on the IPNF under special use permit. In addition, sanitation guidelines are being added to all recreation residence special use permits issued on the IPNF.

The IPNF, KNF, and LNF will be implementing mandatory food storage orders for those portions of the forests included within the SCYE in 2011 (IGBC Subcommittee 2010).

People's Attitudes Toward Grizzly Bears: Some people's attitudes toward grizzly bears are associated with how they view management actions (e.g. changes in motorized vehicle access) done to benefit grizzly bears (Canepa et al. 2008). If viewed as a loss of "freedom" to use their national forest, it may result in a higher mortality risk for grizzly bears. Reducing wheeled motorized vehicle access may increase this type of attitude, which could result indirectly in higher bear mortality risk.

Law Enforcement: Table 5 on page 20 discloses that 15 grizzly bears have been poached since 1982. An active law enforcement program can be a deterrent against this form of illegal grizzly bear mortality. The USFS cooperates with State and Federal law enforcement officials concerning any illegal killings of grizzly bears.

Public Education*:* Public education is an important element of any program designed to reduce grizzly bear mortalities. Through education, people can learn to live in a way that is more compatible with the needs and behaviors of bears. Education programs can reduce bear mortalities in instances of self-defense and habituation to unnatural foods. The USFS and cooperating agencies maintain a regular program of public information and education within the SRZ and CYRZ.

Motorized over-the-snow access - Motorized over-the-snow vehicle use is occurring in the SRZ and CYRZs and the associated BORZ. Overall, motorized over-the-snow vehicle use currently may be occurring on about five percent of each recovery zone. The Proposed Action will not directly change current management direction regarding this activity. When this use occurs during the active bear year[32], grizzly bears may be disturbed and potentially displaced from preferred habitats.

Environmental Effects

The Proposed Action will amend the respective Forest Plans to incorporate new grizzly bear habitat standards for OMRD, TMRD, and Core Area. The new standards provide an overall higher level of habitat security than current Forest Plan direction and are an improvement over current standards. The amendments incorporate the best available science and are consistent with the Forest Plans.

The programmatic changes designed for grizzly bear are expected to provide a higher level of security than existing Forest Plan direction for this species. The level of improved security depends on the site-specific locations of changes in wheeled motorized vehicle access management. Based on the expected improved security the Proposed Action is considered consistent with the respective Forest Plans for threatened and endangered species.

Implementation of these standards will take place according to the following schedule:

- 33 percent of those BMUs currently not meeting one or more standard within individual recovery zones are estimated to meet all standards within *three* years of the amendment decision date;
- 66 percent of those BMUs currently not meeting one or more standard within individual recovery zones are estimated to meet all standards within *five* years of the amendment decision date
- 100 percent of those BMUs currently not meeting one or more standard within individual recovery zones are estimated to meet all standards within *eight* years of the amendment decision date

Appendix H includes the details on scheduling the implementation of the Proposed Action.

The Forest Plans require that in Management Situation 1 (see page 28 of this document), habitat management decisions favor the needs of grizzly bear when grizzly bear habitat and other land use values compete. The 1998 IGBC Guidelines provide that “The FS will manage habitats essential to bear recovery for multiple land use benefits, to the extent these lands uses are compatible with the goal of grizzly recovery (IGBC 1998). Land uses which cannot be made compatible with the goal of grizzly recovery, and are under FS control will be redirected or discontinued.” The Proposed Action meets this requirement by integrating the unique features of the biological and social environment. The Proposed Action would have a greater chance of success because it incorporates a management system that integrates biological, social, valuational, and institutional forces toward a common effort involving grizzly bear conservation.

[32] April 1 to November 15 or November 30 - depending on recovery zone

Direct and Indirect Effects

The proposed federal action represents a programmatic decision, and therefore, would have no **direct effects** on grizzly bears or their habitats. Any direct effects would occur later at the project level when site-specific decisions are made about road and trail use and restrictions. Most of the effects identified in this analysis would be **indirect effects** in that they would occur later in time as a result of this programmatic decision. **Cumulative effects** are discussed in a later section.

Unmanaged human use of motorized roads and trails within occupied grizzly bear habitat may produce or facilitate several kinds of adverse effects to grizzly bears, including the following:

- Direct shooting resulting in injury or mortality may occur through mistaken identity for black bears or other game animals, through defense of life actions, through poaching for trophy animals, and through malicious killings.
- Attractants (human and animal foods and garbage) brought into grizzly bear habitat in motorized vehicles may result in habituated bears that may eventually need to be destroyed, or may result in human/bear conflicts that result in a poor outcome for the bear.
- Some bears may become conditioned to the presence of vehicles and humans on roads and thus become more vulnerable to direct mortality through the means identified above.
- Other bears may be displaced from preferred habitat by the human disturbance associated with road use, with a resultant reduction in habitat availability and quality and potential effects on nutrition and reproduction.
- Direct vehicle collision mortality may occur along major highways within and between the SRZ and CYRZ, both on NFS and private lands.

The Proposed Action would allow for the possibility of opening some closed roads in BMUs that meet all three grizzly bear security standards (OMRD, TMRD, and Core Area) sometime in the future. Depending on where these roads are located, there is a possibility of increased displacement, disturbance, and/or mortality risk to grizzly bear in those BMUs as a result of such future decision(s). These potential effects will be analyzed and consulted upon at the time these site-specific projects are proposed.

Managing motorized vehicle access using the adjusted bear year of April 1 to November 30 in the CYRZ may indirectly reduce administrative access due to the additional two weeks of the bear year (from November 16 to November 30) where administrative use would be included in the limited fall season trip numbers. Likewise, the lengthening of the bear year would reduce public access on restricted roads where gates were previously opened on November 16th to allow for various activities such as firewood collection and/or hunting.

Several effects indicators were used to estimate the effects of the proposed federal action on grizzly bears in the Recovery Zones and BORZ. These included both numerical and non-numerical indicators, which are discussed below.

Quantitative Effects Indicators within Recovery Zones and BORZ: Table 25 summarizes the quantitative measures used to assess how the standards set forth in the Proposed Action meet the access levels identified by Wakkinen and Kasworm (1997). The extent of administrative use allowed is also used as a measure for assessing habitat security. In addition, implementation the Proposed Action would ensure no further degradation in BORZ from

motorized vehicle use and/or route construction on NFS lands over the existing condition (see Table 24) except for ANICLA situations.

Under the Proposed Action, full implementation will occur in eight years (Table 25). The changes that will occur in OMRD, TMRD, and Core Area within the BMUs to reach full implementation will be mandatory[33]. The second set of values (At Standard) could occur only after all the BMUs in each respective recovery zone achieve their assigned standards. At that point, those BMUs that are better than their assigned standard for either OMRD or TMRD and Core Area could potentially increase levels of OMRD (open gated or barriered roads) or TMRD (open or gate currently barriered roads) or decrease levels of Core Area (open or gate currently barriered roads) to the respective BMU standard. However, these are opportunities, not requirements, and will receive their own analysis and review at the time such actions may be proposed, including public comment and formal consultation with the U.S. Fish and Wildlife Service.

Table 25. Summary of effects for the Proposed Action at "Full Implementation" (once all BMUs are at or above access standards) versus "At Standard" in the Cabinet-Yaak and Selkirk Recovery Zones.

Effects Indicator	Cabinet-Yaak		Selkirk[1]	
	Full Implementation (≤ 8 years)	At Standard	Full Implementation (≤ 8 years)	At Standard
Weighted Average[2] OMRD (percent)	32	33	28	31
Weighted Average[2] TMRD (percent)	26	26	22	22
Weighted Average[2] Core Area (percent)	59	58	61	60
Allowable Administrative Use	60 round trips		57 round trips	
Miles of Open and Total Roads in Bears Outside Recovery Zones (BORZ)	Not net increase on NFS lands except for ANILCA		No net Increase on NFS except for ANILCA	

[1]Only eight BMUs are under consideration in these calculations including Blue Grass, Ball-Trout, Myrtle, Long-Smith, Sullivan-Hughes, Kalispell-Granite, Lakeshore, and Salmo-Priest.
[2]Values for OMRD, TMRD, and Core were weighted for the individual BMUs based on the total size of the BMU and then averaged for the entire ecosystem.

[33] In calculating these weighted averages across the two ecosystems, it is important to note that some permitted changes (i.e., increases in road densities or decreases in Core Area in BMUs that are currently better than standards), are unlikely to occur because changes to one standard affects the others. Specifically, there are 25 BMUs in the Proposed Action where the proposed standards for TMRD and Core Area interact to limit the amount of potential change that could occur to either of the parameters. Because changes to TMRD and Core Area[33] both involve putting barriers on open or gated roads, or conversely, opening or gating barriered roads, the proposed standard for Core Area affects or limits the percent of change that can occur in TMRD and vice versa.

Qualitative Effects Indicators within Recovery Zones and BORZ: Seven qualitative indicators were used to evaluate the effects of the Proposed Action on grizzly bears. These indicators are compared in context to the *Original Forest Plan Direction* versus *Current Direction* versus the *Proposed Action*.

- The *Original Forest Plan Direction* includes the access standards put in place for grizzly bears in the 1986 LNF and 1987 IPNF and KNF Forest Plans.
- *Current Forest Plan Direction* on the KNF and LNF ncludes the adoption of the 1994 and 1998 Interim Access Management Strategy and Rule Set developed by the Selkirk/Cabinet-Yaak IGBC Subcommittee. On the IPNF, *Current Forest Plan Direction* reflects direction established by the USFWS in their 2001 BO of the IPNF Forest Plan. All three Forest incorporated Regional Forest Service direction to define grizzly bear recurring use areas but this has not been incorporated into the Forest Plans at this time.
- *Proposed Action* is detailed on pages 6 – 13 of this document.

1. Contributes to achieving Grizzly Bear Recovery Plan Objectives and Consistent with Interagency Grizzly Bear Committee (IGBC) Access Direction. This indicator determines whether the Proposed Action is consistent with administrative direction for recovery of grizzly bears, including the *Grizzly Bear Recovery Plan* (U.S. Fish and Wildlife Service 1993a) and IGBC wheeled motorized vehicle access management direction (IGBC 1998b). The *Grizzly Bear Recovery Plan* identifies recovery goals, objectives, and tasks necessary for recovery of the species. Many of these items relate to reducing human-caused mortality and managing for effective use of available habitats by grizzly bears. Human access by wheeled motorized roads and trails can alter use of important bear habitats and can be a contributing factor to human-caused mortality of bears. The IGBC provided direction for developing consistent management standards related to management of wheeled motorized vehicle access within the SRZ and CYRZ.

    - **Original Forest Plan Direction:** The existing direction achieves Recovery Plan objectives in that it contains measures such as linear open road density (KNF and LNF) and habitat effectiveness (KNF and IPNF) that provide a level of habitat security for bears, thereby reducing some displacement and disturbance of bears from preferred habitats and providing some protection from human-caused mortality. However, mortality while managing under these measures did not meet the Grizzly Bear Recovery Plan goal of zero human caused mortality. Forest Plan direction became obsolete in terms of IGBC direction in that it did not establish numerical OMRD, TMRD or Core requirements within grizzly bear habitat. In regards to BORZ, recurring use by grizzly bears was not recognized when the original Forest Plans were developed although the potential for linkage between the Northern Continental Divide Recovery Zone and CYRZ was noted and Management Area direction was inserted into the KNF Forest Plan to maintain road densities less than or equal to 0.75 miles per square mile. The IPNF and KNF Forest Plans did include limited Management Area direction concerning maintenance of wildlife habitat effectiveness via road closures for some areas situated outside of the Recovery Zone boundaries.

    - **Current Forest Plan Direction:** On the KNF and LNF, current practices incorporate all the protective measures of the Forest Plan direction plus the Interim Access Management Strategy and Rule Set developed by the Selkirk/Cabinet-Yaak IGBC

Subcommittee. Goals for Core are established in Priority 1 BMUs, and no increases in OMRD or TMRD are allowed, but no numerical standards are established for these measures. Thus, current practices are partially consistent with Recovery Plan and IGBC direction. On the IPNF, current practices reflect direction established by USFWS in the 2001 BO on the IPNF Forest Plan. These practices are, therefore, consistent with Recovery Plan objectives. They are also consistent with IGBC access direction by incorporating standards for OMRD, TMRD and Core. The Forests incorporated Regional direction to define grizzly bear recurring use areas (per Wittinger 2002) and analyze for incidental take in the defined BORZ (Wittinger 2003; Johnson 2003) as the best available science, but this has not been incorporated into the Forest Plans at this time.

- **The Proposed Action** complies with IGBC direction and Biological Opinion Terms and Conditions by developing standards for OMRD, TMRD, and Core Area for the BMUs in the CYRZ and SRZ. As anticipated, some standards are proposed above minimum recommended levels for these measures in many BMUs. While in other BMU's, recommended levels of OMRD, TMRD, or Core Area cannot be met due to a lack of legal authority to close highways and county roads, the high percentage of non-federal lands, or other management considerations. The Proposed Action includes conservation measures in BORZ areas that would ensure no further degradation of current motorized access conditions from the existing conditions.

2. Contributes toward conservation in accordance with ESA Section 7(a)(1) requirement to conserve listed species. Section 7(a)(1) requires federal agencies to carry out programs for the conservation of listed species.

   - **Original Forest Plan Direction:** Contains access management measures such as linear open road density (KNF and LNF) and habitat effectiveness (KNF and IPNF). The certainty of conserving grizzly bears is unknown, but if conservation and recovery were to occur, it would likely be over a very long timeframe.

   - **Current Forest Plan Direction:** Provides additional measures for conserving secure habitat for bears on the KNF and LNF compared to Forest Plans. On the IPNF, the 2001 amended Forest Plan Biological Opinion instituted requirements for OMRD, TMRD and Core Area at the levels recommended by local bear researchers (i.e. 33 percent, 26 percent and 55 percent, respectively). These levels of security represent the average values within the home ranges of local bears which successfully reproduced; therefore, conserving bears at a level considered to have reasonable potential for success.

   - **The Proposed Action** provides secure habitat as measured by OMRD, TMRD, and Core Area. Overall, across the SRZ and CYRZ, the level of security is moderately high. The Proposed Action includes Design Elements in BORZ areas that would ensure no further degradation of current motorized access conditions from the existing conditions.

3. Consistent with ESA Section 7(a)(2) requirement to avoid jeopardizing continued existence of listed species. In addition to the obligation to conserve listed species, ESA requires federal agencies to insure that any agency action does not jeopardize the continued existence of the species. The determination of jeopardy or non-jeopardy is made in consultation with USFWS through the ESA Section 7 consultation process. Based on

ongoing informal consultations and an estimate of how the Proposed Action would provide for habitat security of bears and the expected results in terms of human-caused mortality, it is possible to rate the alternative as to its' probable risk of jeopardizing the populations.

- **Original Forest Plan Direction:** Coincided with levels of human-caused mortality that exceeded Recovery Plan goals during the timeframe when it was in place. While bear habitat was being managed in a manner consistent with this direction, USFWS determined that the populations warranted uplisting from threatened to endangered. USFWS amended their Biological Opinions on the Forest Plans in 1995 and 1996 (KNF and LNF) and 2001 (IPNF) to include mandatory terms and conditions to minimize take. The likelihood that USFWS would find existing Forest Plan direction, without these changes, to jeopardize the continued existence of grizzly bears under ESA Section 7(a)(2) appears high.

- **Current Forest Plan Direction:** On the KNF and LNF, current direction contains the security measures in Forest Plans plus additional measures contained in the Interim Access Management Strategy and Rule Set. An important feature of the interim direction is a provision for no net loss in OMRD, TMRD, and Core. On the IPNF, the amended Biological Opinion sets standards for OMRD, TMRD and Core at the levels recommended by bear researchers, and subsequent consultation with the USFWS resulted in a non-jeopardy determination (U.S. Fish and Wildlife Service 2001).

- **The Proposed Action** ensures that the recommended research levels for OMRD, TRMD, and Core Area are met throughout the CYRZ as a whole as well as the portion of the SRZ that is affected by the action.

4. Utilizes best available scientific information. The best available scientific information (see project record) regarding wheeled motorized vehicle access management in grizzly bear habitat is derived from two sources. The first is the research from the South Fork of the Flathead River regarding how road access affects grizzly bears (Mace and Manley 1993, Mace and Waller 1997). This research applied the "moving windows" computer technique for assessing grizzly bear habitat parameters such as OMRD, TMRD, and Core. It also inspired the development of OMRD, TMRD, and Core Area standards as management measures for grizzly bear habitat. The second source is research of local bear populations which applied the South Fork methodology to the SRZ and CYRZ (Wakkinen and Kasworm 1997). This second source is considered the best science to be applied directly to the SRZ and CYRZ for these measures (Allen and Lyndaker 2010). Furthermore, the Proposed Action incorporates Regional direction (Wittinger 2002 and 2003) and updates (Appendix F) in defining areas or use by grizzly bears outside recovery zone (as discussed by Recovery Plan (1993a)).

   - **Original Forest Plan Direction:** While Forest Plans included direction for linear open road density (KNF and LNF) and habitat effectiveness (KNF and IPNF), no consideration was given specifically to OMRD, TMRD or Core since the science and methods related to these parameters was developed after Forest Plans were approved. Only limited consideration was given to grizzly bear use of areas outside the Recovery Zone on the KNF in regards to motorized access.

   - **Current Forest Plan Direction:** On the KNF and LNF, current practices include no net loss in OMRD, TMRD and Core, and working towards 55 percent Core in priority 1 BMUs. BMUs that do not meet recommended minimum standards for OMRD and

TMRD, and Priority 2 and 3 BMUs that do not meet minimum recommendations could remain at present levels but could not decrease. On the IPNF, OMRD, TMRD and Core standards that meet minimum research recommendations were set for all BMUs in the USFWS 2001 amended Biological Opinion. The Forests incorporated Regional direction to define grizzly bear recurring use areas (per Wittinger 2002) and analyze for incidental take in the defined BORZ (Wittinger 2003; Johnson 2003) as the best available science, but this has not been incorporated into the Forest Plans at this time.

- **The Proposed Action** includes BMU-specific standards for OMRD, TMRD, and Core Area in all BMUs. The benchmark for the standards is the average level recommended by researches as needed to support a female grizzly bear with cubs (33 percent OMRD, 26 percent TMRD, and 55 percent Core). The recommendations were based on an average of conditions used by six female grizzly bears in the CYRZ and SRZ. Some of these research bears required less secure habitat and some bears required more security. Accordingly, some BMUs standards are set above or below the average recommendations, depending on site-specific capability of the BMUs and management needs. The Proposed Action includes standards in the BORZ that would ensure no further degradation of current motorized access conditions from the existing conditions.

5. Minimization of grizzly bear mortality risk. An increase in secure habitats should result in a reduction of mortality risk for grizzly bears.

   - **Original Forest Plan Direction:** Includes measures such as linear open road density (KNF and LNF) and habitat effectiveness (KNF and IPNF) which have some potential for minimizing mortality risk.

   - **Current Forest Plan Direction:** Contains requirements for linear open road density and habitat effectiveness where they apply in Forest Plans. Also incorporates the best available science which recognizes the importance of OMRD, TMRD, and Core Area in reducing the risk of mortality as well as displacement and disturbance.

   - **The Proposed Action** includes improved levels of OMRD, TMRD, and Core Area, on average, for all BMUs which should further reduce the risk of displacement, disturbance and mortality on NFS lands from current Forest Plan direction because of the net increase of secure habitat (i.e. 29,982 acres of Core Area for both recovery zones with full implementation of the Proposed Action). The Proposed Action includes standards in the BORZ that would ensure no further degradation of current motorized access conditions from the existing conditions. This will ensure no further increase in the risk of mortality and/or displacement and disturbance of the few grizzly bears using these areas.

6. Minimization of grizzly bear displacement. This indicator parallels indicator 5 very closely. Like the mortality indicator, the greater the amount of secure habitat provided by the Proposed Action, the less potential for displacement of bears from preferred habitat.
   - **The Proposed Action** is rated the same as for indicator 5.

7. Provides for future development of habitat-based wheeled motorized vehicle access management approach. Not all habitats are of equal value to bears. From a bear management standpoint, it makes sense to overlay access restrictions within habitat that

has the greatest biological value. New techniques are becoming available for this habitat-based approach to wheeled motorized vehicle access management, but the techniques are not currently available in the CYRZ or SRZ.

- **Current Forest Plan Direction and the Proposed Action** includes direction to pursue, and if possible, implement a habitat-based wheeled motorized vehicle access management approach**.**

Interaction of Social and Biological Effects: Recovery of grizzly bears involves both biological and social aspects. The future of the grizzly bear will depend on integrating those socioeconomic and utilitarian values of the general human population into the establishment and management of preservation programs. Local values and traditions must be integrated into grizzly bear preservation to enhance local support. A management system that seeks to integrate all biological, social, valuational, and institutional forces toward a common effort involving grizzly bear conservation will have the highest chance of success. Social tolerance can increase effective habitat in areas where bears and humans must coexist, whether it be in backcountry wilderness or in areas of human settlement on the edges of wild lands (USDI 1993a). A segment of the public is opposed to grizzly bear recovery because of perceived adverse effects on lifestyles and the economy (e.g. Canepa et al. 2008). It has been surmised by some that instituting management standards that restrict the public's use of the national forests will have a backlash effect, resulting in people intentionally killing bears. The term "social jeopardy" has been used to describe this potential effect. No scientific data has been collected to document the extent of grizzly bear mortalities that may be due to this form of illegal activity. However, this situation is recognized in the Grizzly Bear Recovery Plan (USDI 1993a).

Managers face a difficult decision in trying to balance the need for scientifically-based resource management standards against potential consequences of the illegal activities of a few individuals opposed to the standards. It is possible that increased restrictions on access may make it more difficult to find and kill bears, even for those people who set out to intentionally do so. However, some level of illegal human-caused mortality may always occur, simply because some individuals do not accept grizzly bears under any circumstances. Therefore, it is possible implementation of additional wheeled motorized vehicle access restrictions may result in a higher risk of illegal shooting mortalities. Other elements of grizzly bear recovery, such as education and law enforcement, may serve to mitigate some of the effects of social jeopardy.

Cumulative Effects

Cumulative effects under ESA include future state and private actions that are reasonably certain to occur in the action area. Current and future federal actions that are unrelated to the Proposed Action are not considered in this section because they require separate consultation under ESA section 7.

Cumulative effects to grizzly bears will occur independent of this decision. The decision would establish management direction for National Forest lands within grizzly bear habitat. However, grizzly bear recovery zones also include State and private lands. The numbers used for road densities and Core Area in this analysis includes consideration of roads on State and private lands within the 30 grizzly bear BMUs considered in this Biological Assessment, even though standards set by Design Elements would apply only to NFS lands (Tables 1 and 2; Appendix D). In addition, the linear miles of open and total roads in the seven BORZ areas includes consideration of roads on State and private lands, even though the standards set by Design Elements would only apply to NFS lands (Table 3).

Decisions made by these landowners regarding management of motorized roads and trails on their lands could potentially result in cumulative effects to grizzly bears such as displacement, disturbance, or mortality. Usually, the Forest Service may compensate for these effects through additional access management steps on Federal lands within the individual BMU. However, it is possible that the amount of Core Area that may be developed on private or state property may sometimes exceed the Forest Service's ability to compensate on NFS lands.

Montana Department of Natural Resources and Conservation Lands released a draft environmental impact statement in June of 2009 as part of their development of a Habitat Conservation Plan (HCP) for their lands (Federal Register 2009). Likewise, the Idaho Department of State Lands is currently working on an HCP with funding provided by the USFWS for that portion of the SRZ that includes the IDL BMU (U.S. Fish and Wildlife Service 2003; G. Lech pers. comm. 2010). When completed, these HCPs should provide additional protection for grizzly bears and their habitat that would minimize or mitigate for some cumulative effects on these state lands.

Continued human uses of state and private lands and within the project area has the potential to add cumulatively to grizzly bear mortality through illegal or mistaken identity, sanitation problems resulting in removal or killing of grizzly bears; rural home development, resorts, and agricultural activities also have the potential to add cumulatively to grizzly bear mortality and habitat loss.

Determination of Effects

During the eight year period of implementation, or prior to all BMUs meeting standards, the existing condition **may affect, and is likely to adversely affect** the grizzly bear or their habitat. This finding is based on the following rationale:

- Human use of forest roads has the potential to result in adverse effects to grizzly bears (U.S. Fish and Wildlife Service 1995a, U.S. Fish and Wildlife Service 1996, U.S. Fish and Wildlife Service 2001).

- Research in the CYRZ and SRZ has identified a level of forest roading compatible with continued use and productivity of grizzly bears (i.e. average OMRD $\leq$33 percent, TMRD $\leq$26 percent, Core $\geq$55 percent) (Wakkinen and Kasworm 1997).

- However, some BMUs in the CYRZ do not currently meet these levels of security, thus adverse effects may currently be occurring and would continue to occur.

- The proposed federal action would set BMU-specific standards for OMRD, TMRD and Core Area that, through consultation with USFWS, have been determined to minimize the adverse effects of motorized human access. However, the agreed upon levels of security would not be fully reached for a period of up to eight years while implementation of the proposed federal action is occurring.

- During this implementation period, displacement, disturbance and mortality which may be occurring as a result of the environmental baseline would likely continue at some

level. This identified potential for adverse effects can result in incidental take of grizzly bears.

- Within the BORZ, existing conditions related to wheeled motorized access may result in displacement and/or disturbance of the grizzly bears that occasional use these ares. However, the available data suggest that mortality risk is minimal for these areas.

Human use of roads may contribute to disturbance and displacement of grizzly bears. Research has shown that bears can co-exist and survive with a certain level of roads (Wakkinen and Kasworm 1997) without apparent adverse effects. Once access management standards are at standard, disturbance and displacement is not expected to be at levels that result in adverse effects to bears as evidenced by the available research and consultation with USFWS.

The proposed federal action sets BMU-specific standards for OMRD, TMRD and Core Area. CYRZ and SRZs would experience an absolute gain of 28,396 and 1,586 acres of Core Area, respectively, from 2009 conditions. Overall, the Cabinet-Yaak ecosystem would exhibit an overall OMRD, TMRD, and Core Area of 33, 26, and 58 percent (Table 25). Likewise, that portion of the Selkirk ecosystem that is affected by the proposed action would exhibit an overall OMRD, TRMD, and Core Area of 31, 22, and 60 percent with project implementation (Table 25). The Proposed Action will allow for no net increases in the existing miles of open and total roads on NFS lands in these seven areas (Table 24).

Canada Lynx

Canada Lynx (*Lynx canadensis*) are medium-sized cats with large feet adapted to walking on snow, long legs, tufts on the ears and black-tipped tails (Ruediger et al. 2000). Snowshoe hare are the primary prey of lynx, compromising the majority of their diet throughout most of their distribution, especially in the winter. Female lynx select mature, dense forest habitats with lots of down woody debris, for example jack-strawed logs, to provide security and thermal cover (Ruggiero et al. 1994, Koehler 1990).

Additional information on lynx (*Lynx canadensis*) population ecology, biology, and habitat description and relationships are described in Ruggiero et al. 2000 and Ruediger et al. 2000.

Reference Condition

Canada lynx were officially listed as a threatened species in March of 2000. In that same year, the Canada Lynx Conservation Assessment and Strategy (LCAS) was developed to provide a consistent and effective approach to conserve Canada lynx on federal lands (Ruediger 2000). In 2007, the Forest Service completed the Northern Rockies Lynx Management Direction (NRLMD) which adopted many of the recommendations from the LCAS, but incorporated more recent research findings to develop standards and guidelines to protect lynx and their habitat within designated LAUs and linkage zones.

On February 28, 2008, the USFWS (U.S. Fish and Wildlife Service 2008) issued a proposed rule revising critical lynx habitat. The USFWS released a revised designation of critical habitat for Canada lynx on February 25, 2009 (U.S. Fish and Wildlife Service 2009). This analysis area partially falls in designated critical lynx habitat. Critical lynx habitat has been designation north

of U.S. Highway 2 on the KNF. A small portion of the IPNF lynx habitat north of U.S. Highway 2 and east of the Moyie River is also designated critical lynx habitat. No designated critical lynx habitat occurs on the portion of the LNF in the analysis area. However, a July 28, 2010 ruling remanded this designation back to the USFWS for further consideration while keeping the original 2009 designations in place. The USFWS has been instructed by the courts to reanalyze areas in National Forests considered to be currently unoccupied for potential inclusion as designated critical habitat, including the Lolo National Forest.

Affected Environment

Population Status

The most recent lynx distinct population segment status is found in the Biological Opinion on the effects of the NRLMD (U.S. Fish and Wildlife Service 2007). Both historic and recent lynx records are relatively scarce, which makes identifying range reductions and determining historical distribution of populations in the region difficult (Koehler and Aubry 1994). Lynx have been documented in numerous locations throughout the analysis area.

The primary risk factors impacting lynx populations are largely based on the alteration of forest habitats through vegetation management, fire or grazing and the resulting impact on its ability to provide snowshoe hare habitat, particularly in winter. Their primary prey, snowshoe hare, reaches their highest densities in young, dense, coniferous forests or multi-storied stands consisting of mature forests characterized by a dense understory.

Mortality risk factors include incidental trapping and predation especially on kittens by coyotes, wolves, mountain lions, bobcats, and birds of prey (U.S. Forest Service 2007). The states of Montana, Idaho, and Washington prohibit trapping of lynx; however legal trapping of other species occurs in these three states, while Canada has a legal lynx trapping season just north of the SRZ and CYRZ (British Columbia Ministry of Environment 2008). While there is some concern that predation on lynx could occur due to the abundance of mountain lions in the region, predation is not known to be a factor that is threatening lynx. In addition, numerous wolf packs are now well established within the SRZ and CYRZ. It is possible that the higher population numbers of wolves may increase the potential for predation on lynx, although the risk is probably low (Ruediger et al. 2000).

Other risk factors include increased competition from other predators (e.g. coyotes, bobcats, and mountain lions) for hare. Historically where the ranges of these species overlapped with the lynx, deep snow excluded them from winter habitats for the lynx. Alteration of forests and development of compacted trails through the snow could facilitate movement of potential lynx competitors. Plowed roads and snow compaction of roads and trails associated with a variety of forest management and recreational activities may also increase the potential for competitors to move into lynx habitat. However, Kolbe et al. (2007) found that the overall influence of snowmobile trails on coyote movements and lynx foraging success during winter appeared to be minimal.

Habitat Status

Lynx and lynx habitat are most abundant in the classic boreal forest ecosystem known as taiga in Canada and Alaska. Lynx extend south from this into the conterminous United States in a peninsular fashion and inhabit areas that are considered more marginal. Habitat is the southern part of their range becomes less suitable and less abundant. They occur primarily in moist, cold

habitat types above 4000 feet in elevation, where snow depths are generally deep throughout the winter.

Snowshoe hares are an important food source, comprising 35 to 97 percent of the diet throughout the range of lynx. Red squirrels may be an important prey species, especially when hare populations are low. The primary limiting factor for this species appears to be suitable winter foraging habitat. Primary winter foraging habitat is found in multi-story mature or late successional forests that hold good populations of snowshoe hare (U.S. Forest Service 2007).

The direction provided in the NRLMD is applied to lynx habitat at the Lynx Analysis Unit (LAU) scale. All three forests remapped their LAU boundaries based on the Canada Lynx Biology Team recommendations to have LAUs of 16,000 to 25,000 acres in size with at least 6,400 acres of primary habitat within each LAU. The IPNF has delineated 13 LAUs which approximate a female lynx home range size, while the KNF and LNF have identified 47 and 5 LAUs, respectively, in the analysis area. Table 26 and Figure 10 display the current lynx habitat conditions across the analysis area, by Forest, in relation to the NRLMD criteria. Three LAUs on the KNF are not shown because they are associated with the Northern Continental Divide Grizzly Bear Ecosystem and are not affected by this federal action. In addition to the LAUs, there are 12 identified linkage areas for lynx in the analysis area (U.S. Forest Service 2001).

Table 26. Lynx Habitat by Lynx Analysis Unit (LAU) on the Idaho Panhandle, Kootenai, and Lolo National Forests (2009).

Forest	Lynx Analysis Unit (LAU)	Total Lynx Habitat in LAU (Acres)	Stand Initiation Structural Stage Habitat (Acres (%)) [1]	Habitat Changed to Stand Initiation Structural Stage Over past 10 years by Timber Management with Regeneration Harvests (Acres (%)) [2]	Number of Adjacent LAUs that Exceed 30 % Lynx Habitat in a Stand Initiation Structural Stage
Idaho Panhandle	Katka	9,872	446 (5)	55 (1)	0
	Boulder	14,755	437 (3)	0 (0)	0
	Grouse	12,407	0 (0)	0 (0)	0
	Lunch	15,043	235 (2)	97 (1)	0
	Trestle	19,296	11 (0)	0 (0)	0
	Lightning	16,201	143 (1)	143 (1)	0
	Scotchman	10,936	0 (0)	0 (0)	0
	American Canuck	22,133	1,364 (6)	40 (0)	0
	Deer Skin	14,132	72 (1)	24 (0)	0
	Round Prairie	14,452	695 (5)	200 (1)	0
	Blue Grass	18,298	385 (2)	188 (1)	0
	Saddle Cow	16,705	116 (1)	32 (0)	0
	Upper Smith	17,698	0 (0)	0 (0)	0
	Parker	16,266	123 (1)	0 (0)	0
	Trout	17,962	655 (4)	0 (0)	0
	Cascade	15,707	22 (0)	0 (0)	0
	Snow	15,224	0 (0)	0 (0)	0
	Pack River	10,613	0 (0)	0 (0)	0
	Upper Priest	30,210	221 (1)	0 (0)	0
	Hughes	19,633	148 (1)	0 (0)	0

Forest	Lynx Analysis Unit (LAU)	Total Lynx Habitat in LAU (Acres)	Stand Initiation Structural Stage Habitat (Acres (%)) [1]	Habitat Changed to Stand Initiation Structural Stage Over past 10 years by Timber Management with Regeneration Harvests (Acres (%)) [2]	Number of Adjacent LAUs that Exceed 30 % Lynx Habitat in a Stand Initiation Structural Stage
	Hemlock	27,157	631 (2)	0 (0)	0
	Willow	33,290	1,246 (4)	30 (0)	l0
	Sema	19,178	107 (1)	0 (0)	0
	Kalispell	22,376	1,559 (7)	128 (1)	0
	Tola Pelke	13,827	167 (1)	35 (0)	0
Kootenai	Young/Dodge	18,092	622 (3.4)	408 (2.3)	0
	Boulder/Sullivan	23,815	1,701 (7.1)	673 (2.8)	0
	Good	14,595	1,555 (10.7)	211 (1.4)	0
	North Fork Big	18,248	334 (1.8)	0 (0)	0
	Lookout	18,600	399 (2.1)	227 (1.2)	0
	South Fork Big	23,406	296 (1.3)	108 (0.5)	0
	Parsnip	15,436	561 (3.6)	86 (0.6)	0
	McGuire/Tenmile	23,144	599 (2.6)	438 (1.9)	0
	Sutton	17,516	1989 (11.4)	524 (3)	0
	Pinkham	26,368	3665 (13.9)	3106 (11.8)	0
	Edna	18,812	262 (1)	233 (1)	0
	Swamp	20,157	77 (.4)	0 (0)	0
	Fortine	18,226	530 (3)	331(2)	0
	Sunday/Trego	34,597	1096 (3.2)	50 (0.1)	0
	Robinson	44,746	4,719 (10)	268 (1)	1
	Hawkins	53,260	7,246 (14)	208 (0)	0
	Baldy	32,455	1,713 (5)	54 (0)	0
	Lost Horse	30,373	2,718 (9)	900 (3)	1
	Skookum	38,015	4,281 (11)	327 (1)	0
	Thunder	30,988	2,731 (9)	10 (0)	0
	China	28,386	4,386 (15)	800 (3)	0
	Callahan	45,052	2,613 (6)	0 (0)	0
	Crowl	18,203	5,588 (31)	12 (0)	0
	Keeler	18,686	2,167 (12)	60 (0)	1
	Ross	29,635	10,941(37)	45 (0)	0
	McElk	12,816	709 (6)	0 (0)	0
	Silver Butte	23,627	69 (< 1)	0 (0)	0
	West Fisher	22,489	949 (4)	225 (1)	0
	Crazy	35,456	1,361 (4)	355 (1)	0
	Treasure	32,098	2,437 (8)	2,247 (7)	1
	Lower Quartz	12,039	920 (8)	602 (5)	0
	Upper Quartz	19,887	2,157 (11)	597 (3)	0
	Upper Pipe	19,174	1,275 (7)	192 (1)	1
	Lower Pipe	22,760	2,867 (13)	910 (4)	0
	Bristow	18,763	2,577 (14)	1,313 (7)	0

Forest	Lynx Analysis Unit (LAU)	Total Lynx Habitat in LAU (Acres)	Stand Initiation Structural Stage Habitat (Acres (%)) [1]	Habitat Changed to Stand Initiation Structural Stage Over past 10 years by Timber Management with Regeneration Harvests (Acres (%)) [2]	Number of Adjacent LAUs that Exceed 30 % Lynx Habitat in a Stand Initiation Structural Stage
	Cripple	30,528	4,941 (16)	916 (3)	0
	Dry Fork/Weigel	17,799	3,633 (20)	712 (4)	0
	Upper Wolf	17,335	4,411 (25)	1,734 (10)	0
	Bull	20,856	918 (4)	12 (< 1)	1
	Rock	29,451	695 (2)	656 (2)	0
	Vermilion	37,184	1,819 (2)	0 (0)	0
	Beaver/Whitepine	27,142	0 (0)	1500 (5)	0
	Trout/Martin	34,111	303 (1)	495 (1)	0
	Elk/Pilgrim	21,049	405 (2)	0 (0)	0
Lolo	Mantrap	16,983	2,124 (12%)	0 (0%)	0
	West Fork Fishtrap	16,592	1,071 (6%)	0 (0%)	0
	Thompson	19,516	0 (0%)	0 (0%)	0
	Cougar	24,946	92 (< 1%)	92 (< 1%)	0
	Big Hole	18,864	708 (3.8%)	0 (0%)	0

[1] These acres are lynx habitat that currently does not provide sufficient vegetation quantity or quality (height) to be used by snowshoe hare and lynx. No additional regeneration harvest is allowed if more than 30 % of lynx habitat in an LAU is in a stand initiation structural stage that does not provide winter snowshoe hare habitat, except for limited fuel treatments in the wildland urban interface.
[2] Portion of the total LAU acres that provide lynx habitat (suitable + unsuitable acres). No more than 15 % of lynx habitat on NFS lands in an LAU may be changed by regeneration harvest in a 10-year period.

Roads and Habitat Use: Road and trail access and recreational use are risk factors that can impact lynx populations. Roads and trails facilitate human access, thereby escalating the likelihood for lynx and human interactions and increasing lynx vulnerability to trapping and shooting loss. Conversely, roads also facilitate trapping and hunting of predator species that may prey on lynx kittens (e.g. mountain lions, wolves, bobcats, coyotes) or compete with lynx (e.g. mountain lions, bobcats, coyotes, red fox). Although uncommon, lynx have been trapped or shot (legally, illegally, and incidentally) in the Northern Rocky Mountains geographic area (Ruediger et al. 2000).

Roads in general represent a risk factor to lynx; however, paved roads and highways, which are limited on National Forest System lands within the analysis area, account for the majority of the impacts to lynx from roads. There is no evidence that lynx avoid or are displaced by unpaved roads, therefore unpaved roads and their subsequent potential use as over snow routes are not considered a threat to lynx movement. Similarly, road density does not appear to affect lynx habitat selection (Ruediger et al. 2000).

Environmental Consequences

The Proposed Action will amend the respective Forest Plans to incorporate new grizzly bear habitat security standards for OMRD, TMRD, and Core Area. The new standards provide an overall higher level of habitat security than current Forest Plan direction and are an improvement over current standards. The amendments incorporate the best available science and are consistent with the Forest Plans.

The Proposed Action will not change any other current programmatic direction related to managing for the recovery of Canada lynx. However, the programmatic changes designed for grizzly bear are expected to provide a higher level of security than existing Forest Plan direction for this species. The level of improved security depends on the site-specific locations of changes in wheeled motorized vehicle access management. Based on the expected improved security the Proposed Action is considered consistent with the respective Forest Plans for threatened and endangered species.

Direct and Indirect Effects

Because the Proposed Action represents a programmatic decision, there would be no direct effects on the following to the Canada lynx. Any direct effects would occur later at the project level when site-specific decisions are made about road and trail use restrictions. Most of the effects identified in this analysis would be indirect effects because they would occur later in time as a result of programmatic decisions.

The effects related to the Proposed Action focus primarily on managing and controlling access on existing roads and trails to achieve specific objectives and standards for each BMU. Accordingly, this analysis deals with the influences of human use on motorized roads and trails, and the associated consequences on lynx security and habitat effectiveness. The effects related to habitat manipulation are not addressed because they are not part of the Proposed Action.

Although the Proposed Action places greater limitations on human use of motorized roads and trails and provides an overall improvement in security for grizzly bears, it provides opportunities for management access and public use. These opportunities arise from BMUs that exceed their

numeric standards for core habitat and road density, thereby, providing a chance for management activities/public use while adhering to the management goals set for each BMU. However, these are opportunities, not requirements, and will receive their own scrutiny at the time those actions are proposed. Consequently, the results of opportunities are not expected to have meaningful effects to the Canada lynx.

This analysis includes only those Objectives, Standards, and Guidelines of the NRLMD that apply to this project.

Objectives, Standards, and Guidelines applicable to All (ALL) management projects in lynx habitat

Objective ALL 01: ***Maintain or restore lynx habitat connectivity in and between LAUs and in linkage areas.***

Implementation of the Proposed Action would improve conditions for lynx movements in and between LAUs by reducing wheeled motorized vehicle access over the existing condition.

Standard ALL S1: ***New or expanded permanent development and vegetation management projects must maintain habitat connectivity in an LAU and/or linkage area.***

In the short term, implementation of the Proposed Action could potentially improve habitat connectivity within some LAUs where roads were restricted or closed to reach the OMRD or Core Area standards, respectively. However, the Proposed Action does allow for permanent loss of core via road construction/reconstruction and/or vegetation management in 13 of the 30 BMUs once all BMUs within the respectively ecosystems are up to standard[34]. Such proposed changes in permanent development (e.g. road construction) and vegetation management approved through site-specific analysis would take into account the need to maintain habitat connectivity in an LAU and/or linkage area.

Guideline ALL G1: ***Methods to avoid or reduce effects on lynx should be used when constructing or reconstructing highways or forest highways across NFS land. Methods could include fencing, underpasses, or overpasses.***

Changes in road access that could be approved through site-specific analysis would normally be done during the summer months, when winter mortality risk would not be a factor. This timing of management actions should reduce effects on lynx in both alternatives.

Objectives, Standards, and Guidelines applicable to Vegetation (VEG) and Livestock (GRAZ) management projects in lynx habitat

The NRLMD vegetation and livestock management Objectives, Standards, and Guidelines do not apply to this analysis. They would be analyzed at the site-specific scale.

Objectives, Standards, and Guidelines applicable to Human Use (HU) projects in lynx habitat

[34] See page 10 for the scope of this Forest Plan Amendment. Also, please see Appendix D for a detailed explanation of which BMUs are most likely experience a loss of core at some future date, due to the amount and juxtaposition of private/state land core area and proximity of core to Wildland Urban Interface and city watersheds.

Objectives HU 01, 02 and Guidelines HU G11 (see NRLMD for description): This project does not include expansion of snow compacting activities in lynx habitat, therefore objective HU 01 and guideline HU G11 would be met.

Wheeled motorized recreation activities would potentially be reduced due to road closures in the Proposed Action. This meets Objective HU 02 and HU G11.

All other human use project objectives and guidelines are not applicable for this proposal and would be applied, when appropriate, at the site-specific scale during project-specific analysis.

Objectives, Standards and Guidelines applicable to all projects in Linkage Areas (LINK), in occupied habitat, subject to valid existing rights

Objective LINK 01: The Proposed Action makes no site-specific changes to access NFS land or private ownership land, but establishes standards that would be applied at the project-specific scale to provide or pursue linkage habitat. Site-specific projects would comply with appropriate linkage area objectives, standards, and guidelines. Under the Proposed Action, Lynx habitat conditions in linkage areas should improve as the BMU standards are achieved.

According to the Lynx Conservation Assessment and Strategy (Ruediger et al. 2000), there is no compelling evidence that lynx avoid roads, at least on lower traffic-volume forest and backcountry roads. Though uncommon, lynx have been trapped or shot (legally, illegally and incidentally) in the Northern Rocky Mountains geographic area (ibid). Road access could contribute to any mortality that does occur. Therefore, any reduction in wheeled motorized vehicle access in lynx habitat would likely provide a higher degree of habitat security and lower mortality risk to Canada lynx in proportion to their limitations on access.

It has been suggested that compacted winter travel routes created by activities such as snowmobiling and cross-country skiing, may serve as transport routes for potential predators and competitors of lynx (Ruediger et al. 2000). However, the most recent research on the subject (Kolbe et al. 2007) did not support this suggestion. Regardless, a motorized access management standard(s) that reduce opportunities for winter recreation use within lynx habitat may also reduce the potential for conflicts with lynx and its competitors. The Proposed Action does not directly propose to reduce winter access. However, site-specific analysis subsequent to this document that would result in road obliteration or heavily vegetated roads may indirectly reduce winter access by making these roads inaccessible to snowmobiles.

The Proposed Action would allow for the possibility of opening some closed roads in BMUs that meet all three grizzly bear access parameters (OMRD, TMRD, and Core Area) sometime in the future (i.e. > 8 years). Depending on where these roads are located, there is a very small possibility of increased poaching mortality risk and/or displacement to lynx under the Proposed Action. However, these are opportunities, not requirements, and would receive their own scrutiny at the time those actions are proposed.

Implementation of the Proposed Action would not cause the loss of, or adversely modify, designated critical lynx habitat. In the long term, reduced road miles could improve conditions in designated critical habitat areas.

Cumulative Effects

Implementation of the Proposed Action would establish management direction for NFS lands within the SRZ, which overlaps Canada lynx habitat. However, the SRZ and CYRZs also includes State and private lands. Decisions made by these landowners regarding management of wheeled motorized roads and trails on their lands, public access for recreation and particularly big game hunting or trapping, and vegetation changes could potentially result in cumulative effects to lynx. The numbers used for road densities and Core Area in this analysis include consideration of roads on State and private lands within the 30 grizzly bear BMUs considered in this Biological Assessment (Appendix D), even though standards set by Design Elements will apply only to NFS lands (Tables 1 and 2). In addition, the linear miles of open and total roads in the seven BORZ includes consideration of roads on State and private lands, even though the standards set by Design Elements will only apply to NFS lands (Table 3). Therefore, the analysis included the consideration of cumulative effects on State and private lands within the evaluation area for Canada lynx.

Determination of Effects

Implementation of the Proposed Action may affect individual lynx but is not likely to adversely affect the population. The Proposed Action restricts access beyond the current condition and may result in: 1) a reduction in direct mortality from hunting, trapping, and competition from other species by improving habitat effectiveness; and 2) a slight increase in the potential for predation by species that are typically hunted or trapped from existing roads (e.g. mountain lions and bobcats). This determination is based on the fact that there would be no direct effects and indirectly, subsequent site-specific decisions are planned and implemented under this amendment may include some short-term displacement effects to lynx during site specific project activities that would be addressed during consultation for those projects. Long-term effects may be beneficial due to improved security conditions created by wheeled motorized vehicle access changes.

The Proposed Action would not result in adverse modification of designated critical lynx habitat and would be in compliance with the NRLMD ROD and Biological Opinion.

GRAY WOLF

Gray wolves *(Canis lupus)* are highly social animals and form packs of two to twenty individuals. They are opportunistic predators of elk, deer, and moose, and to a lesser extent, small vertebrates. Dens are located in underground burrows dug into steep hillsides, in hollow logs, or in abandoned beaver lodges. Isolated meadows within forested areas are used as rendezvous sites for the pack (U.S. Fish and Wildlife Service 1987, U.S. Fish and Wildlife Service 2003, Tucker et al.1990).

Additional information on gray wolf population ecology, biology, habitat description and relationships identified by research are described in USDI Fish and Wildife Service (1987), Montana Fish, Wildlife, and Parks (2003), and Sime et al. (2010).

Reference Condition

The northern Rocky Mountain wolf was listed as endangered in 1973. In 1978, the gray wolf was listed as an endangered at the species level, except in Minnesota, to eliminate problems associated with listing subspecies and the relatively narrow geographic areas in which they were protected (U.S. Fish and Wildlife Service 2003). A Gray Wolf Recovery Plan was finalized in 1987 (U.S. Fish and Wildlife Service 1987). Naturally recolonizing wolves in northwest Montana and northern Idaho (north of Interstate 90) are fully protected endangered species, while reintroduced wolves in the Greater Yellowstone Area and central Idaho are designated as nonessential experimental populations.

In December 2002, the northern Rocky Mountain wolf population attained the population recovery goal of 30 breeding pairs of wolves well distributed throughout the states of Idaho, Montana, and Wyoming for three consecutive years (USFWS 2003). Under federal law, initiation of a delisting process could occur when the northern Rocky Mountain wolf population met recovery goals and each state developed USFWS-approved wolf management plans and enacted legislation and regulations to ensure long-term conservation of wolves. Idaho and Montana had USFWS-approved wolf management plans and adequate state laws in place by the time population recovery goals were met in 2002.

The gray wolf was removed from the endangered species list in March of 2008, but a court ruling on July 18, 2008 imposed a preliminary injunction on the delisting and reinstated its endangered status in areas north of Interstate 90. However, effective May 4, 2009 the U.S. Fish and Wildlife Service officially delisted the Northern Rockies Distinct Population Segment of gray wolves. Once delisted, regulated legal hunting of gray wolves was allowed during the 2009 hunting season in Montana and Idaho. However, on August 5, 2010 the District Court ordered the USFWS to reclassify the wolf as an endangered species. Hence, all wolves within the Selkirk and Cabinet-Yaak grizzly bear recovery zones currently receives full protection in accordance with provisions of the Endangered Species Act.

Affected Environment

Population Status

The project area is located in the Northwest Montana (NWMT) Recovery Area, one of the three wolf recovery areas identified for the Northern Rocky Mountain wolf population (U.S. Fish and Wildlife Service et al. 2006). Gray wolves are year-round, general forest residents of the project area.

At the end of 2009 there were 101 wolf packs in all of Montana, with 37 meeting breeding pair criteria. These packs contained a minimum estimate of 524 wolves (Sime et al. 2010). In The NWMT Recovery Area, there were 45 packs and a minimum of 256 wolves, with 17 of these packs meeting breeding pair criteria for 2009. In Idaho, IDFG personnel documented at least 489 wolves and more than 83 wolf packs in Idaho by the end of 2007 (IDFG 2008). The population estimation technique, based on the number of documented packs and individuals within the packs, and correction for lone wolves, yielded a minimum population estimate of 732 wolves in Idaho for 2007.

Numerous established wolf packs are known or presumed to use a portion of the analysis area. As of 2009, the home ranges of the Murphy Lake, Lydia, Kootenai South, Thirsty, Bearfite, Candy Mountain, Pulpit Mountain, Cabinet, Fishtrap, Corona, Silcos, Mckay, Twilight, Calder Mountain, Soloman Mountain, Copper Falls, and Boundary packs overlap the CYRZ and associated BORZ (IDFG Conservation Database 2008, Sime et al. 2010). Two of these packs are located in Idaho (i.e. Boundary and Calder Mountain) while the remaining 15 are located in Montana. The home ranges of Diamond, Snowy Top, and Cutoff Peak wolf packs overlap with the SRZ and associated BORZ (IDFG Conservation Database 2008, IDFG 2008). Additionally, single or multiple wolves occasionally pass through or use nearly any portion of the analysis area for short periods. Reports of wolf sightings are received from within the area on a frequent basis. See IDFG (2008) and Sime et al. 2010 for details on pack size and minimum population estimates for the areas that encompass the project area.

Habitat Status

Wolves are capable of using a broad array of habitats and vegetative conditions. When addressing wolf habitat needs the Northern Rocky Mountain Wolf Recovery Plan (U.S. Fish and Wildlife Service 1987) focused on three key components of wolf habitat. These components included: (1) a sufficient year-round prey base of big game and alternate prey; (2) suitable and somewhat secluded denning and rendezvous sites: and (3) sufficient space with minimal exposure to humans. The two key factors that determine the ability of habitat to support wolves include the availability of big game populations as prey, and security from human-caused mortality and disturbance.

Prey species are generally abundant throughout much of the analysis area. Habitat suitability for prey species within the analysis area varies from low to high, depending on location. Big game prey availability is adequate to support transient or resident wolves in much of the area. Since gray wolves could occur most anywhere big game species are present, acres of suitable gray wolf habitat were not calculated for this assessment.

Roads and Habitat Use: Conservation requirements for wolf populations include the availability of prey and reducing risk of human-caused mortality as key components (U.S. Fish and Wildlife Service 1987). The risk of human-caused mortality can be directly related to the density and distribution of open roads. Wolves are known to avoid habitats with high road densities (Mech et al. 1988, Thiel 1985, and Whittington et al. 2005).

Security afforded by access restrictions in grizzly bear habitat also benefit wolves. The level of security currently existing in the analysis area is adequate to support a resident wolf population, and wolf sightings have increased in recent years.

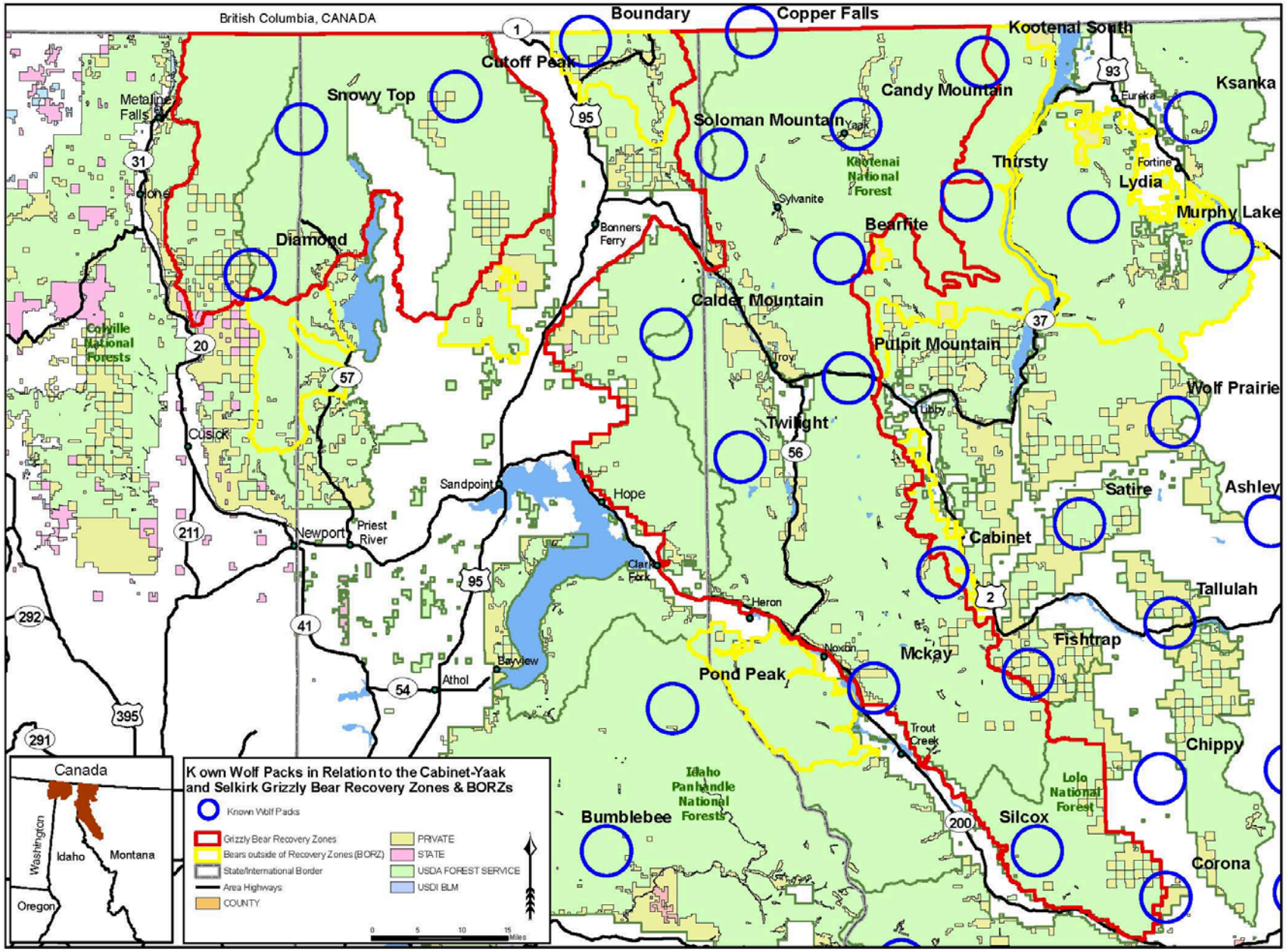

Figure 11. Known Gray Wolf Packs in Relation to the Cabinet-Yaak and Selkirk Recovery Zones.

Environmental Consequences

The Proposed Action would amend the respective Forest Plans to incorporate new grizzly bear habitat security standards for OMRD, TMRD, and Core Area. The new standards provide an overall higher level of habitat security than current Forest Plan direction and are an improvement over current standards. The amendments incorporate the best available science and are consistent with the Forest Plans.

The Proposed Action would not change any other current programmatic direction related to managing for the recovery of the gray wolf. However, the programmatic changes designed for grizzly bear are expected to provide a higher level of security than existing Forest Plan direction for this species. The level of improved security depends on the site-specific locations of changes in wheeled motorized vehicle access management. Based on the expected improved security the Proposed Action is considered consistent with the respective Forest Plans for threatened and endangered species.

Direct and Indirect Effects

Because the Proposed Action represents a programmatic decision, there would be no direct effects on the following to the gray wolf. Any direct effects would occur later at the project level when site-specific decisions are made about road and trail use restrictions. Most of the effects identified in this analysis would be indirect effects because they would occur later in time as a result of programmatic decisions.

The potential indirect effects on wolves were determined by evaluating the effects on habitat security and the potential for increased mortality. Controlling and/or managing access improves wolf habitat use by reducing the risk of displacement and poaching and providing secure habitats for their preferred prey. Human tolerance is probably the most important factor in the recovery of the wolf. Unrestricted road access generally increases the chances of human/wolf interactions, thereby, increasing the risk of human-caused mortality. The effects related to the Proposed Action focus primarily on managing and controlling access on existing roads and trails to achieve specific objectives and standards for each BMU.

The analysis area presently offers a high degree of security for wolves due the existing access management strategies for grizzly bears, thereby, providing a favorable environment for wolves and their prey. Protection measures are already in place to support the conservation and recovery of the gray wolf (e.g. Northern Rocky Mountain Wolf Recovery Plan, and the KNF, LNF and IPNF Forest Plans).

The proposed Federal actions are expected augment a relatively favorable environment for gray wolves. Overall, the Proposed Action would reduce open road densities across the grizzly bear recovery zones and provide a higher degree of habitat security and lower mortality risk to gray wolves. Likewise, the Proposed Action would promote an ungulate population that is sufficient in providing prey for wolves.

The Proposed Action would allow for the possibility of opening some closed roads in BMUs that meet all three grizzly bear access parameters (OMRD, TMRD, and Core Area) sometime in the future (i.e. > 8 years). Depending on where these roads are located, there is a very small possibility of increased poaching mortality risk and/or displacement to wolves under the Proposed Action. However, these are opportunities, not requirements, and would receive their own scrutiny at the time those actions are proposed.

Cumulative Effects

Implementation of the Proposed Action would establish management direction for NFS lands within the CYRZ and SRZs, which overlaps gray wolf habitat. However, the two recovery zones also include State and private lands. Decisions made by these landowners regarding management of wheeled motorized roads and trails on their lands, public access for recreation and particularly big game hunting, and vegetation changes could potentially result in cumulative effects to gray wolves. The numbers used for road densities and Core Area in this analysis include consideration of roads on State and private lands within the 30 grizzly bear BMUs considered in this Biological Assessment, even though standards set by Design Elements would apply only to NFS lands (Tables 1 and 2). In addition, the linear miles of open and total roads in the Pack River BORZ area includes consideration of roads on State and private lands, even though the standards set by Design Elements would only apply to NFS lands (Table 3). Therefore, the analysis included the consideration of cumulative effects on State and private lands within the evaluation area for gray wolf.

Determination of Effects

The Proposed Action may affect, but is not likely to adversely affect the gray wolf. Implementation of the Proposed Action may affect individuals but is not likely to adversely affect the population. This determination is based on the fact that there would be no direct effects and indirectly, subsequent site-specific decisions that adhere to this amendment may include some short-term displacement effects to wolves during site-specific project activities. Long-term effects may be beneficial due to increased security from human disturbance.

Woodland Caribou

The woodland caribou (*Rangifer tarandus caribou*) population[35] is generally found above 4000 feet elevation in the Selkirk Mountains in Engelmann spruce/subalpine fir and western red cedar/western hemlock forest types. They are highly adapted to upper elevation boreal forests where they feed almost exclusively on arboreal lichen during the winter months. In contrast to the seasonal long-distance migrations undertaken by some caribou subspecies, mountain caribou make seasonal elevational movements in response to factors such as snow levels, food availability, and predator avoidance (U.S. Fish and Wildlife Service 2008).

Reference Condition

The Selkirk population of woodland caribou was listed as endangered by the U.S. Fish and Wildlife Service under an emergency listing process in 1983, with a final rule published in 1984 (U.S. Fish and Wildlife Service 1985). At the time of listing, the population consisted of some 25-30 animals with a distribution situated around Stagleap Park in British Columbia and the nearby international border (Scott and Servheen 1985). A woodland caribou Recovery Plan was completed in 1985 and revised in 1994, with an indentified recovery area including portions of northeastern Washington, northern Idaho, and southwestern British Columbia, Canada (U.S. Fish and Wildlife Service 1985 and 1994). The majority of the recovery area is under the jurisdiction of federal and state government land management agencies. The Fish and Wildlife Service recently agreed to designate critical habitat within the Recovery Area with work beginning on the effort in 2010 (B. Holt, pers. comm. 2009).

Historically, woodland caribou were widely distributed throughout portions of the northern tier of the coterminous United States (US) from Washington State to Maine, as well as throughout most of Canada (Mountain Caribou Technical Advisory Committee (MCTAC) 2002, U.S. Fish and Wildlife Service 1994 and 2008). The decline in woodland caribou numbers has been generally attributed to habitat loss, habitat fragmentation, and excessive mortality by predators and humans (MCTAC 2002, U.S. Fish and Wildlife Service 1985, 1994, and 2008).

Predation on caribou by mountain lion[36] has been identified as the greatest mortality threat to caribou within the Southern Selkirk Mountains (Compton et al. 1995 and Katnick 2002). Caribou have also been predated on by bears within this recovery area (Compton et al. 1995), and wolves are considered an additional predation threat (U.S. Fish and Wildlife Service 2008). Poaching has been a lesser concern in the past two decades but was considered a serious threat that led, in part, to their listing in the 1980's (USDI 1994b). Highway-caused mortality resulting from caribou crossing Highway 3 in British Columbia remains a continued threat with three caribou killed by motorists during the 2008/2009 winter season (Quinn 2009).

The 1986 Biological Opinion (USDI Fish and Wildlife Service 1986) and the 1987 Idaho Panhandle Forest Plan upon which it was based (USDA Forest Service 1987) identified key standards to reduce negative impacts to caribou habitat from timber harvesting, road construction, recreation, and other human activities. Relevant standards that are especially

[35] There are three recognized ecotypes of woodland caribou including the mountain, northern, and boreal ecotypes (Heard and Vagt 1998). Each is differentiated by the type of habitat occupied, individual movement patterns, and feeding behavior (ibid). The southern Selkirk Mountain population found within the Selkirk Mountains of northern Idaho and eastern Washington is the mountain ecotype (USDI Fish and Wildlife Service 2008).

[36] Idaho Fish and Game instituted a liberalized mountain lion hunting season to assist in caribou recovery efforts. Mountain lions are typically hunted via motorized access routes using passenger vehicles, ATVs, and snowmobiles to transport hunters and their dogs.

applicable to this project include: 1) management for roaded natural, and, where possible, toward semi-primitive motorized and non-motorized recreation with restriction on motorized use when needed to protect caribou; and 2) implementation of seasonal closures to protect caribou.

Affected Environment

Recovery Area

The recovery area for caribou in the Selkirk Mountains is comprised of approximately 1,477 square miles in southern British Columbia, northeastern Washington and northern Idaho. Forty-seven percent of the recovery area is located in British Columbia, while the remaining 53 percent falls into the U.S. (U.S. Fish and Wildlife Service 1994). Almost the entire woodland caribou recovery area on the IPNF falls within the Selkirk grizzly bear recovery zone.

Woodland caribou historically occurred on the KNF and was thought to be extirpated from Montana in 1958 (ibid). However, occasional sightings are reported on the KNF. These animals are assumed to be wandering in from Canada or Idaho and then moving back to their normal range in the Selkirk Mountains and the Purcell Range in British Columbia.

Population Status

An intermediate population target of 100-109 caribou was initially set in the first Recovery Plan for woodland caribou (U.S. Fish and Wildlife Service 1985). However, this target was not assumed to be a recovered population, with additional genetics and population modeling work required to reevaluate population viability and a recovered population size (U.S. Fish and Wildlife Service 1994). In the short term, the 1994 Plan set a goal of maintaining two herds (one in B.C. and one in Idaho) and the desire to establish a herd in Washington as well (U.S. Fish and Wildlife Service 1994).

Augmentation: As part of the plan for their recovery, caribou were augmented into the ecosystem from populations[37] in British Columbia (U.S. Forest Service 1985). In 1987, 1988, and 1990, 60 caribou were augmented into the Idaho portion of the ecosystem. As a result of these efforts the population within the southern Selkirk Mountains increased to approximately 55 to 70 animals by 1990. However, the population declined in 1996 in what is believed to be the result of increased rates of predation (Wakkinen and Johnson 2000). A subsequent augmentation effort was conducted in 1996 and 1997 to place 32 caribou into the Washington portion of the ecosystem, followed by a 1998 effort to release 11 additional caribou into the British Columbia portion of the recovery area (Almack 2000, U.S. Fish and Wildlife Service 2008). However, similar declines were noted in the Washington portion of the recovery area (Almack 2000). Idaho Department of Fish and Game personnel documented only 1-3 caribou in the vicinity of Snowy top and Little Snowy Top[38] during the last five years of late winter census efforts (i.e. an area south of the international border in Idaho and Washington). The Selkirk caribou population is currently estimated at 43 animals, with 41 of these animals residing in British Columbia based on the late winter aerial surveys (Wakkinen et al. 2010).

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[37] Augmented caribou included both *mountain* and *northern* ecotypes based on the availability of animals from several source populations in British Columbia.

[38] Shedroof Divide situated on both the IPNF and CNF.

Habitat Status

Woodland caribou typically occupy mature and old growth cedar/hemlock and subalpine fir/spruce forests. These vegetation types occur at mid to high elevations. Mature stands produce the most abundant arboreal lichens, which caribou feed primarily on for six to eight months out of the year. After a stand-replacing disturbance, it usually takes over 100 years for the forest to develop the stand structure and lichen growth, which caribou prefer. Stand-replacing fires are probably the largest threat to caribou habitat. There have been essentially no changes to caribou habitat on NFS lands in the past 20 years as a result of timber harvest, with wildfire and the impact of insects and disease considered the primary factors affecting changes in caribou habitat conditions.

Thirty-nine percent of the caribou habitat in the Selkirk Ecosystem and 53 percent of the caribou habitat in the U.S. portion of the Selkirk Ecosystem is on the IPNF (USDI 1994). A stand-based habitat suitability index (HSI) and habitat capability index (HCI) was developed as part of the 1987 IPNF Forest Plan (U.S. Forest Service 1986). Subsequent updates and evaluation of the Idaho/Washington portion of the recovery area have been used for land management decisions from 1994 to 2007 (Allen and Deiter 1993, and Allen 1998). A landscape level habitat priority model was recently developed to facilitate a unified assessment of currently suitable caribou habitat throughout the SRZ (Kinley and Apps 2007). Table 27 displays the acreage on the IPNF that is currently providing caribou habitat based on the Kinley and Apps (2007) landscape habitat priority model. Figure 12 illustrates the juxtaposition of the caribou recovery area to the Selkirk grizzly bear Recovery Zone.

Table 27. Woodland Caribou Habitat on the Idaho Panhandle National Forests and the Idaho Department of Lands, from Kinley and Apps (2007) landscape habitat priority model.

Priority Rating[1]	Seasonal Habitat (Acres)				
	Spring	Calving	Summer	Early Winter	Late Winter
High	25,623	19,134	16,209	19,693	18,606
Moderate	144,376	116,865	120,343	120,307	76,636
Low	147,167	190,864	191,552	188,092	199,457
Total	**317,166**	**326,863**	**328,104**	**328,092**	**294,699**

[1] The probability of habitat selection by caribou was categorized as *high* (0.7 to 0.99), *moderate* (0.3 to 0.69), and *low* (0.1 to 0.29).

Roads and Habitat Use: Oberg et al. (2000) demonstrated that woodland caribou avoid both natural linear features and roads, with caribou avoidance decreasing as the distance from streams and roads increased. In a fine scale investigation, caribou avoided streams up to 250 meters. Roads were avoided to a 500 meters distance in a coarse scale investigation, but that avoidance level should be interpreted cautiously, due to the small sample size of caribou used in that analysis and the location of roads in the landscape (i.e. roads occurred on the fringes of caribou ranges). Nevertheless, a 100 meter avoidance of roads, when caribou came within 500 meters of roads, was noted using both preference indices and compositional analysis. The mechanism for such avoidance is not known, but one theory is that caribou perceive roads in the same way as natural linear features; as travel corridors for predators and other ungulates associated with these areas. Oberg et al. (2000) also observed that roads classified as “inactive” were avoided to a distance of 250 meters, signaling that the mechanism for avoidance may be more than just a response to increased human activity.

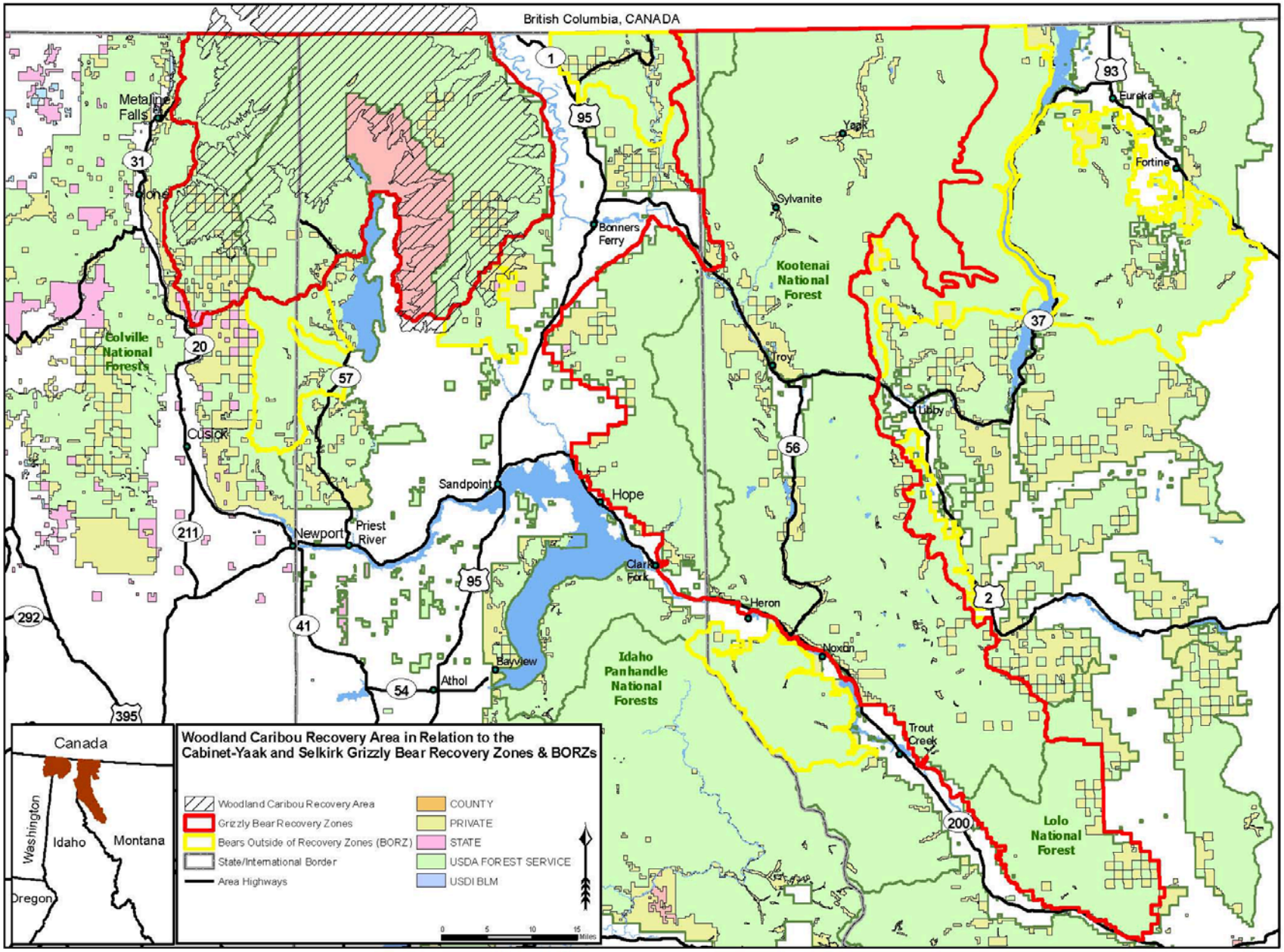


Figure 12. Woodland Caribou Recovery Area in Relation to the Cabinet-Yaak and Selkirk Recovery Zones

Environmental Consequences

The Proposed Action would amend the respective Forest Plans to incorporate new grizzly bear habitat security standards for OMRD, TMRD, and Core Area. The new standards provide an overall higher level of habitat security than current Forest Plan direction and are an improvement over current standards. The amendments incorporate the best available science and are consistent with the Forest Plans.

The Proposed Action would not change any other current programmatic direction related to managing for the recovery woodland caribou. However, the programmatic changes designed for grizzly bear are expected to provide a higher level of security than existing Forest Plan direction for this species. The level of improved security depends on the site-specific locations of changes in wheeled motorized vehicle access management. Based on the expected improved security Alternative E Updated is considered consistent with the respective Forest Plans for threatened and endangered species.

Direct and Indirect Effects

Because the Proposed Action represents a programmatic decision, there would be no direct effects to the woodland caribou. Any direct effects would occur later at the project level when site-specific decisions are made about road and trail use or restriction. Most of the effects identified in this analysis would be indirect effects because they would occur later in time as a result of programmatic decisions.

The effects related to the Proposed Action focus primarily on managing and controlling access on existing roads and trails to achieve specific objectives and standards for each BMU. Accordingly, this analysis deals with the influences of human use on motorized roads and trails, and the associated consequences on caribou security and habitat effectiveness. The effects related to habitat manipulation are not addressed because it is not part of the Proposed Actions.

The potential indirect effects on woodland caribou were determined by evaluating the effects on habitat security and the potential for increased mortality. Controlling and/or managing access improves woodland caribou habitat use by reducing the risk of displacement and poaching. Conversely, limiting access to mountain lion habitat that interfaces with the recovery area may reduce the effectiveness of the mountain lion hunting season which could result in additional mortality risk to woodland caribou.

In general, the Proposed Action offers a relatively secure environment for woodland caribou due to existing wheeled motorized vehicle access management strategies for grizzly bear. The Proposed Action promotes lower levels of wheeled motorized vehicle access, which in turn provides a more secure environment for caribou.

The Proposed Action would allow for the possibility of opening some closed roads in BMUs that meet all three grizzly bear access parameters (OMRD, TMRD, and Core Area) sometime in the future (i.e. > 8 years). Depending on where these roads are located, there is a very small possibility of increased poaching mortality risk to caribou under Alternative E Updated. The Proposed Action would allow for the possibility of opening some closed roads in BMUs that meet all three grizzly bear access parameters (OMRD, TMRD, and Core Area) sometime in the future (i.e. > 8 years). However, these are opportunities, not requirements, and would receive their own scrutiny at the time those actions are proposed.

Cumulative Effects

Implementation of the Proposed Action would establish management direction for NFS lands within the SRZ, which overlaps woodland caribou habitat. However, the SRZ also includes State and private lands. Decisions made by these landowners regarding management of wheeled motorized roads and trails on their lands, public access for recreation and particularly big game hunting (ungulate, black bear, and mountain lion), and vegetation changes could potentially result in cumulative effects to caribou. The numbers used for road densities and Core Area in this analysis include consideration of roads on State and private lands within the seven[39] grizzly bear BMUs that overlap with the caribou recovery area in the Selkirk Mountains, even though standards set by Design Elements would apply only to NFS lands (Tables 1 and 2). In addition, the linear miles of open and total roads in the Pack River BORZ area (located in the extreme southeast portion of the caribou recovery area includes consideration of roads on State and private lands, even though the standards set by Design Elements would only apply to NFS lands (Table 3). Therefore, the analysis included the consideration of cumulative effects on State and private lands within the evaluation area for woodland caribou.

Determination of Effects (for the IPNF only)

The Proposed Action may affect, but is not likely to adversely affect woodland caribou. This determination of effects applies to woodland caribou listed as an endangered species on the IPNF. Implementation of the Proposed Action may affect individuals but is not likely to adversely affect the population. This determination is based on the fact that there would be no direct effects and indirectly, subsequent site-specific decisions that adhere to this amendment may include some short-term displacement effects to caribou during site-specific project activities. Long-term effects may be beneficial due to increased security from human disturbance.

FISH SPECIES

Bull Trout

Bull trout *(Salvelinus confluentus*), member of the family Salmonidae, are char native to the Pacific Northwest and western Canada. The bull trout and the closely related Dolly Varden (*Salvelinus malma*) were not officially recognized as separate species until 1980 (Robins et al. 1980). Bull trout historically occurred in major river drainages in the Pacific Northwest from the southern limits in the McCloud River in northern California (now extirpated), Klamath River basin of south central Oregon, and the Jarbidge River in Nevada to the headwaters of the Yukon River in the Northwest Territories, Canada (Cavender 1978; Bond 1992). To the west, bull trout current range includes Puget Sound, coastal rivers of British Columbia, Canada, and southeast Alaska (Bond 1992). East of the Continental Divide bull trout are found in the headwaters of the Saskatchewan River in Alberta and the MacKenzie River system in Alberta and British Columbia (Cavender 1978; Brewin and Brewin 1997). Bull trout are wide-spread throughout the Columbia River basin, including its headwaters in Montana and Canada.

Reference Condition

[39] Myrtle, Trout-Ball, Long-Smith, Blue-Grass, Salmo-Priest, Sullivan-Hughes, and Kalispell-Granite BMUs overlap with portions of the woodland caribou recovery area.

The coterminous United States population of the bull trout was listed as threatened on November 1, 1999 (64 FR 58910). The threatened bull trout occurs in the Klamath River Basin of south-central Oregon and in the Jarbidge River in Nevada, north to various coastal rivers of Washington to the Puget Sound and east throughout major rivers within the Columbia River Basin to the St. Mary-Belly River, east of the Continental Divide in northwestern Montana (Cavender 1978, Bond 1992, Brewin and Brewin 1997, Leary and Allendorf 1997).

The bull trout was initially listed as three separate Distinct Population Units (DPSs)(63 FR 31647, 64 FR 17110). The preamble to the final listing rule for the United States coterminous population of the bull trout discusses the consolidation of these DPSs, plus two other population segments, into one listed taxon and the application of the jeopardy standard under section 7 of the ESA relative to this species (64 FR 58930):

"Although this rule consolidates the five bull trout DPSs into one listed taxon, based on conformance with the DPS policy for purposes of consultation under section 7 of the Act, we intend to retain recognition of each DPS in light of available scientific information relating to their uniqueness and significance. Under this approach, these DPSs will be treated as interim recovery units with respect to application of the jeopardy standard until an approved recovery plan is developed. Formal establishment of bull trout recovery units will occur during the recovery planning process."

Throughout its range, the bull trout is threatened by the combined effects of habitat degradation, fragmentation and alterations associated with: dewatering, road construction and maintenance, mining, and grazing; the blockage of migratory corridors by dams or other diversion structures; poor water quality; incidental angler harvest; entrainment (a process by which aquatic organisms are pulled through a diversion or other device) into diversion channels; and introduced non-native species (64 FR 58910).

The FWS completed a 5-year Status Review for bull trout in 2008 (FWS 2008). The review concluded that the species should remain listed as threatened and that the designation of multiple DPSs should be reevaluated.

Life History and Habitat Requirements

Bull trout exhibit resident and migratory life-history strategies throughout much of the current range (Rieman and McIntyre 1993). Resident bull trout complete their entire life cycle in the streams where they spawn and rear. Migratory bull trout spawn and rear in streams for one to four years before migrating to either a lake (adfluvial), river (fluvial), or, in certain coastal areas, to saltwater (anadromous) where they reach maturity (Fraley and Shepard 1989; Goetz 1989). Resident and migratory forms often occur together and it is suspected that individual bull trout may give rise to offspring exhibiting both resident and migratory behavior (Rieman and McIntyre 1993).

Bull trout have more specific habitat requirements than other salmonids (Rieman and McIntyre 1993). Watson and Hillman (1997) concluded that watersheds must have specific physical characteristics to provide habitat requirements for bull trout to successfully spawn and rear. It was also concluded that these characteristics are not necessarily ubiquitous throughout these watersheds resulting in patchy distributions even in pristine habitats.

Bull trout are found primarily in colder streams, although individual fish are migratory in larger, warmer river systems throughout the range (Fraley and Shepard 1989; Rieman and McIntyre 1993, 1995; Buchanan and Gregory 1997; Rieman et al. 1997). Water temperature above 15°C (59°F) is believed to limit bull trout distribution, which may partially explain the patchy distribution within a watershed (Fraley and Shepard 1989; Rieman and McIntyre 1995). Spawning areas are often associated with cold-water springs, groundwater infiltration, and the coldest streams in a given watershed (Pratt 1992; Rieman and McIntyre 1993; Rieman et al. 1997). Goetz (1989) suggested optimum water temperatures for rearing of about 7 to 8°C (44 to 46°F) and optimum water temperatures for egg incubation of 2 to 4°C (35 to 39°F).

All life history stages of bull trout are associated with complex forms of cover, including large woody debris, undercut banks, boulders, and pools (Oliver 1979; Fraley and Shepard 1989; Goetz 1989; Hoelscher and Bjornn 1989; Sedell and Everest 1991; Pratt 1992; Thomas 1992; Rich 1996; Sexauer and James 1997; Watson and Hillman 1997). Jakober (1995) observed bull trout overwintering in deep beaver ponds or pools containing large woody debris in the Bitterroot River drainage, Montana, and suggested that suitable winter habitat may be more restrictive than summer habitat. Bull trout prefer relatively stable channel and water flow conditions (Rieman and McIntyre 1993). Juvenile and adult bull trout frequently inhabit side channels, stream margins, and pools with suitable cover (Sexauer and James 1997).

The size and age of bull trout at maturity depend upon life-history strategy. Growth of resident fish is generally slower than migratory fish; resident fish tend to be smaller at maturity and less fecund (Fraley and Shepard 1989; Goetz 1989). Bull trout normally reach sexual maturity in 4 to 7 years and live as long as 12 years. Bull trout are iteroparous (they spawn more than once in a lifetime), and both repeat- and alternate-year spawning has been reported, although repeat-spawning frequency and post-spawning mortality are not well documented (Leathe and Graham 1982, Fraley and Shepard 1989, Pratt 1992, Rieman and McIntyre 1996).

Bull trout typically spawn from August to November during periods of decreasing water temperatures. Migratory bull trout frequently begin spawning migrations as early as April, and have been known to move upstream as far as 250 kilometers (km) (155 miles (mi)) to spawning grounds (Fraley and Shepard 1989). Depending on water temperature, incubation is normally 100 to 145 days (Pratt 1992) and, after hatching, juveniles remain in the substrate. Time from egg deposition to emergence may exceed 200 days. Fry normally emerge from early April through May depending upon water temperatures and increasing stream flows (Pratt 1992; Ratliff and Howell 1992).

The iteroparous reproductive system of bull trout has important repercussions for the management of this species. Bull trout require two-way passage up and downstream, not only for repeat spawning, but also for foraging. Most fish ladders, however, were designed specifically for anadromous semelparous (fishes that spawn once and then die, and therefore require only one-way passage upstream) salmonids. Therefore even dams or other barriers with fish passage facilities may be a factor in isolating bull trout populations if they do not provide a downstream passage route.

Bull trout are opportunistic feeders with food habits primarily a function of size and life-history strategy. Resident and juvenile migratory bull trout prey on terrestrial and aquatic insects, macro-zooplankton and small fish (Boag 1987; Goetz 1989; Donald and Alger 1993). Adult migratory bull trout are primarily piscivores, known to feed on various fish species (Fraley and Shepard 1989; Donald and Alger 1993).

Critical Habitat: On September 25, 2005 the FWS published a final rule designating critical habitat for the Klamath River, Columbia River, Jarbidge River, Coastal-Puget Sound and Saint Mary-Belly River populations of bull trout (70 FR 56212). This rule did not designate critical habitat on National Forest System lands. On December 22, 2008 the FWS notified the court of its intent to review a December 15, 2008 Interior Department Inspector General Report disclosing irregularities in development of its 2005 bull trout final critical habitat designation. On March 23, 2009 the FWS requested a voluntary remand of the 2005 final critical habitat rule to address irregularities in the rule-making process and outcome as identified by the 2008 Inspector General report. On July 1, 2009 the court granted the Service's request for a remand, and directs the Service to submit a proposed revision to the Federal Register by December 31, 2009, and a final designation by September 30, 2010. On January 13, 2010 the FWS published the proposed critical habitat revision, a Justification document that includes Rationale for Why Habitat is Essential, and Documentation of Occupancy, and Draft Economic Analysis. The final Critical Habitat designation rule was published in the Federal Register in October 2010.

Affected Environment

Methodology

Selection of analysis area

The FWS bull trout recovery plan identified bull trout recovery units, which are specific river basins or collections of river basins within population segments that share genetic characteristics as well as management jurisdictions (See Dunham and Rieman 1999). These recovery units were further divided into "Core areas". Core areas are composed of one or more local populations. Local populations are groups of bull trout that spawn in various tributaries and are generally characterized by relatively small amounts of genetic diversity within a tributary but high levels of genetic divergence between tributaries (Leary et al. 1993; Taylor et al. 1999; Spruell et al. 2000).

The Grizzly Bear Access amendment project area lies within two bull trout recovery units, the Clark Fork and the Kootenai. The Clark Fork Recovery area is comprised of four recovery subunits: Upper Clark Fork, Lower Clark Fork, Flathead and Priest. Only the Lower Clark Fork Sub-recovery unit and the Priest Sub-recovery unit are included in this project area, therefore only these two will be discussed further. The Lower Clark Fork Sub Recovery unit includes 5 bull trout core areas, of which four are within the project area. These four core areas include 17 local populations. The Priest Sub-recovery unit includes one bull trout core area separated into nine local populations.

The Kootenai Bull trout Recovery Unit has four bull trout core areas, but only two; the Kootenai River and Bull Lake, are within the project area. There are six specified local populations in the Kootenai River core area and one local population in the Bull Lake. This document will analyze the 6th code Hydrologic units (HUC) within these core areas, which have known bull trout use and which, completely or partially, lie within a BMU (Table 1). Sixth code HUCs which lie within BORZ areas have been identified in Table 1. Some of these HUCs also lie within BMUs and have detailed existing condition provided, if however the HUC lies only in a BORZ, only minimal information is provided because this project will not alter the overall road density. Roads maybe be closed but they will be put in a condition in which the road does not need maintenance for at least 10 years.

Table 1. Core areas, associated local populations and 6th code HUCs within Action Area.

Recovery Unit	Bull Trout Core Area	Listed as a Local Population	6th code HUC	BMU
Clark Fork	Clark Fork River Section 3		170102130304 (Mud Cr)	Mt. Headley BMU
		Fishtrap Creek	170102130401 (Beartrap Cr)	Mt. Henry BMU
			170102130402 (upper Fishtrap Cr)	Mt. Henry BMU
			170102130403 (WF Fishtrap Cr)	Mt. Henry BMU
			170102130404 (lower Fishtrap Cr)	Mt. Henry BMU
		West Fork Thompson River	170102130405 (West Fork Thompson River)	Mt. Henry BMU
			170102130406 (Deerhorn_Big Hole Cr)	Mt. Henry BMU
			170102130407 (Lower Thompson River	Mt. Henry BMU
			170102130508 (Weeksville Cr)	Mt. Henry BMU
			170102130613 (Munson_Quartz Cr)	Mt. Henry BMU
	Noxon Rapids Reservoir	Prospect Creek		No BMU (outside project area)
		Graves Creek	170102130804 (Graves Creek)	Mt. Henry BMU
		Vermillion River	170102130805 (Upper Vermillion River)	Vermillion
			170102130806 (Lower Vermillion River)	Silver Butte-Fisher and Vermillion BMUs
			170102130904 (Swamp Cr)	Silver Butte-Fisher and Wanless BMUs
			170102130903 (Marten Cr)	Clark Fork BORZ
			170102130905 (Noxon Rapids Reservoir)	Clark Fork BORZ
			170102131102 (Pilgrim Cr)	Clark Fork BORZ
			170102131103 (EF Elk Creek)	Clark Fork BORZ
			170102131104 (Elk Creek)	Clark Fork BORZ
			170102131108 (Cabinet Gorge Reservoir)	Clark Fork BORZ
			170102130702 (Squaw Cr)	
			170102130703 (Deep Cr trib to Clark Fk)	Lolo BMU
			170102130704 (Mosquito / Cougar Cr)	Lolo BMU
	Cabinet Gorge Reservoir	Rock Creek	170102131101 (Rock Cr)	Bull, St. Paul and Wanless BMUs
			170102131001 (South Fork Bull River)	Bull and Snowshoe BMU

		Bull River (1701021310)	170102131002 (East Fork Bull River)	St. paul
			170102131003 (Upper Bull River)	Bull, St. Paul, Snowshoe, Spar
			170102131004 (Lower Bull River)	Bull and St. Paul BMU
			1701012131106 (Blue Creek above EF Blue Creek)	Bull BMU
	Lake Pend Oreille	Twin Creek	170102131203 (Twin Cr)	NO BMU
		Lightning Creek	170102131301 (Lightning Creek abv Rattle Cr)	North Lightning BMU
		Porcupine and Wellington Creeks	170102131302 (Middle Fork Lightning Creek)	Scotchman BMU and North Lighting BMU
			170102131303 (East Fork Lightning Creek)	Scotchman BMU
			170102131304 (Lightning Creek blw EF Lightning Cr)	Scotchman BMU
		Johnson Creek	170102140605 (Johnson Cr)	NO BMU
		Gold Creek	170102140203 (Gold Cr)	No BMU
		North Gold Creek	170102140205 (NF Gold Cr)	No BMU
		Granite Creek	170102140207 (Granite Cr)	No BMU
		Trestle Creek	170102140404 (Trestle Cr)	North Lightning BMU
		Pack River (1701021405)	170102140502 (Pack River abv Caribou Cr)	NO BMU
			170102140501 (Pack River abv Jeru Cr)	Myrtle BMU
			170102140503 (Pack River abv Sand Cr)	NO BMU
		Grouse Creek	170102140505 (Grouse Cr)	Grouse BMU
			170102140506 (Rapid Lightning Cr)	Grouse and North Lightning BMUs
	Priest Lake	Upper Priest River	170102150101 (Upper Priest River abv Malcom Cr)	Blue-Grass and Salmo-Priest
			170102150102 (Upper Priest River abv Upper Priest Lake)	Blue-Grass BMU, Sullivan-Hughes BMU, and Salmo-Priest BMU
		Hughes Fork	170102150104 (Hughes Fork abv Gold Cr)	Sullivan-Hughes
		Trapper Creek		State lands (No Action)
		Lion Creek		State lands (No Action)
		Two Mouth Creek		State lands (No action)
		Granite Creek	170102150302 (NF Granite)	Lakeshore BMU and Kalispell-Granite BMU
			170102150301 (SF Granite)	Kalispell-Granite BMU and Le Clerc

				(No Action) BMU
		Indian Creek		State lands (No Action)
		Kalispell Creek	170102150208 (Kalispell Cr)	Lakeshore BMU and Kalispell-Granite BMU
		Soldier Creek		State lands (No Action)
Kootenai	Bull Lake		170101010902 (Stanley)	Spar BMU
			170101010903 (Upper Lake Creek)	Cedar and Snowshoe BMUs
		Keeler Creek	170101010904 (Keeler Creek)	Spar
			170101010905 (Lower Lake Creek)	Spar BMU
	Kootenai River	Fisher River	170101020205 (WF Fisher River)	Wanless BMU
		Libby Creek	170101010701 (Upper Libby)	St. Paul BMU and Cabinet face/Libby BORZ
			170101010702 (Swamp)	Cabinet face/Libby BORZ
			170101010703 (Granite)	Snowshoe BMU
			170101010704 (Big Cherry)	Snowshoe BMU and Cabinet face/Libby BORZ
			170101010801 (Flower Cr)	Cedar BMU
			170101010802 (Parmenter Cr)	Cedar BMU
		Pipe Creek	170101010804 (Upper Pipe Cr)	Big Creek and Roderick BMUs/ West Kootenai BORZ
			170101010803 (EF Pipe Creek)	Big Creek BMU/ West Kootenai BORZ
		Quartz Creek	170101010807 (Quartz Cr)	Pulpit BMU/West Kootenai BORZ
		O'Brien Creek	170101011001 (O'Brien Cr)	Pulpit BMU
		Callahan Creek	170101011004 (Callahan Cr)	Callahan BMU
			170101040201 (Boulder Cr above MF Boulder)	Boulder BMU
			170101040202 (Boulder Cr below MF Boulder, includes MF and EF Boulder)	Boulder BMU
			170101040401 (Deep Creek above McArthur Lake)	No BMU
			170101040402 (Deep Creek above Brown Cr)	Grouse BMU
			170101040406 (Brown Cr , includes Twentymile Cr)	Boulder and Grouse BMUs
			170101040502 (Myrtle Cr)	Myrtle BMU
			170101040801 (Boundary Cr above Grass Cr)	Bluegrass BMU

			170101040802 (Grass Cr)	Bluegrass BMU
			170101040803 (Boundary Cr below Grass Cr)	Bluegrass BMU
			1701010303 (Yaak River)	Majority of drainage no BT
	Lake Koocanusa	Wigwam River		No BMU (outside project area)
		Tobacco River		No BMU (outside project area)
			170101010406 (Tobacco River)	Tobacco BORZ
			170101010307 (Lower Fortine)	Tobacco BORZ
		Grave Creek		No BMU (outside project area)
	Sophie Lake	Phillips Creek upstream of Sophie Lake		No BMU (outside project area)

Data sources: Each 6th code HUC will be reviewed using the indicators developed by the USFWS (USDI Fish and Wildlife Service 1998). Baseline information for this analyze was gathered from many sources but primarily from; 2010 data using GIS mapping technology, the original Biological Assessment for this project, USFS 2002; U.S FWS Biological Opinion on the original EIS (USDI Fish and Wildlife Service 2004); Section 7 Consultation Watershed Baseline: Lower Kootenai River, Montana (USDA Forest Service 2000a), Section 7 Consultation Watershed Baseline: Middle Kootenai River, Montana (USDA Forest Service 2000b), Section 7 Consultation Watershed Baseline: Lower Clark Fork River, Montana (USDA Forest Service 2000c), updated Kootenai NF BT Core Area assessments 2010 (Project File document); updated IPNF Bull trout environmental baseline matrices 2006 (Project File document).

Primary Constituent Elements (PCEs) for Proposed Bull Trout Critical Habitat and Associated Habitat Indicators

Appendix H provides the supporting rationale that the PCEs for proposed bull trout critical habitat are thoroughly addressed in the current matrix analysis and that the environmental baseline conditions and determination for effects to the species consists of a biological and habitat component addressing in total the PCEs listed in the proposed rule for proposed critical habitat (USDI Fish and Wildlife Service 2002a).

Action Area

Clark Fork Recovery Unit

The Clark Fork River is Montana's largest river, with an average annual stream flow of 21,960 cfs at the Montana-Idaho border. The total drainage area is 22,073 mi^2 (USGS 1995). Land ownership within the drainage is mixed. Timber production is the primary land use activity. The Clark Fork River flows into Pend Oreille Lake near Clark Fork, Idaho. In Montana, its major tributaries include the Blackfoot River, Upper Clark Fork River, Bitterroot River, Flathead River, and Bull River.

There are three hydroelectric dams within the LCFR drainage. Thompson Falls Dam, completed in 1916, is owned and operated by PP&L Montana. This facility controls flows into the Noxon Reservoir reach of the LCFR. Cabinet Gorge Dam, completed in 1952, is just downstream of the Montana-Idaho border. It currently operates as a re-regulating facility for Noxon Rapids Dam. Noxon Rapids Dam, completed in 1958, inundates that portion of the Clark Fork River between the backwaters of Cabinet Gorge Reservoir and the tailwaters of Thompson Falls Dam (Gaffney 1955). Avista Corporation owns and operates the Cabinet Gorge and Noxon Rapids hydroelectric dams.

Almost all streams entering the Clark Fork River or reservoirs from the Bitterroot Mountains on the south side of the drainage have naturally intermittent reaches. Some streams on the north side of the Clark Fork River are also intermittent, but there are not as many in this area. The amount of intermittent streams has increased due to natural and man-caused events. Historical natural events include major forest fires in 1889 and 1910, subsequent high flows in 1916, and intermittent drought. Human disturbance is primarily the result of events related to mining, silviculture, and agricultural practices.

The Lower Clark Fork Recovery Subunit

The Lower Clark Fork Recovery Subunit (Figure 1) includes Lake Pend Oreille and its Idaho tributaries, and the Clark Fork River and its tributaries in Montana upstream to the confluence with the Flathead River. There are five bull trout core areas within this recovery subunit. Four of these, Clark Fork River section 3, Noxon Reservoir, Cabinet Gorge Reservoir and Lake Pend Oreille; also lie within the project area for this access amendment. The Lower Flathead River core area does not lie within the project area and therefore will not be discussed further.

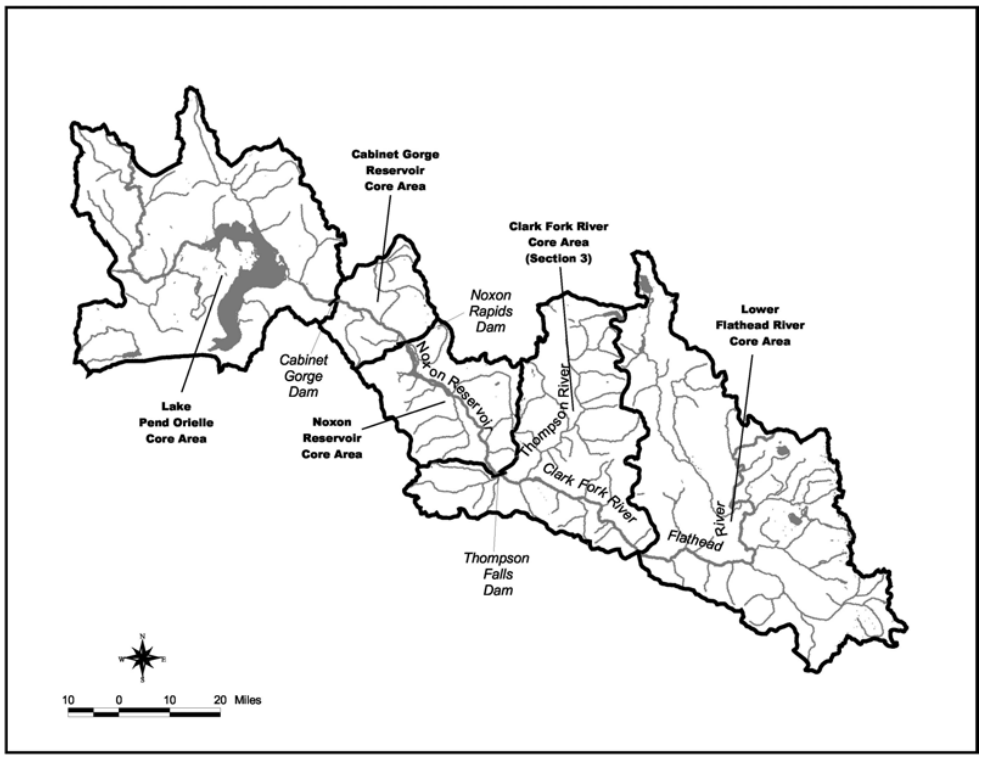


Figure 1. Map of Core areas in the Lower Clark Fork Recovery Subunit

This recovery subunit has a drainage area of over 15,500 square kilometers (6,000 square miles) in Montana and Idaho. The Lower Clark Fork Subbasin drains only 2 percent in Idaho,

the majority is within the Lightning Creek Watershed. About 67 percent of the lands within the basin are National Forest System lands, of which, 50 percent is within grizzly bear management units.

In Idaho the Clark Fork subbasin is considered “functioning at risk” due to its moderate overall inherent sensitivity, low riparian disturbance and moderate watershed disturbance. The majority of past watershed disturbance activities within this subbasin have been road construction and timber harvest activities within the Lightning Creek drainage.

The Lower Clark Fork Recovery subunit was selected as a bull trout critical habitat unit in the 2010 proposed critical habitat designation because it is “essential for conservation both as nearby spawning and rearing habitat for Lake Pend Oreille bull trout populations and, with removal of Milltown Dam and enhanced fish passage at other downstream facilities, as a migratory linkage to the Middle Clark Fork and Upper Clark Fork core area.” (USDI Fish and Wildlife Service 2010).

The U.S. Fish and Wildlife Service conducted a 5-year review on the status of bull trout (USDIA Fish and Wildlife Service 2005). Table 2 provides information from that document and from the Summary developed from that review (USDI Fish and Wildlife Service 2008), regarding threats and trends for each of the core areas within the grizzly bear access amendment project area.

Table 2. Summary of three threat categories, and risk ratings within bull trout core areas of the Lower Clark Fork Subrecovery unit.

Sub Recovery Unit	Bull Trout Core Area	Brook Trout (% of key streams occupied)*	Road Density (mi/mi^2)**	Water Quality Key habitat on State 303(d) lists^	Short Term Trend	Threat Rank	Final Rank
Clark Fork	Clark Fork River Section 3	84	1.4	Low	Unknown	Moderate, imminent	High Risk
	Noxon Rapids Reservoir	100	1.0	High	Unknown	Moderate, immenent	High Risk
	Cabinet Gorge Reservoir	100	1.1	Elevated	Stable	Moderate, imminent	High Risk
	Lake Pend Oreille	84	2.1	Low	Stable	Moderate, non-imminent	Potential Risk

* Estimated based on GIS data comparing key stream recovery habitat occupied by brook trout as a percentage of total core area key recovery habitat occupied by bull trout.

** Based on entire core area. State GIS data layers are not precisely comparable (e.g. a little used forest road may be included in one State’s GIS layer and a comparable road not included in another State’s GIS layer) and should be used with caution.

^ Based on proportion of key stream recovery habitat for bull trout within a core area that is 303(d) listed: lowe = 0-25%; moderate = 26-50%; elevated = 51-75%; high =76-100%. Some States have not completed the process identifying water quality impaired streams.

Clark Fork River Section 3 (Flathead River to Thompson Falls Dam) BT Core Area

This core area includes two migration corridors and two local populations (Fishtrap Creek and West Fork Thompson River) and nine 6th code HUCs. Approximately 65% of this core area is managed by the U.S. Forest Service (USDI Fish and Wildlife Service 2005).

Mud Creek (170102130304)

Habitat Characteristics: Table 3 provides status calls for select habitat characteristics which could potentially be affected by this proposal (USFS 2000c).

Table 3. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment			X
Nutrients and Contaminants			
Physical Barriers			X
Substrate			
Large Woody Debris			
Pool Frequency			X
Pool Quality			
Off-channel Habitat			
Prime Habitat (refugia)			X
Pool Width/depth ratio			
Streambank condition			
Floodplain connectivity			
Peak and Base Flows			
Drainage Network			
Road Network			X
Disturbance History			
RHCAs			
Disturbance Regime			

Bull Trout status in HUC: The status of bull trout populations in Mud Creek are unknown (USFS 2000c).

Integrated Status of bull trout and habitat: Mud Creek is rated as FUR for integration of bull trout and habitat due to the unknown status of the bull trout population and the high number of habitat characteristics which are rated as functioning at unacceptable risk.

Thompson River (1701021304)

Habitat characteristics: Portions of the Thompson River were listed as critical habitat under the 2005 listing (005b) and a portion of Thompson River, from the confluence with the Clark Fork upstream to the confluence with Fishtrap Creek, is proposed as critical habitat under the 2010 proposal (USFWS 2010). The Thompson River has been identified as a migration corridor and

Fishtrap Creek and West Fork Thompson River have been identified as local populations (USFWS 2002).

Fishtrap Creek

The Fishtrap Creek local population is composed of three 6th code HUCs.

Habitat Characteristics: Fishtrap Creek is a tributary to the Thompson River. Approximately 23 percent of this Fishtrap Creek drainage is managed by PCTC, the majority of the remainder is under USFS management. The Fishtrap watershed has been heavily impacted by logging activities with road densities exceeding 5.4 mi/mi^2 throughout Fishtrap Creek mainstem (LNF unpublished data). The Fishtrap Creek watershed is FUR for the "Sediment" and "Road Density" indicators (USFS 2002a). Portions of Fishtrap Creek are listed as critical habitat (USFWS 2005b) and in the 2010 proposal it is listed as critical habitat from the confluence with Thompson River upstream to the confluence with the West Fork Fishtrap Creek (USFWS 2010).

Bull trout status in HUC: Weir traps, electrofishing surveys and redd counts have all resulted in detection of bull trout. Juvenile and adult were identified, this along with the presence of redds, indicate multiple age class use of this drainage. Using a weir trap on Fishtrap Creek, located 4.2 miles upstream of its confluence with the Thompson River, Avista (2002b) captured 157 juvenile bull trout averaging 6.3 in. (range 2.7-9.4 in.) during the summer/fall outmigration in 2000. Additionally, they captured 7 upstream adult migrants averaging 16.5 in. (range 11.8-19.4 in.) and 10 adult outmigrants averaging 17.9 in. (range 10.6-31.3). 2001 trapping efforts yielded 70 juvenile bull trout outmigrants (average 5.7 in., range 3.8-8.4 in.) and 7 adult outmigrants (average 19.2 in, range 13.4-31.5 in.) (Avista 2002b) table 4).

Table 4. Population Estimates for bull trout in Fishtrap Creek (Avista 2002).

Year	Fishtrap Creek	
	Reach	Est. (fish/100m)/ CI
2000	Basin Draw	17 (14-20)
	10 Mile	34 (33-42)
2001	Basin Draw	17 (17-26)
	10 Mile	46 (46-53)

Beartrap Creek (170102130401)

Habitat Characteristics: Beartrap Creek is a 15 mi^2 tributary to Fishtrap Creek. Table 5 provides status calls for select habitat characteristics (USFS 2000c).

Table 5. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment			X
Nutrients and Contaminants			

Physical Barriers		X	
Substrate			
Large Woody Debris			
Pool Frequency			X
Pool Quality			
Off-channel Habitat			
Prime Habitat (refugia)			X
Pool Width/depth ratio			
Streambank condition			
Floodplain connectivity			
Peak and Base Flows			
Drainage Network			
Road Network			X
Disturbance History			
RHCAs			
Disturbance Regime			

Table 6 provides information pertaining to roads within this 6th code HUC (Project file document, Lolo Road/Stream Crossings and Lolo RHCA miles, 2010).

Table 6. Road information within Beartrap Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Lolo	34	7.41	41.26	-
Outside BMU	29	6.27	37.93	-
Total	63	13.68	79.79	5.3

*The number of crossings, within a 6th code HUC, was generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status in HUC: The status of the bull trout population in Beartrap Creek is unknown (USFS 2000c).

Integrated Status of bull trout and habitat: Beartrap Creek is rated as FUR for integration of bull trout and habitat due to the unknown status of the bull trout population and the high number of habitat characteristics which are rated as functioning at unacceptable risk.

Upper Fishtrap (170102130402)

Habitat Characteristics: Upper Fishtrap is a 10mi^2 HUC. Table 7 provides status calls for select habitat characteristics which would be most impacted by this proposal (USFS 2000c).

Table 7. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature			X
Sediment			X

Nutrients and Contaminants			
Physical Barriers		X	
Substrate			
Large Woody Debris			
Pool Frequency			X
Pool Quality			
Off-channel Habitat			
Prime Habitat (refugia)			X
Pool Width/depth ratio			
Streambank condition			
Floodplain connectivity			
Peak and Base Flows			
Drainage Network			
Road Network			X
Disturbance History			
RHCAs			
Disturbance Regime			

Table 8 provides information pertaining to roads within this 6th code HUC (Project file document, Lolo Road/Stream Crossings and Lolo RHCA miles, 2010).

Table 8. Road information within Upper Fishtrap Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Lolo	77	13.35	71.51	-
Outside BMU	56	11.48	77.94	-
Total	133	24.83	149.45	7.86

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status in HUC: The status of bull trout populations in Upper Fishtrap Creek are unknown (USFS 2000c).

Integrated Status of bull trout and habitat: Upper Fishtrap Creek is rated as FUR for integration of bull trout and habitat due to the unknown status of the bull trout population and the high number of habitat characteristics which are rated as functioning at unacceptable risk.

West Fork Fishtrap (170102130403)

Habitat Characteristics: West Fork Fishtrap was identified as critical habitat under the 2010 critical habitat designation. West Fork Fishtrap is an 18 mi^2 HUC. Table 9 provides status calls for select habitat characteristics which could be most affected by this proposal (USFS 2000c).

Table 9. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment			X

Nutrients and Contaminants			
Physical Barriers		X	
Substrate			
Large Woody Debris			
Pool Frequency			X
Pool Quality			
Off-channel Habitat			
Prime Habitat (refugia)			X
Pool Width/depth ratio			
Streambank condition			
Floodplain connectivity			
Peak and Base Flows			
Drainage Network			
Road Network			X
Disturbance History			
RHCAs			
Disturbance Regime			

Table 10 provides information pertaining to roads within this 6th code HUC (Project file document, Lolo Road/Stream Crossings and Lolo RHCA miles, 2010).

Table 10. Road information within West Fork Fishtrap Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Lolo	83	19.48	97.15	5.4

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status in HUC: The status of the bull trout population in West Fork Fishtrap Creek is strong (USFS 2000c).

Integrated Status of bull trout and habitat:
West Fork Fishtrap Creek is rated as FUR for integration of bull trout and habitat due to the high number of habitat characteristics which are rated as functioning at unacceptable risk.

Lower Fishtrap (170102130404)

Habitat Characteristics: Lower Fishtrap is an 41 mi^2 HUC. Table 11 provides status calls for select habitat characteristics which could be most affected by this proposal (USFS 2000c).

Table 11. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature			X
Sediment			X

Nutrients and Contaminants			
Physical Barriers		X	
Substrate			
Large Woody Debris			
Pool Frequency			X
Pool Quality			
Off-channel Habitat			
Prime Habitat (refugia)			X
Pool Width/depth ratio			
Streambank condition			
Floodplain connectivity			
Peak and Base Flows			
Drainage Network			
Road Network			X
Disturbance History			
RHCAs			
Disturbance Regime			

Table 12 provides information pertaining to roads within this 6th code HUC (Project file document, Lolo Road/Stream Crossings and Lolo RHCA miles, 2010).

Table 12. Road information within Lower Fishtrap Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Lolo	133	23.21	161.02	-
Outside BMU	90	21.69	107.35	-
Total	223	44.9	268.37	6.5

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status in HUC: The status of the bull trout population in Lower Fishtrap Creek is depressed (USFS 2000c).

Integrated Status of bull trout and habitat: Lower Fishtrap Creek is rated as FUR for integration of bull trout and habitat due to the depressed status of the bull trout population and the high number of habitat characteristics which are rated as functioning at unacceptable risk.

West Fork Thompson River (170102130405)

Habitat characteristics: West Fork Thompson River is listed as critical habitat under the 2010 designation (USFWS 2010). The West Fork Thompson River is an 36 mi^2 HUC. Approximately one percent of the drainage is managed by PCTC, the majority of the remainder is under U.S. Forest Service management. The West Fork Thompson River has a road density of 1.9 mi/mi^2 resulting in a FAR determination for the "Road Density" indicator, there are 17.6 miles of road within the riparian zone. The West Fork Thompson River was FAR for an integration of the habitat and population indicators (USFS 2002a). Table 13 provides status calls for select habitat characteristics (USFS 2000c).

Table 13. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment			X
Nutrients and Contaminants			
Physical Barriers		X	
Substrate			
Large Woody Debris			
Pool Frequency			X
Pool Quality			
Off-channel Habitat			
Prime Habitat (refugia)			X
Pool Width/depth ratio			
Streambank condition			
Floodplain connectivity			
Peak and Base Flows			
Drainage Network			
Road Network			X
Disturbance History			
RHCAs			
Disturbance Regime			

Table 14 provides information pertaining to roads within this 6th code HUC (Project file document, Lolo Road/Stream Crossings and Lolo RHCA miles, 2010).

Table 14. Road information within West Fork Thompson Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Lolo	54	17.59	67.5	1.9

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status in HUC: WF Thompson River is considered a local population (USFWS 2002). Weir traps, electrofishing surveys and redd counts have all resulted in detection of bull trout. Juvenile and adult were identified, this along with the presence of redds, indicate multiple age class use of this drainage. The bull trout population in this watershed (Table 15) is considered to be strong (USFS 2000).

Table 15. Population Estimates for bull trout in West Fork Thompson River (Avista 2002).

Year	West Fork Thompson River	
	Reach	Est. (fish/100m)/ CI
2000	1.1 Mile	14 (14-41)
	4.0 Mile	86 (84-99)
2001	1.1 Mile	9 (9-20)
	4.0 Mile	71 (68-83)

Integrated Status of bull trout and habitat: West Fork Thompson Creek is rated as FAR for integration of bull trout and habitat due to the strong status of the bull trout population and yet a high number of habitat characteristics are rated as functioning at unacceptable risk.

Deerhorn Big Hole Creek (170102130406)

Habitat Characteristics: Deerhorn Creek and Big Hole Creek are tributaries to the Thompson River. These drainages combine for a total area of 48 mi^2. Table 16 provides status calls for select habitat characteristics (USFS 2000c).

Table 16. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment			X
Nutrients and Contaminants			
Physical Barriers			X
Substrate			
Large Woody Debris			
Pool Frequency			X
Pool Quality			
Off-channel Habitat			
Prime Habitat (refugia)			X
Pool Width/depth ratio			
Streambank condition			
Floodplain connectivity			
Peak and Base Flows			
Drainage Network			
Road Network			X
Disturbance History			
RHCAs			
Disturbance Regime			

Table 17 provides information pertaining to roads within this 6th code HUC (Project file document, Lolo Road/Stream Crossings and Lolo RHCA miles, 2010).

Table 17. Road information within Deerhorn/Big Hole HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Lolo	167	33.95	153.85	-
Outside BMU	25	10.36	42.71	-
Total	192	44.31	196.57	4.1

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status in HUC: The status of the bull trout population in Deerhorn/Big Hole is unknown (USFS 2000c).

Integrated Status of bull trout and habitat: Deerhorn/Big Hole is rated as FUR for integration of bull trout and habitat due to the unknown status of the bull trout population and the high number of habitat characteristics which are rated as functioning at unacceptable risk.

Lower Thompson River (170102130407)

Habitat Characteristics: The Lower Thompson River HUC is 21mi^2.Table 18 provides status calls for select habitat characteristics which could be affected by this proposal (USFS 2000c).

Table 18. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment			X
Nutrients and Contaminants			
Physical Barriers			X
Substrate			
Large Woody Debris			
Pool Frequency			X
Pool Quality			
Off-channel Habitat			
Prime Habitat (refugia)			X
Pool Width/depth ratio			
Streambank condition			
Floodplain connectivity			
Peak and Base Flows			
Drainage Network			
Road Network			X
Disturbance History			
RHCAs			
Disturbance Regime			

Table 19 provides information pertaining to roads within this 6th code HUC (Project file document, Lolo Road/Stream Crossings and Lolo RHCA miles, 2010).

Table 19. Road information within Lower Thompson River HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Lolo	35	15.02	68.77	-
Outside BMU	1	0.93	3.16	-
Total	36	15.95	71.94	3.4

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status in HUC: Bull trout use the Lower Thompson River as a migration corridor (USFS 2000c).

Integrated Status of bull trout and habitat: The Lower Thompson River is rated as FUR for integration of bull trout and habitat due to the high number of habitat characteristics which are rated as functioning at unacceptable risk.

Weeksville Creek (170102130508)

Habitat Characteristics: Weeksville Creek is a 22 mi^2 tributary to the Clark Fork River. Table 20 provides status calls for select habitat characteristics which could be affected by this proposal(USFS 2000).

Table 20. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment			X
Nutrients and Contaminants			
Physical Barriers			X
Substrate			
Large Woody Debris			
Pool Frequency			X
Pool Quality			
Off-channel Habitat			
Prime Habitat (refugia)		X	
Pool Width/depth ratio			
Streambank condition			
Floodplain connectivity			
Peak and Base Flows			
Drainage Network			
Road Network			X
Disturbance History			
RHCAs			
Disturbance Regime			

Table 21 provides information pertaining to roads within this 6th code HUC (Project file document, Lolo Road/Stream Crossings and Lolo RHCA miles, 2010).

Table 21. Road information within Weeksville Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Lolo	50	10.91	66.74	-
Outside BMU	27	7.79	21.20	-
Total	77	18.7	87.94	4.0

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status in HUC: The status of bull trout in Weeksville Creek is unknown (USFS 2000).

Integrated Status of bull trout and habitat: Weeksville Creek is rated as FUR for integration of bull trout and habitat due to the unknown status of the bull trout population and the high number of habitat characteristics which are rated as functioning at unacceptable risk.

Munson_Quartz Creek (170102130613)

Habitat Characteristics: Table 22 provides status calls for select habitat characteristics (USFS 2000c).

Table 22. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature			X
Sediment		X	
Nutrients and Contaminants			
Physical Barriers			X
Substrate			
Large Woody Debris			
Pool Frequency			X
Pool Quality			
Off-channel Habitat			
Prime Habitat (refugia)		X	
Pool Width/depth ratio			
Streambank condition			
Floodplain connectivity			
Peak and Base Flows			
Drainage Network			
Road Network	X		
Disturbance History			
RHCAs			
Disturbance Regime			

Bull Trout status in HUC: The Munson_Quartz 6th Code HUC functions as a migration corridor for bull trout (USFS 2000c).

Integrated Status of bull trout and habitat: The Munson_Quartz 6th code HUC is rated as FUR for integration of bull trout and habitat due to the high number of habitat characteristics which are rated as functioning at unacceptable risk.

Noxon Rapids Reservoir BT Core Area

The MBTSG (1996d) reported that Noxon Reservoir currently has five tributaries that support bull trout spawning and rearing; Vermillion River, Prospect, Swamp, Graves, and Marten

Creeks. The Vermillion River, Prospect Creek and Graves Creek have been identified as local populations within this bull trout core area. (USFWS 2002). There are eight 6th code HUCs within this core area within the project area. Approximately 81% of this core area is managed by the U.S. Forest Service (USFWS 2005).

Graves Creek (170102130804)

Habitat Characteristics: Graves Creek has its headwaters in the Cabinet Mountains and flows in a southwest direction to its confluence with Noxon Reservoir approximately 7 miles east of Thompson Falls, Montana. It drains a watershed 18,200 acres. Graves Creek Falls, 2.7 miles upstream of the mouth, is a natural fish barrier. Winniemuck and Thorne Creeks are the major tributaries downstream of this barrier. Portions of Graves Creek are listed as critical habitat for bull trout (USFWS 2005b) and it is listed as critical habitat under the 2010 critical habitat proposal (USWFS 2010).

The major stream habitat types in Graves Creek are high and low gradient riffles. There is a relatively low amount of pool habitat available in the mainstem Graves Creek. Substrate is dominated by cobbles and gravels. WWP (1996) found an average of 7 percent surface fines (range 1-11 percent) among three reaches surveyed. Graves Creek road follows the creek bed throughout the watershed and several dwellings are present in the riparian zone. This has led to some disturbance in the riparian area but overall the riparian vegetation is still intact. The riparian vegetation is dominated by grasses and forbs lower down in the drainage; riparian trees are present in a high amount in the reach just below the falls (WWP 1996). It is estimated that there is 4574 ft^2 of spawning habitat available below the barrier falls which is capable of supporting 118 adfluvial salmonids (WWP 1996).

Bull Trout status in HUC: Bull trout densities were highest in Graves Creek of all the lower Clark Fork River tributaries capable of supporting fish (WWP 1996). Bull trout populations were estimated at 738 fish for Graves Creek based upon snorkel and electrofishing surveys in 1994 (WWP 1996). Bull trout densities averaged 0.086 fish/ft (range 0.051-0.122 fish/ft) for the three reaches surveyed with densities being higher in the lower grade riffle habitat type. Using a weir trap, located 330 feet upstream of the Blue Slide Road culvert, during the late summer/fall season, Lockard et al. (2003) captured 337 bull trout (size range 2.55-225.5 inches). The trap was in operation for 103 days. Bull trout constituted 78 percent of the total number of fish (N=431) caught in the trap in 2002. Only 2 brook trout and 7 brown trout were captured indicating low densities of these non-native fish. Low levels of large woody debris and availability of suitable spawning and rearing habitat were limiting factors in the salmonid population (WWP 1996).

Integrated status of bull trout and habitat: Due to the lack of sub-population connectivity and the lack of appropriate rearing habitat Graves Creek was FUR for an integration of both population and habitat indicators (USFS 2002a). This watershed hasn't received the same level of land management activities as other watersheds having not had any significant harvest activities in the past thirty years.

Vermillion River (1701021308)

Habitat characteristics: Portions of the Vermillion River are listed as critical habitat for bull trout (USFWS 2005b). Under the 2010 critical habitat proposal, the Vermilion River is proposed as critical habitat from the confluence with the Clark Fork upstream to the confluence with Willow Creek (USFWS 2010).

This drainage is approximately 68,000 acres, over 90 percent in under USFS management. The river flows into the northeast shore of Noxon Reservoir approximately 6 miles east of Trout Creek, Montana. There is a natural fish barrier at Vermillion Falls located 10.5 miles upstream from the mouth. Habitat consists primarily of a mix of low and high gradient riffles with run-type habitat interspersed (WWP 1996). Table 23 presents a summary of habitat environmental baseline indicators (USFS 2000c). Low amounts of fine sediment are present leading to a "Functioning Appropriately" (FA) determination for the "Sediment" indicator as defined in the Framework (USFS 2002a). Due to past harvest practices and development in the riparian area, WWP (1996) determined that the riparian zone was "largely non-functional" leading to a FUR determination for the "Streambank Conditions" indicator (USFS 2002a).

Table 23. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X[1]	
Sediment			X[1]
Nutrients and Contaminants	X		
Physical Barriers			X[1]
Substrate	X		
Large Woody Debris		X	
Pool Frequency		X[1]	
Pool Quality		X[1]	
Off-channel Habitat		X	
Prime Habitat (refugia)			X
Pool Width/depth ratio		X	
Streambank condition			X
Floodplain connectivity		X	
Peak and Base Flows			X
Drainage Network		X	
Road Network		X	
Disturbance History		X	
RHCAs		X	
Disturbance Regime		X	

X[1] factors identified in the 2010 Environmental baseline updates

Upper Vermillion River (170102130805)

Habitat Characteristics: The Upper Vermillion River HUC is 49 mi^2. Table 24 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 24. Road information within this 6th code HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Vermillion	242	44.36	191.76	3.91

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Lower Vermillion River (170102130806)

Habitat Characteristics: The Lower Vermillion River HUC is 58 mi^2. Table 25 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 25. Road information within this 6th code HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Silver Butte-Fisher	31	6.8	33.61	-
Vermillion	70	14.98	54.29	-
Not in a BMU	1	0.04	0.04	-
Total	102	21.82	87.94	1.52

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status in HUC: Redd surveys in 1993 found 27 redds mainly upstream of the China Gorge area approximately 5 miles upstream of the mouth (USFS 2002a). In 2001, redd surveys identified 37 redds (20 below the gorge, 17 above) (Avista 2002a). Electrofishing efforts during August 2001, captured 122 bull trout (size range 2.75-17.1 inches) below Vermillion Falls. Bull trout densities over 8 electrofishing sections below the falls ranged from a low of 0.003 fish/ft^2 in the lowest reach to a high of .503 fish/ft^2 in the reach directly above Miner's Creek (Avista 2002a). However, during 108 days of operation of a rotary screw trap during the spring/summer season 2002, only 14 juvenile bull trout were captured. Additional trapping using a weir trap during the summer/fall season 2002 captured 18 additional bull trout with an average size of 15.9 inches (range 2.36-27.36 inches) (Lockard et al. 2003). Pratt and Huston (1993) estimated that the Vermillion River supported less than 100 bull trout capable of spawning. Table 26 describes the rating for species environmental baseline indicators.

Table 26. Summary of Vermillion River drainage species environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation		X	
Growth and Survival		X	
Life History Diversity and connectivity			X
Persistence and Genetic Integrity			X

Integrated status of bull trout and habitat: The Vermillion River watershed, including the Upper and Lower Vermillion River 6th code HUCs, is functioning at Unacceptable Risk (USFS 2000) This rating is due to the high number of non-native species, brook and brown trout, and the high

number of habitat elements rating at either functioning at risk or functioning at unacceptable risk.

Swamp Creek (170102130904)

Habitat Characteristics: Swamp Creek is a 36 mi^2 drainage. Swamp Creek is identified as critical habitat under the 2010 bull trout critical habitat designation (USFWS 2010). Timber management has been identified as a source of impaired water quality in Swamp Creek (USFWS 2002). Table 27 provides a summary of the results of the environmental baseline analysis (USFS 2000c).

Table 27. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature	X		
Sediment	X		
Nutrients and Contaminants	X		
Physical Barriers	X		
Substrate	X		
Large Woody Debris			X
Pool Frequency		X	
Pool Quality		X	
Off-channel Habitat		X	
Prime Habitat (refugia)		X	
Pool Width/depth ratio		X	
Streambank condition	X		X
Floodplain connectivity	X		
Peak and Base Flows		X	
Drainage Network		X	
Road Network	X		
Disturbance History	X		
RHCAs		X	
Disturbance Regime		X	

Table 28 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 28. Road information within Swamp Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Silver Butte-Fisher	4	1.12	9.4	-
Wanless	10	1.07	14.01	-
Not in a BMU	3	2.00	7.52	-
Total	17	4.19	30.93	0.86

Bull Trout status: Swamp Creek has one known spawning reach with the bulk occurring in the Cabinet Wilderness. Some juveniles move downstream to Pend Oreille and at this point the likelihood of transport back upstream is small. Brook trout are present but the threat to bull trout is low (Project file, Kootenai NF Core Area summaries). Table 29 presents a summary of the status of species indicators (USFS 2000c)

Table 29. Summary of Swamp Creek drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation		X	
Growth and Survival		X	
Life History Diversity and connectivity		X	
Persistence and Genetic Integrity		X	

Squaw Creek (170102130702)

Habitat Characteristics: The Squaw Creek drainage is 35 mi^2. Table 30 provides status calls for select habitat characteristics which potentially could be affected by this proposal (USFS 2000c).

Table 30. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature			X
Sediment		X	
Nutrients and Contaminants			
Physical Barriers		X	
Substrate			
Large Woody Debris			
Pool Frequency		X	
Pool Quality			
Off-channel Habitat			
Prime Habitat (refugia)		X	
Pool Width/depth ratio			
Streambank condition			
Floodplain connectivity			
Peak and Base Flows			
Drainage Network			
Road Network		X	
Disturbance History			
RHCAs			
Disturbance Regime			

Table 31 provides information pertaining to roads within this 6th code HUC (Project file document, Lolo Road/Stream Crossings and Lolo RHCA miles, 2010).

Table 31. Road information within Squaw Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Lolo	-	0.20	0.9	-
Outside BMU	12	2.95	70.60	-
Total	12	3.15	71.50	2.04

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status in HUC: Bull trout use Squaw Creek as a migration corridor and the subpopulation is rated as FUR(USFS 2000c).

Integrated Status of bull trout and habitat: Squaw Creek is rated as FUR for integration of bull trout and habitat due to the status of the bull trout subpopulation being FUR and the high number of habitat characteristics which are rated as functioning at unacceptable risk.

Deep Creek (170102130703)

Habitat Characteristics: Deep Creek is a 14 mi^2 tributary to the Clark Fork River. Table 32 provides status calls for select habitat characteristics (USFS 2000c).

Table 32. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature	X		
Sediment		X	
Nutrients and Contaminants			
Physical Barriers			X
Substrate			
Large Woody Debris			
Pool Frequency		X	
Pool Quality			
Off-channel Habitat			
Prime Habitat (refugia)		X	
Pool Width/depth ratio			
Streambank condition			
Floodplain connectivity			
Peak and Base Flows			
Drainage Network			
Road Network		X	
Disturbance History			
RHCAs			
Disturbance Regime			

Table 33 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings 2010, Kootenai RHCA miles, 2010, Lolo Road/stream crossings 2010, Lolo RHCA miles 2010).

Table 33. Road information within Deep Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Lolo	4	1.85	6.13	-
Outside BMU	1	0.79	3.88	-
Total	5	2.64	10.9	0.79

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status in HUC: Bull trout status in Deep Creek is unknown but the subpopulation is considered to be FUR (USFS 2000c).

Integrated Status of bull trout and habitat: Deep Creek is rated as FUR for integration of bull trout and habitat due to the unknown status of the population (USFS 2000c)

Mosquito/Cougar Creek (170102130704)

Habitat Characteristics: Mosquito Creek and Cougar Creek are tributaries to the Clark Fork River. These drainages combine to create a 24 mi^2 HUC. Table 34 provides status calls for select habitat characteristics (USFS 2000c).

Table 34. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature			X
Sediment			X
Nutrients and Contaminants			
Physical Barriers			X
Substrate			
Large Woody Debris			
Pool Frequency			X
Pool Quality			
Off-channel Habitat			
Prime Habitat (refugia)		X	
Pool Width/depth ratio			
Streambank condition			
Floodplain connectivity			
Peak and Base Flows			
Drainage Network			
Road Network			X
Disturbance History			

RHCAs			
Disturbance Regime			

Table 35 provides information pertaining to roads within this 6th code HUC (Project file document, Lolo Road/Stream Crossings and Lolo RHCA miles, 2010).

Table 35. Road information within Mosquito/Cougar HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Lolo	7	1.68	12.62	-
Outside BMU	36	5.98	72.66	-
Total	43	7.66	85.29	3.55

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status: Bull trout use the Mosquito/Cougar 6th HUC as a migration corridor and the subpopulation is considered to be FUR (USFS 2000c).

Integrated Status of bull trout and habitat: The Mosquito/Cougar 6th code HUC is rated as FUR for integration of bull trout and habitat due to the FUR status of the subpopulation and the high number of habitat characteristics which are rated as functioning at unacceptable risk.

Cabinet Gorge Reservoir Core Area

The Cabinet Gorge Reservoir Core Area includes two local populations; Rock Creek and Bull River, which are divided into five 6th code HUCs. Cabinet Gorge Reservoir bull trout population is supported primarily by spawning occurring in the Bull River watershed and Rock Creek. Approximately 77% of this core area is managed by the U.S. Forest Service (USFWS 2005).

Rock Creek (170102131101)

Habitat Characteristics: Portions of Rock Creek are listed as critical habitat for bull trout (USFWS 2005b). Rock Creek is also listed as critical habitat under the 2010 proposal (USFWS 2010).

The headwaters of Rock Creek are in the southwestern end of the Cabinet Mountains. This watershed drains approximately 21,162 acres. Peak flow for Rock Creek is estimated to be between 200 and 300 cfs with base flow approximately 2 cfs. The mainstem Rock Creek consists of C and D Rosgen channel types through much of its lower reaches. The lower section is typified by low gradient, approximately 2 percent, through much of its length. The watershed contains several areas of sensitive landtypes, which are presently chronic sediment sources. This has resulted in a large volume of bedload and reduced transport efficiency.

Rubble and gravel are the co-dominant substrate in the lower reaches associated with large boulders and cobble (WWP 1996). Steeper sections of the mainstem and the East and West Forks are dominated by cobbles (WWP 1996). Spawning habitat is limited to isolated pockets of gravel behind stable debris or boulders (USFS 2002a). Off-channel habitat is naturally limited in the Rock Creek drainage. The stream has access to its floodplain but there is limited

complexity and potential for back-water areas, particularly in the areas of steeper gradient. With the exception of a road along the stream, connectivity with the floodplain has not been altered by past management activity.

Pool frequency is low in the Rock Creek drainage. Most of the available fish habitat is in the form of runs and riffles (WWP 1996). This condition holds true in the low gradient portions of the mainstem Rock Creek. Given the overall low frequency of pools, pool quality also is very low. Stream surveys have consistently identified low pool frequency as a potential aspect for habitat improvement. The mainstem Rock Creek contains a relatively small amount of large woody debris (LWD) relative to other watersheds in the lower Clark Fork River drainage (WWP 1996). The potential for future recruitment of LWD is greatly reduced due to past riparian timber harvest and the location of existing roads. Little of the large woody material that enters the active channel is retained. Despite the low abundance of LWD, the thermal regime appears to be functioning appropriately. Low water temperatures ranged from 32.5°F (0.3° C) in November up to 53.8° F(12.1° C) in August in 1994 (WWP 1996).

Mainstem Rock Creek lacks surface flow during periods of base flow for the majority of its lower 3.4 miles. West Fork Rock Creek flows perennially from the falls, approximately 1.6 miles upstream from the confluence of the East Fork Rock Creek, downstream to about 0.2 miles upstream from the confluence. Subsurface flows generally occurs annually in the mainstem of Rock Creek. There is a suspected low flow barrier on Rock Creek which prevents upstream movement during certain low flow years. Table 36 provides a summary of the results of the environmental baseline analysis (USFS 2000c).

Table 36. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature	X		
Sediment	X		
Nutrients and Contaminants	X		
Physical Barriers		X	
Substrate	X		
Large Woody Debris	X		
Pool Frequency		X	
Pool Quality			X
Off-channel Habitat	X		
Prime Habitat (refugia)		X	
Pool Width/depth ratio	X		
Streambank condition		X	
Floodplain connectivity	X		
Peak and Base Flows	X		
Drainage Network		X	
Road Network		X	
Disturbance History		X	
RHCAs		X	
Disturbance Regime		X	

Table 37 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 37. Road information within Rock Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Saint Paul	46	4.23	47.62	-
Wanless	34	7.38	67.40	-
Total	80	11.61	115.02	3.48

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull trout status: Currently, bull trout in the Rock Creek drainage are considered to be primarily of the resident life history form. Pratt and Huston (1993) suggest Rock Creek bull trout historically did not have a strong migratory component. However, there have been documented occurrences of larger migratory bull trout in the Rock Creek drainage (USFS 2002a). Also, two radio tagged bull trout transported from the Clark Fork River below Cabinet Gorge Dam to Cabinet Gorge Reservoir were relocated near the mouth of Rock Creek in 2001. This may suggest these fish were attempting to enter Rock Creek to spawn (Lockard et al. 2002). Typically, intermittent stream flow seasonally isolates Rock Creek from the reservoir. The culvert under State Highway 200 has been identified as a potential barrier at some flows. Natural barriers have been identified including the ephemeral lower reaches of Rock Creek and a waterfall limiting upstream movement on the West Fork

Within the Rock Creek drainage, bull trout occur in the mainstem of Rock Creek, West Fork Rock Creek, and East Fork Rock Creek (USFS 2002a). Several attempts to determine the number of Rock Creek bull trout were made between 1986 and 1996. WWP (1996) population estimates extrapolated to the drainage scale from density data collected at the reach scale yield approximately 1,900 total bull trout in Rock Creek and 743 total bull trout in West Fork Rock Creek. However, such extrapolations must be viewed cautiously or they may lead to erroneous estimates especially in a system with such variable flow conditions. Brook trout are present in Rock Creek and may compete or hybridize with bull trout. Risk of hybridization between brook trout and bull trout is increased because the largest component of bull trout in this system is of the resident form A single individual bull trout was found in Pilgrim Creek within the past decade along with numerous bull *x* brook trout hybrids; however, only hybrids were found during electrofishing surveys in 1999 by MFWP (Kleinschmidt and Pratt 2001, USFS 2002a). The West Fork Rock Creek also supports a resident population.

The Service has issued a non-jeopardy biological opinion regarding the Sterling Mining Company's proposal to develop an underground mine located north of the confluence of the West and East Forks Rock Creek (USFWS 2003). The mine project includes 3.5 miles of new roads and 5.5 miles of reconstructed roads in the Rock Creek watershed. Additionally, it includes a tailings piles and processing plant located at the mouth of Rock Creek. The Service concluded that this project may appreciably reduce bull trout persistence in Rock Creek by reducing numbers, reproduction and/or distribution of bull trout (USFWS 2003). Sterling Mining Company is taking steps to minimize this impact including a sediment abatement program which will reduce the post-project sediment input by 38 percent, as well as ensuring protective measures are in place to prevent mine waste from entering into Rock Creek (USFWS 2003). Additionally, to minimize impacts from their activities, Avista has initiated an effort to pass

juvenile bull trout from Rock Creek downstream of their dams (Avista 2003a). Table 38 presents a summary of the status of species indicators (USFS 2000c)

Table 38. Summary of Rock Creek drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation		X	
Growth and Survival		X	
Life History Diversity and connectivity		X	
Persistence and Genetic Integrity		X	

Integrated status of bull trout and habitat: Rock Creek is FUR for an integration of species and habitat indicators. The primary concern is the absence of a migratory life history of bull trout in concert with the relatively low habitat complexity and low frequency of pools. The majority of available habitat is only suitable for smaller resident fish. No habitat in the drainage is considered prime habitat for bull trout. Another reason for concern is lack of connectivity and dewatered areas when the stream goes dry at low flow. If migratory bull trout exist, access to upper reaches of Rock Creek is likely denied in many years due to intermittent flows. The absence of upstream passage over Cabinet Gorge Dam for juveniles migrating below Cabinet Gorge Dam further limits productivity. Marginal rearing conditions in Cabinet Gorge Reservoir are an additional constraint (WWP 1995). Low habitat complexity, limited suitable spawning and rearing habitat, stream intermittence, and the rarity of the migratory life history form indicate Rock Creek bull trout are largely isolated and vulnerable to extirpation due to random events (USFS 2002a).

Bull River (1701021310)

Bull River is comprised of four 6th code HUC watersheds: Upper Bull River (53 mi^2), Lower Bull River (25 mi^2), East Fork Bull River (26 mi^2), and South Fork Bull River (38 mi^2)

Habitat Characteristics: Portions of Bull River are listed as critical habitat for bull trout (USFWS 2005b). Bull River is proposed as critical habitat under the 2010 proposed listing, from the confluence with the Clark Fork upstream to the confluence with the South Fork Bull River (USFWS 2010).

This 88,600 acre watershed has its headwaters in the Cabinet Mountains to the north of the reservoir. The mainstem consists of “C” and “E” Rosen stream channel types. The major tributaries (North, Middle, East and South Forks) are predominantly “B” channel types (USFS 2000). The mainstem consists primarily of glide/run habitat types and is used predominantly as rearing habitat by out migrating bull trout (WWP 1996). The predominant riparian vegetative community along the mainstem is dominated by grasses and forbs which provide stable streambanks but low amounts of overhanging vegetative cover and thermal refugia; temperatures do not appear to be a limiting factor (WWP 1996). Avista Corporation acquired 716 acres of riverfront land along the mainstem of the Bull River to provide long-term habitat protection (Avista 2003a). Table 39 provides a summary of the results of the environmental baseline analysis (USFS 2000c).

Table 39. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature			X
Sediment	X		
Nutrients and Contaminants	X		
Physical Barriers	X		
Substrate	X		
Large Woody Debris		X	
Pool Frequency	X		
Pool Quality	X		
Off-channel Habitat			X
Prime Habitat (refugia)		X	
Pool Width/depth ratio	X		
Streambank condition		X	
Floodplain connectivity	X		
Peak and Base Flows	X		
Drainage Network		X	
Road Network		X	
Disturbance History		X	
RHCAs		X	
Disturbance Regime		X	

Table 40. Road information within Upper Bull River HUC (170102131003).

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Bull	46	12.93	76.06	-
Saint Paul	3	0.22	1.10	-
Snowshoe	4	0.66	7.89	-
Not in a BMU	4	0.47	1.12	-
Total	57	14.28	86.17	1.63

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Table 41. Road information within Lower Bull River HUC (170102131004).

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Bull	17	5.46	40.59	-
Saint Paul	1	0.56	4.98	-
Total	18	6.02	45.57	1.82

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull trout status: It is estimated that there is spawning habitat available for approximately 280 adfluvial bull trout; however, only 16 and 23 redds were found during surveys in 1993 and 1994

respectively (WWP 1996); redd surveys haven't been conducted since 1994 on the mainstem Bull River with the exception of 2001 when 0 redds were found (Avista 2002c). The majority of bull trout production within this watershed comes from the East Fork Bull River (EFBR) while the South Fork Bull River (SFBR) provides limited input as well. Individual bull trout have been found in the North and Middle Forks (Chadwick 2000, WWP 1996).

Table 42 presents a summary of the status of species indicators (USFS 2000c)

Table 42. Summary of Bull River drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation		X	
Growth and Survival		X	
Life History Diversity and connectivity		X	
Persistence and Genetic Integrity		X	

Integrated status of bull trout and habitat: Based upon the degraded condition of available habitat in the mainstem Bull River, the presence of high numbers of non-native brook and brown trout and the lack of sub-population connectivity and lower than expected bull trout numbers, this watershed is FUR for an integration of habitat and population indicators. Road densities are low in this watershed at 0.8 mi/mi^2 and the ECA is less than 15 percent. However, the riparian development in the mainstem results in the compromising of the system's ability to recover from disturbance effects. Fine sediment (sands/silt) is higher in the Bull River mainstem than the average of the other lower Clark Fork River tributaries (WWP 1996). WWP (1996) concluded that salmonid populations in the Bull River were limited by low availability of suitable spawning and rearing habitat, the low level of large woody debris and a low level of habitat complexity. This watershed is currently undergoing restoration activities associated with the Avista hydropower plants at Cabinet Gorge and Noxon Dams and this appears to be evident with the increase in bull redds in the East Fork Bull River. Avista is currently debating the proposal to implement a non-native fish suppression program in attempt to reduce the threat non-natives pose to bull trout within this watershed

South Fork Bull River (170102131001)

Habitat Characteristics: Portions of the South Fork Bull River are listed as critical habitat for bull trout (USFWS 2005b). The South Fork Bull River is listed also listed under the 2010 proposal (USFWS 2010).

The SF Bull River watershed is 7,600 acres and consists primarily of pools, runs and high/low gradient riffles (WWP 1996). The substrate is dominated by gravels and rubble with low amounts of fine sediments present. McNeil core samples averaged 34 percent fines (range 31-35 percent) with surface fines only averaging 9 percent. Riparian vegetation is dominated by grasses and forbs with riparian shrubs present (WWP 1996). WWP (1996) estimated that 7,717 ft^2 of spawning habitat was available in 1994. Table 43 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 43. Road information within SF Bull River HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Bull	32	4.23	52.78	-
Snowshoe	2	0.09	1.56	-
Total	34	4.32	54.34	1.43

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status: Based upon electrofishing surveys WWP (1996) estimated that the SFBR bull trout population was 121 fish (95 percent CI+67). This equated to bull trout densities estimated at 0.0082 fish/ft, in the surveyed reaches. Electrofishing surveys in 1999 found a single bull trout in the SFBR which resulted in a population estimate of 19 fish (80 percent CI= 25) (Chadwick 2000). Redd surveys in 2001 found one redd (Avista 2002c).

Integrated status of bull trout and habitat: WWP (1996) concluded that salmonid populations in the SFBR were limited by low availability of suitable spawning and rearing habitat and a low level of habitat complexity.

East Fork Bull River (170102131002)

Habitat Characteristics: The East Fork Bull River is listed critical habitat under the 2010 proposal (USFWS 2010). The EF Bull River is approximately 17,600 acres and has its headwaters at Saint Paul Lake in the Cabinet Mountain Wilderness. Habitat consists primarily of high gradient riffle and pool habitat types (WWP 1996). The riparian vegetation community consists of grass, forbs and riparian shrubs with stable streambanks. Three McNeil core samples taken in 1994 found that material <6.35mm constituted an average of 25 percent (range 15-33) of the substrate; gravel and rubble dominated the substrate composition. WWP (1996) estimated that only 2,260 ft^2 of spawning habitat was available for bull trout. The Bull River Watershed Council, in conjunction with the Avista Corporation, conducted two restoration efforts in the EFBR watershed in 2001 to minimize sediment input (Avista 2003a). It is unknown whether those efforts were successful. Table 44 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 44. Road information within EF Bull River HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Saint Paul	29	7.20	43.24	1.66

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status: In 1993, 12 bull trout redds were identified. Using electrofishing sampling in 1993-1994, WWP (1996) estimated that the East Fork Bull River's bull trout population was 609 fish (95 percent CI= 253) with a density of 0.02 fish/ft in the surveyed reaches. Electrofishing surveys in 1999 found 29 bull trout in the East Fork Bull River (Chadwick 2000). Based upon

their surveys, they estimated the East Fork Bull River bull trout population to be 217 fish (80 percent CI=92). Avista (2002c) estimated that the four reaches electrofished in the EFBR had an average fish density of .031 fish/ft (range .012-.06 fish/ft). Redd surveys in 2001 found 21 redds in the EFBR (Avista 2002c).

Integrated status of bull trout and habitat: WWP (1996) concluded that salmonid populations in the EFBR were limited by low availability of suitable spawning and rearing habitat and a low level of habitat complexity.

Blue Creek (1701021311)

Bull trout were found in the reservoir in Blue Creek Bay; however, no recent (1956) records of bull trout usage in Blue Creek are available (Kleinschmidt and Pratt 2001).

Lake Pend Oreille BT Core Area (17010214)

This core area begins at the Cabinet Gorge Dam and extends downstream to Albeni Falls Dam. This core area six local populations, which are divided amongst eight 6th code HUCs. This area was selected as a bull trout critical habitat unit, in the 2010 proposed critical habitat designation, because it is "essential for conservation as habitat for local populations spawning in Lake Pend Oreille tributaries, Pend Oreille River, and Clark Fork River; with enhanced fish passage at Clark Fork River facilities, linkage for bull trout from Lake Pend Oreille to access the upstream critical habitat subunits is critically important; the size and scope of this core area make it essential to recovery" (USFWS 2010).

Lightning Creek (1701021313) designated as a local population

Habitat characteristics: Lightning Creek, the largest tributary to the Clark Fork River below Cabinet Gorge Dam, is over 54,400 acres and it flows southerly reaching the Clark Fork 2-3 miles upstream of the Lake Pend Oreille (PBTTAT 1998b). Twelve large-scale floods have occurred in this drainage since 1890 with six of these occurring since 1964. This watershed can receive heavy amounts of rainfall whereas the neighboring watershed may receive half as much (PBTTAT 1998b). Coupled with steep (>70percent) slopes on most valleys sides, this precipitation and rain-on-snow events have resulted in a highly impacted watershed. Excess bedload from natural mass-wasting events as well as land management activities have contributed to creating an unstable channel and lack of habitat complexity in the mainstem Lightning Creek (PBTTAT 1998b). The mainstem Lightning Creek is braided and has a high width-to-depth ratio (PBTTAT 1998b). Lightning Creek's road density is moderate at 1.1 mi/mi^2 and the ECA is 11percent (meeting notes April 1-2, 2003). However, Cacek (1989 as cited in USFS 2002a) found that road and clearcutting activities resulted in 58 percent of the landslides and 75 percent of the total landslide volume within the basin. Portions of Lightning Creek are listed as critical habitat for bull trout (USFWS 2005b). Lightning Creek, and its tributaries East Fork Lightning, Morris, Porcupine, and Wellington Creeks are proposed as critical habitat under the 2010 listing proposal (USFWS 2010).

Bull Trout Status in HUC: Bull trout populations in the Lightning Creek drainage appear to be persisting at very low levels (Avista 2003).

Summary of Environmental Baseline: Major threats to bull trout are excess bedload and the associated loss of pool habitat and channel complexity. Additionally, the lack of large woody

debris and intermittent flow patterns also limit bull trout production. PBTTAT (1998b) concluded that roads are the major threat to the Lightning Creek watershed due to poor road construction (location and design) and the natural proneness of the watershed to mass-wasting events. The mainstem Lightning Creek, Porcupine Creek and the East Fork Lightning Creek are in the Scotchman BMU which is currently failing to meet standards and therefore may have activities associated with the proposed action occur within these watersheds. The remainder of the watershed is within the North Lightning BMU which is currently meeting standards (TMRD and Core) and therefore activities associated with the proposed action are not expected to occur within this watershed.

Lightning Creek above Rattle Creek (170102131301)

Habitat characteristics: Table 45 displays the rating for habitat environmental baseline indicators for the Middle Lightning Creek HUC. The notable indicators are; temperature, sediment, and road network. IDEQ has listed portions of Lightning Creek as 303d water quality impaired for temperature. Sediment inputs and road network will be decreased following planned road decommissioning projects (Lightning Restoration Project, 2009).

Table 45. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment		X	
Nutrients and Contaminants	X		
Physical Barriers	X		
Substrate			X
Large Woody Debris		X	
Pool Frequency	X		
Pool Quality	X		
Off-channel Habitat	X		
Prime Habitat (refugia)		X	
Pool Width/depth ratio		X	
Streambank condition		X	
Floodplain connectivity	X		
Peak and Base Flows		X	
Drainage Network		X	
Road Network		X	
Disturbance History		X	
RHCAs		X	
Disturbance Regime			X

Table 46 provides information pertaining to roads within this 6th code HUC (Project file document, IPNF Road/Stream Crossings and IPNF RHCA miles, 2010).

Table 46. Road information within Lightning Creek above Rattle Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
North Lightning	37	11.26	22.51	-
Total	37	11.26	22.51	1.1

The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Middle Lightning Creek (including Porcupine and Wellington Creeks designated as local populations) (170102131302)

Habitat characteristics: Table 47 displays the rating for habitat environmental baseline indicators for the Middle Lightning Creek HUC. The notable indicators are; temperature, sediment, and road network. IDEQ has listed portions of Lightning Creek as 303d water quality impaired for temperature. Road density for this HUC is 1.3 mi/mi^2. Sediment inputs and road network will be decreased following planned road decommissioning projects (Lightning Restoration Project, 2009).

Table 47. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment		X	
Nutrients and Contaminants		X	
Physical Barriers	X		
Substrate			X
Large Woody Debris		X	
Pool Frequency	X		
Pool Quality	X		
Off-channel Habitat	X		
Prime Habitat (refugia)		X	
Pool Width/depth ratio		X	
Streambank condition		X	
Floodplain connectivity	X		
Peak and Base Flows		X	
Drainage Network		X	
Road Network		X	
Disturbance History		X	
RHCAs		X	
Disturbance Regime			X

Table 48 provides information pertaining to roads within this 6th code HUC by BMU (Project file document, IPNF Road/Stream Crossings and IPNF RHCA miles, 2010).

Table 48. Road information within Middle Lightning Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
North Lightning	55	15.59	44.64	-
Scotchman	8	1.90	6.47	-
Total	63	17.49	51.11	1.16

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords
++ Road miles includes IGBC codes 1,2,3 and 4

Bull Trout status in HUC: Redd counts were conducted between 1983-1988 and 1992-2002 on Porcupine and Wellington Creeks. Redd numbers in Porcupine Creek ranged from 0 – 52 with the highest count occurring in 1984. Redd numbers in Wellington Creek ranged from 0 – 22, with the highest count occurring in 1999 (Avista 2003).

East Fork Lightning Creek (170102131303) designated as a local population

Habitat characteristics: East Fork Lightning Creek and its tributaries, Char and Savage Creeks are listed as critical habitat under the 2010 proposed critical habitat (USFWS 2010). Table 49 displays the rating for habitat environmental baseline indicators for East Fork Lightning Creek. The notable indicators are; Width/depth ratio, streambank condition and disturbance history. Each of these factors have been affected by the November 2006 flood, as well has past management.

Table 49. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment		X	
Nutrients and Contaminants	X		
Physical Barriers	X		
Substrate		X	
Large Woody Debris	X		
Pool Frequency		X	
Pool Quality		X	
Off-channel Habitat	X		
Prime Habitat (refugia)		X	
Pool Width/depth ratio		X	
Streambank condition		X	
Floodplain connectivity		X	
Peak and Base Flows	X		
Drainage Network		X	
Road Network		X	
Disturbance History			X
RHCAs		X	
Disturbance Regime		X	

Table 50 provides information pertaining to roads within this 6th code HUC (Project file document, IPNF Road/Stream Crossings and IPNF RHCA miles, 2010).

Table 50 Road information within East Fork Lightning Creek HUC

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Scotchman	32	6.09	9.76	0.5

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status in HUC: East Fork Lightning Creek is the only "High" priority PBTTAT index stream in this watershed; however, spawning also occurs in a reduced capacity in other tributaries to Lightning Creek. East Fork Lightning Creek has seen similar drops as streams in the Middle Lightning Creek HUC. During the 8-year period between 1983-1990 bull trout redds averaged average 67 redds/year (range 8-132); however, during the 11-year period of 1992-2002 (sample wasn't conducted in 1991) the average number of redds dropped to 38 redds/year (range 3-64), a drop of 176 percent. East Fork Lightning Creek had 958 redds from 1983-2002 which was 8% of the redds in Lake Pend Oreille tributaries (Avista 2003b). Densities of bull trout were estimated in 1997 at 0.0061-0.0091 fish/ft. in the East Fork Lightning Creek (PBTTAT 1998b). Based upon Rieman and McIntyre's (1993) use of redd counts to estimate probability of persistence, the East Fork Lightning Creek has a low probability of persistence, 48 percent for the next 100 years.

Lighting Creek below EF Lightning Creek (170102131304)

Habitat characteristics: Table 51 displays the rating for habitat environmental baseline indicators for Lightning Creek below EF Lightning Creek. The notable indicators are; temperature, substrate and large woody debris (LWD). Portions of Lightning Creek are listed, by IDEQ, as 303d water quality limited for temperature. A planned road decommissioning/storage project should, in the future, reduce sediment inputs and decrease substrate embeddedness. Currently the road density is 1.6 mi/mi^2. LWD is lacking in the lower Lightning Creek area, due to historic fires in the riparian zone, riparian harvest, road construction and burning of LWD on the floodplain, which had been deposited by a flood in 2008.

Table 51. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment		X	
Nutrients and Contaminants		X	
Physical Barriers		X	
Substrate			X
Large Woody Debris			X
Pool Frequency		X	
Pool Quality		X	

Off-channel Habitat		X	
Prime Habitat (refugia)		X	
Pool Width/depth ratio		X	
Streambank condition		X	
Floodplain connectivity	X		
Peak and Base Flows		X	
Drainage Network		X	
Road Network		X	
Disturbance History		X	
RHCAs		X	
Disturbance Regime		X	

Table 52 provides information pertaining to roads within this 6th code HUC (Project file document, IPNF Road/Stream Crossings and IPNF RHCA miles, 2010).

Table 52. Road information within Lightning Creek below EF Lightning Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles++	Road Density (mi/mi^2)
Scotchman	47	9.55	24.39	-
North Lightning	0	0.06	0	-
Not in a BMU	19	5.05	26.85	-
Total	66	14.66	51.24	1.60

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords
++ Road miles include IGBC codes 1,2,3 and 4

Bull Trout status in HUC: Bull trout status (Table 53) information was obtained from the Environmental Baseline prepared for the Lightning Creek Restoration Project.

Table 53. Summary of Lightning Creek below EF Lightning Creek HUC environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation		X	
Growth and Survival		X	
Life History Diversity and connectivity		X	
Persistence and Genetic Integrity		X	

Pend Oreille Lake Basin

The Pend Oreille Lake subbasin is 1174 square miles in size and is entirely within the state of Idaho. The subbasin is composed of all the streams that drain into Pend Oreille Lake and Pend Oreille River, excluding the Clark Fork. The subbasin boundary is where Albeni Falls Dam impounds the Pend Oreille River. The major tributaries include Pack River, Grouse Creek, Trestle Creek, and Gold Creek. Pend Oreille Lake is the largest and deepest natural lake in Idaho and is recognized throughout the Inland Northwest as an extremely valuable water

resource. About 26 percent of the lands within this basin are National Forest System lands, of which, 40 percent is within grizzly bear management units.

Habitat Characteristics: The Pend Oreille Lake subbasin is considered to be "functioning at risk" due to its moderate overall inherent sensitivity, and its moderate riparian and watershed disturbance. Riparian and watershed disturbances are the greatest in the Grouse Creek, Gold Creek and Granite Creek watersheds. As with other areas, road construction, timber harvesting and mining have been the dominant disturbance factors.

Trestle Creek (170102140404)

Habitat Characteristics: This third order watershed is 14,713 acres and enters along the north shore of Lake Pend Oreille. Over 90 percent of the watershed is managed by the Forest Service with the remainder in state, private and Bureau of Land Management ownership (USFS 2002a). Some of the best remaining habitat in the Pend Oreille/Lower Clark Fork tributary system exists in Trestle Creek (PBTTAT 1998b). Habitat is dominated by glide-runs and pool habitat only accounted for 15 percent of the habitat total over 12 reaches surveyed in 1992 (PBTTAT 1998b). Due to natural mass wasting from steep slopes and rain-on-snow events, the natural sediment yield is 17-200 tons/mi^2/yr (USFS 2002a). The Forest Service indicated that pool habitat is limited due to fill from these mass-wasting events; however, the risk from future bedload inputs has been greatly reduced. To minimize bedload input the Forest Service closed 18-20 miles of problem roads in 1994-95 (USFS 2002a). This watershed has been moderately affected by land management activities in the past with a road density of 1.9 mi/mi^2 and an ECA of 15 percent; however, the majority of impacts have occurred on private lands near the mouth of the creek (USFS 2002a). Despite the high bedload, the PBTTAT rated habitat and watershed conditions as "good" (PBTTAT 1998b). Portions of Trestle Creek are listed as critical habitat for bull trout (USFWS 2005b). Trestle Creek is listed as critical habitat under the 2010 critical habitat proposal (USFWS 2010). Table 53 provides information pertaining to roads within this 6th code HUC (Project file document, IPNF Road/Stream Crossings and IPNF RHCA miles, 2010).

Table 54. Road information within Trestle Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles++	Road Density (mi/mi^2)
North Lightning	39	9.38	18.21	-
Not in a BMU	3	0.67	1.27	-
Total			19.48	0.97

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords
++ Total road miles includes IGBC codes 1,2, 3, and 4

Bull Trout status: Trestle Creek, a "High" priority index stream, produces the highest redd count for all the tributaries of the Lake Pend Oreille and generally supports 30-50 percent of the spawning in the Lake Pend Oreille watershed (PBTTAT 1998b). From 1983-2008 bull trout redd counts have averaged 247 redds/year (range 102-395 redds) and total number of redds (6422 redds) (IDFG 2009). Redd surveys in 2004 found 102 redds, the lowest count and 2006 found 395 redds, the highest during this period (IDFG 2009). Based upon Rieman and McIntyre's (1993) use of redd counts to estimate probability of persistence, Trestle Creek has the highest

probability of persistence (95 percent) in the watershed for the next 100 years. Idaho Fish and Game estimated the number of adult bull trout in Trestle Creek to range annually from 326 to 1264 based on redds counted (IDFG 2009).

Integrated status of bull trout and habitat: PBTTAT (1998b) determined that the most significant threat to bull trout within this watershed is the development of the lower watershed to include the increase in the additional stream channel alterations, increase in impermeable surfaces which allows an increase surface runoff, and the removal of riparian vegetation. This watershed was FA for the "Sediment" and species indicators (USFS 2003).

Pack River (1701021405)

The Pack River has two local populations (the Pack River itself and Grouse Creek a tributary to the Pack River) and three 6th code HUCs within BMUs. Portions of the Pack River are listed as critical habitat for bull trout (USFWS 2005b). The Pack River is listed as critical habitat under the 2010 designated critical habitat proposal (USFWS 2010).

Upper Pack River (above Jeru Creek) (170102140503)

Habitat Characteristics: The Upper Pack River (above Jeru Creek) HUC is 41 mi^2. Table 55 displays the rating for habitat environmental baseline indicators for Upper Pack River. The notable indicators are; temperature, sediment, contaminates, lwd and disturbance history. Upper Pack River is listed, by IDEQ, as 303d water quality limited for temperature and for phosphorous. Sediment is rated at risk due to numerous historic road and culvert failures. LWD was removed from the channel in the 1960s. Disturbance history is a result of approximately 27% of the watershed was burning in the Sundance Fire (1967) and 16% of the drainage being harvested. Table 54 provides information pertaining to roads within this 6th code HUC (Project file document, IPNF Road/Stream Crossings and IPNF RHCA miles, 2010).

Table 55. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment		X	
Nutrients and Contaminants		X	
Physical Barriers	X		
Substrate	X		
Large Woody Debris		X	
Pool Frequency		X	
Pool Quality		X	
Off-channel Habitat	X		
Prime Habitat (refugia)	X		
Pool Width/depth ratio		X	
Streambank condition	X		
Floodplain connectivity	X		
Peak and Base Flows	X		
Drainage Network	X		
Road Network	X		
Disturbance History		X	

RHCAs	X		
Disturbance Regime	X		

Bull trout status: Bull trout redd surveys have been conducted in the Pack River since 1983, with a gap of four years between 1988 and 1991. Over that 22-year period, the Pack River has totaled 531redds and averaged 24 redds/year (range 0-108). Redd counts from 1983 through 1987 averaged 32 redds/year compared to the last 17 years of redd counts which averaged 22 redds/year (IDFG 2009). Table 56 presents a summary of the status of species indicators (Project file; IPNF environmental baselines, Pack River above Jeru Creek).

Table 56. Summary of Pack River above Jeru Creek environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation		X	
Growth and Survival		X	
Life History Diversity and connectivity	X		
Persistence and Genetic Integrity		X	

Summary of species and habitat integration: The Pack River upstream of Jeru Creek is rated as functioning appropriately due to the presence of bull trout, the connection to other bull trout habitats and the high number of habitat indicators which are functioning appropriately.

Grouse Creek (170102140505) designated as a local population

Habitat Characteristics: Grouse Creek is a tributary to the Pack River and it drains a watershed of 32,352 acres (PBTTAT 1998b). The Forest Service manages the upper half of the watershed (USFS 2003). Approximately 46 percent of this watershed lies within the “Sensitive Snow Zone” which is the elevational range (2,500-4,500 feet) where rain-on-snow events are frequent resulting in flooding events. This has resulted in channel braiding, infrequent pool habitat types and a higher width-depth ratio than was prior to the extensive logging and railroad activities in the early part of the 1900s; approximately 70 percent of the watershed had been cleared or burned by 1934 (PBTTAT 1998b). Riparian logging in the early 1900s reduced the potential for large woody debris recruitment and therefore pieces of large woody debris are limited in Grouse Creek (PBTTAT 1998b). NF Grouse and Grouse Creek are listed by the IDEQ as water quality limited for temperature exceedences. The Forest Service rated this watershed as “Highly Degraded” (USFS 2003). Portions of Grouse Creek are listed as critical habitat for bull trout (USFWS 2005b). Grouse Creek is listed as critical habitat under the 2010 designated critical habitat proposal (USFWS 2010). Table 57 provides information pertaining to roads within this 6th code HUC (Project file document, IPNF Road/Stream Crossings and IPNF RHCA miles, 2010). Road density for this HUC is 1.45 mi/mi^2. Table 58 provides information about habitat environmental baseline indicators.

Table 57. Road information within Grouse Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road miles++	Road Density (mi/mi^2)
Grouse	104	26.51	60.21	-
Not in a BMU	16	3.80	22.71	-
Total	120	30.31	82.92	1.45

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords
++ Total road miles includes IGBC codes 1,2, 3, and 4

Table 58. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature			X
Sediment		X	
Nutrients and Contaminants		X	
Physical Barriers		X	
Substrate	X		
Large Woody Debris		X	
Pool Frequency		X	
Pool Quality		X	
Off-channel Habitat	X		
Prime Habitat (refugia)		X	
Pool Width/depth ratio		X	
Streambank condition		X	
Floodplain connectivity		X	
Peak and Base Flows		X	
Drainage Network		X	
Road Network		X	
Disturbance History			X
RHCAs		X	
Disturbance Regime		X	

Bull Trout status in HUC: Grouse Creek is a “High” priority index stream for bull trout redd counts and has been surveyed every year since 1983 (PBTTAT 1998b). Over that 26-year period, Grouse Creek has totaled 1010 redds and averaged 39 redds/year (range 0-108). The total number of redds in Grouse Creek accounts for 6 percent of the redds in Lake Pend Oreille tributaries over the first 20 years of surveying (Avista 2003b). Redd counts from 1999 through 2008 averaged 46 redds/year compared to the previous 16 years of redd counts which averaged 34 redds/year (IDFG 2009). Table 59 presents a summary of the status of species indicators (Project file; IPNF environmental baselines, Grouse Creek).

Table 59. Summary of Grouse Creek drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation		X	

Growth and Survival	X		
Life History Diversity and connectivity	X		
Persistence and Genetic Integrity		X	

Integrated status of bull trout and habitat: Major threats and limiting factors to the bull trout persistence in Grouse Creek are: excessive bedload from past harvest activities, loss of habitat complexity through the denudation of large woody debris input, and unstable channels (PBTTAT 1998b). Due to these threats, the unstable channels, the lack of pool habitat and large woody debris and the high level of bedload, this watershed is FAR for an integration of the habitat and species indicators (USFS 2003). Specifically, with a road density of 1.45 mi/mi^2, including a riparian road density of 1.9 mi/mi^2, and a high ECA of 28 percent this watershed has been heavily impacted in the past and suffers from "legacy effects" (effects from a previous action lasting decades into the future) (USFS 2003, meeting notes April 1-2, 2003).

Rapid Lightning Creek (170102140506)

Habitat Characteristics: Table 60 provides information pertaining to roads within this 6th code HUC (Project file document, IPNF Road/Stream Crossings and IPNF RHCA miles, 2010). Road Density in the Rapid Lightning drainage is 2.51 miles/sq. mile.

Table 60. Road information within Rapid Lightning Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
North Lightning	30	4.86	22.08	-
Grouse	53	9.19	35.99	-
Not in a BMU	50	14.91	64.87	-
Total	133	28.96	122.94	2.51

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Priest Recovery Subunit

The Priest Recovery Subunit (Figure 2) includes Priest Lake, its direct tributaries, and its tributary system upstream, including the Priest River Thorofare, Upper Priest Lake, and the Upper Priest River. The Priest River watershed is partially isolated from the Pend Oreille system by Priest Lake Dam. This bull trout critical habitat unit was selected in the 2010 proposed critical habitat designation because it is "essential for conservation both as spawning and rearing and as foraging, migration and overwintering habitat for local populations in Priest Lake and Upper Priest lake; high elevation with relatively secure and unmanaged spawning and rearing habitat in headwater reaches of the Upper Priest River, may support cold-water refugia during ongoing climate change" (USFWS 2010).This subunit consists of one bull trout core population called the Priest Lake(s) and Upper Priest River Core area. Table 61 describes the threats to bull trout within this core area.

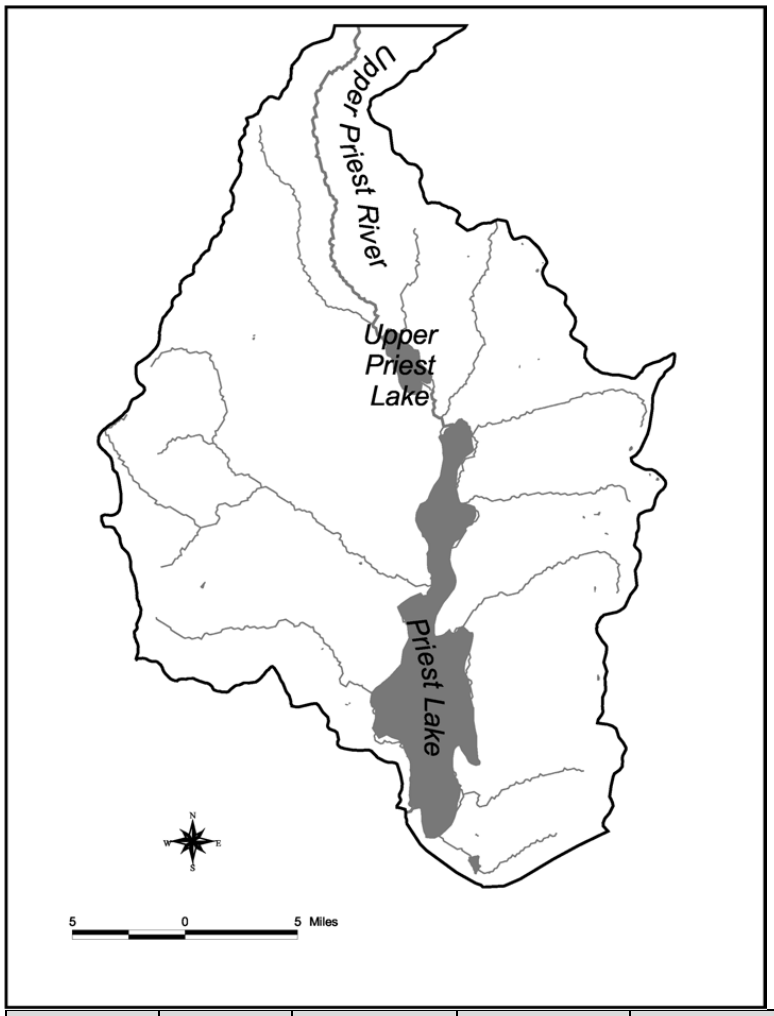


Figure 2: Map of core areas in the Priest Recovery Subunit

Table 61. Summary of three threat categories, and risk ratings within bull trout core areas of the Priest Lakes Subrecovery unit.

Sub Recovery Unit	Bull Trout Core Area	Brook Trout (% of key streams occupied)*	Road Density (mi/mi^2)**	Water Quality Key habitat on State 303(d) lists^	Short Term trend	Threat Rank	Final Rank
Priest Lakes		48	1.7	low	Rapidly Declining	Substantial, imminent	High Risk

* Estimated based on GIS data comparing key stream recovery habitat occupied by brook trout as a percentage of total core area key recovery habitat occupied by bull trout.

** Based on enter core area. State GIS data layers are not precisely comparable (e.g. a little used forest road may be included in one State's GIS layer and a comparable road not included in another State's GIS layer) and should be used with caution.

^ Based on proportion of key stream recovery habitat for bull trout within a core area that is 303(d) listed: lowe = 0-25%; moderate = 26-50%; elevated = 51-75%; high =76-100%. Some States have not completed the process identifying water quality impaired streams.

Priest Lake(s) and Upper Priest River Core Area

The Priest River Basin originates in British Columbia near the international boundary and flows north to south through the Selkirk Mountain Range until the river empties into the Pend Oreille River below Pend Oreille Lake. The Priest River basin is approximately 980 mi^2 and contains the Priest Lake system, a unique and highly valued water resource in the region. The main tributaries are Granite Creek, Hughes Creek, Lamb Creek, Upper and Lower West Branch, and Kalispell Creek.

Land ownership is unique within this basin, where the western portion is primarily composed of National Forest System Lands and the eastern portion is primarily comprised of lands administered by the Idaho Department of Lands. About 51 percent of the lands within this basin are National Forest System lands, of which 28 percent is within grizzly bear management units. The analysis area for this amendment will primarily be the watershed boundaries along National Forest System Lands from the Upper Priest River watershed to Kalispell Creek, a tributary to Priest Lake.

This basin includes two lakes, Upper Priest Lake and Priest Lake, which are connected by a 2.7 mile long low gradient predominately run type reach called the Thorofare. Priest Lake empties into the Priest River which flows into the Pend Oreille River. Priest River from the outlet of Priest Lake dam to the confluence with the Pend Oreille River is included in the Lake Pend Oreille Core area of the Lower Clark Fork Recovery Subunit.

Upper Priest Lake

The UPL watershed drains an area approximately 131,800 acres and consists of 4 major tributaries: Upper Priest River, Hughes Fork, Trapper Creek, and Caribou Creek. The first three of these tributaries are designated as local populations as is Gold Creek, a tributary to Hughes Fork. Trapper and Caribou Creeks are almost exclusively owned by the state of Idaho, therefore are not included in this analysis area. There are five 6th code HUCs within this watershed.

Habitat Characteristics: The Upper Priest Lake watershed is dominated by the Pacific coast type climate which provides an average of 32 inches of rain at the lake elevation and an average of 60 inches on the peaks of the Selkirk Mountains (PBTTAT 1998c). The climate and soil composition is similar to the Kootenai River Subbasin.

The lake serves primarily as rearing habitat for bull trout. Upper Priest Lake has a surface area of 1,388 acres and is a shallow lake with a mean depth of approximately 42.7 feet and a maximum depth of 105 feet(Fredericks et al. 1999).

Bull Trout Status: PBTTAT (1998c) called the UPL population of bull trout the strongest in the Priest River Basin. An estimated 100 adults are in the UPL and mainly spawn in Trapper Creek and upper Priest River and its tributaries (PBTTAT 1998c). Trapper Creek redd counts have averaged 3.2 redds/year (range 0-8) for the period of 1993-2001 (IDFG unpublished data). Idaho Fish and Game has conducted redd counts since 1985, and has identified that a significant ($P=< 0.001$) downward trend across consistently surveyed sites is evident in the abundance of spawning bull trout in the Priest Lake Core Area (IDFG 2009)

Lake trout were first discovered in UPL in 1985. Fredricks and Venard (2000) using gill nets during the early summer and early fall months of 1998 captured 912 lake trout with an average size of 17.3 inches (range 7.1-35.4 in.) and 46 bull trout (no size or range reported) which resulted in a 5:100 bull trout to lake trout ratio for the UPL. Additional limited gill netting in 1999

resulted in a bull to lake trout ratio of 4.7:100. They estimated the lake trout population of UPL was between 480-1,000 fish and the bull trout population at 93 fish (95 percent CI range 43-209 fish). Additionally, they documented lake and bull trout migration between the LPL and the UPL. Based on historical anecdotal information, bull trout were present in almost all the large accessible tributaries of the UPL and upper Priest River (PBTTAT 1998c).

Almost all the known spawning of bull trout within the Priest Lake Core Area occurs in the Upper Priest Lake watershed (Fredricks et al. 1999). Due to the low redd counts, bull trout seem to be at a high risk of extinction in this basin (PBTTAT 1998c).

Upper Priest River (1701021501)

Habitat Characteristics: This watershed of 204 sq miles has its headwaters in British Columbia and in the U.S. is almost exclusively managed by the Forest Service (95 percent ownership) (PBTTAT 1998c). Portions of Upper Priest River are listed as critical habitat for bull trout (USFWS 2005b). The Upper Priest River, and its tributaries Cedar, Lime, Rock, Malcom Creeks, are listed as critical habitat under the 2010 designated critical habitat proposal (USFWS 2010).

There is a natural barrier falls located approximately ½ mile south of the international border. This watershed has seen relatively low amounts of land management activities and was rated "High" for importance to bull trout. Habitat conditions could serve as reference conditions for a typical "C" type channel (USFS 2003).

Bull Trout Status in Upper Priest River (1701021501): Redd counts have been conducted in the mainstem the Upper Priest River in four different reaches. Bull trout have averaged 27 redds/year in the Upper Priest River during the period of 1996-2001; previous redd surveys were intermittent and incomplete (IDFG unpublished data).

Summary of Environmental Baseline: Tributaries to Upper Priest River have been surveyed for bull trout and no significant numbers have been found with the exception of Hughes Creek and its tributary, Gold Creek.

Limiting factors for this watershed are the presence of lake trout in the UPL as well as brook trout hybridization (PBTTAT 1998c, Fredericks and Venard 2000). Roads also provide a moderate-high limiting factor in several tributaries to upper Priest Lake and River due to creation of passage barriers as well as sources of sediment (PBTTAT 1998c). The sediment indicators were FAR for Gold Creek and the Upper Priest River immediately upstream of the lake (USFS 2003).

Upper Priest River above Malcom (170102150101)

Habitat Characteristics: The upper Priest River upstream of the confluence of Malcolm Creek is roadless. A natural barrier falls exist approximately ½ mile upstream of the confluence with Malcom Creek, about 0.6 mile downstream of the Idaho/Canada border. Table 62 displays the lack of management action within this HUC. Road density is 0.05 miles/sq mi, this road is not located in a BMU. Table 62 provides information pertaining to roads within this 6th code HUC (Project file documents, IPNF Road/Stream Crossings 2010, Colville Road/Stream Crossings 2010, IPNF RHCA miles 2010, Colville RHCA miles 2010).

Table 62. Road information within Upper Priest River above Malcom Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles++	Road Density (mi/mi^2)
Bluegrass	0	0	0	-
Outside BMU	0	0	1.41	-
Total	0	0	1.41	0.05

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords
++ road miles include: IGBC code 1,2,3,and 4

Bull trout status within the HUC: A natural falls prevents bull trout access to all but about 0.5 miles of the Upper Priest River within this HUC.

Upper Priest River above Upper Priest Lake (170102150102)

Habitat Characteristics: Major tributaries to Upper Priest River within this HUC are; Ruby, Snow, Cedar, Lime, and Rock Creeks. The majority of the habitat and watershed condition characteristics received a functioning appropriately rating (USFS 2006)(Table 63). The only exceptions are road densities (1.04 mi/sq mi), increase in drainage network and physical barriers, which are rated as functioning at risk.

Table 63. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature	X		
Sediment	X		
Nutrients and Contaminants	X		
Physical Barriers		X	
Substrate	X		
Large Woody Debris	X		
Pool Frequency	X		
Pool Quality	X		
Off-channel Habitat	X		
Prime Habitat (refugia)	X		
Pool Width/depth ratio	X		
Streambank condition	X		
Floodplain connectivity	X		
Peak and Base Flows	X		
Drainage Network		X	
Road Network		X	
Disturbance History	X		
RHCAs	X		
Disturbance Regime	X		

Table 64 provides information pertaining to roads within this 6th code HUC (Project file documents, IPNF Road/Stream Crossings 2010, Colville Road/Stream Crossings 2010, IPNF RHCA miles 2010, Colville RHCA miles 2010).

Table 64. Road information within Upper Priest River above Upper Priest Lake HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles++	Road Density (mi/mi^2)
Jackson-Hughes	23	4.54	21.62	-
Salmo-Priest	1	0.37	0	-
Bluegrass	39	9.95	31.98	-
State	3	0.46	1.72	-
Total	66	15.32	54.33	1.04

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords
++ Total road miles include IGBC codes 1,2,3, and 4

Bull trout status within the HUC: Redd surveys in the Upper Priest River have been conducted annually since 1992. Prior to 1992 surveys were conducted in 1985 and 1986 in Cedar, Lime and Upper Priest between Lime and Snow Creeks. These surveys were of a different length than current surveys, they produced the 16 and 7 redds, respectively. Between 1992-2008 surveys have averaged 20.7 redds/year (range 3-53). The highest number of redds were found in 1999 (53 redds) and the lowest was in 1995 (3 redds) however in 1995 two segments were not surveyed. Tributaries to Upper Priest River (Rock, Lime, Cedar and Ruby Creeks) produced 0.6 redds/year between 1992 and 2008. No redds have been found in Lime Creek since 1999 or in Cedar Creek since 1997. Bull trout status is rated as functioning at risk for all aspects of population characteristics (Table 65). This is due to the presence of non-native brook trout and lake trout.

Table 65. Summary of Upper Priest River Above Priest Lake drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation		X	
Growth and Survival		X	
Life History Diversity and connectivity		X	
Persistence and Genetic Integrity		X	

Summary of Environmental Baseline

The integration of species and habitat conditions was rated as functioning at risk (USFS 2006). This rating is due primarily because of the influence of non-native trout.

Lower Upper Priest River (includes Lower Hughes Fork and Boulder Creek) (170102150103)

Habitat Characteristics: Of the 19 characteristics, 16 are rated as functioning appropriately the remainder are functioning at risk. The road density within this 6th code HUC is 0.48 mi/mi^2. Drainage network was rated as FAR due to the extensive road network in the headwaters of Boulder Creek and there is some increase in drainage network in that area. RHCAs were rated as FAR because approximately 0.75 miles of stream length along the lower Hughes Fork were harvested in the past. Table 66 displays the environmental baseline for habitat within this drainage.

Table 66. Habitat environmental baseline within the drainage.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature	X		
Sediment	X		
Nutrients and Contaminants	X		
Physical Barriers	X		
Substrate	X		
Large Woody Debris	X		
Pool Frequency	X		
Pool Quality	X		
Off-channel Habitat	X		
Prime Habitat (refugia)	X		
Pool Width/depth ratio	X		
Streambank condition	X		
Floodplain connectivity	X		
Peak and Base Flows	X		
Drainage Network		X	
Road Network		X	
Disturbance History	X		
RHCAs		X	
Disturbance Regime	X		

Table 67 provides information pertaining to roads within this 6th code HUC (Project file documents, IPNF Road/Stream Crossings 2010, Colville Road/Stream Crossings 2010, IPNF RHCA miles 2010, Colville RHCA miles 2010).

Table 67. Road information within Lower Upper Priest River HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Jackson-Hughes	12	2.07	0.02	-
Kalispell-Granite	11	2.76	8.82	-
Sullivan-Hughes	0	0.01	0	-
State	1	0.36	3.5	-
Total	24	5.2	12.42	0.48

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull trout status within the HUC: Redd surveys within this HUC have been conducted periodically since 1993, five years in the Upper Priest River from the lake to Hughes Fork and 10 years in Boulder Creek. No redds have been found during any of these surveys (IDFG 2009). Table 68 summarizes environmental baseline species indicators for the Lower Upper Priest River.

Table 68. Summary of Lower Upper Priest River Above Priest Lake drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation			X
Growth and Survival		X	
Life History Diversity and connectivity		X	
Persistence and Genetic Integrity			X

Summary of Environmental Baseline: The integration of species and habitat conditions was rated as functioning at risk (USFS 2006). This rating is due primarily because of the influence of non-native trout.

Hughes Fork above Gold (170102150104)

Habitat Characteristics: Hughes Creek has seen relatively little land management actions with a low ECA and moderate road density. However, in the 1940s Hughes Creek through Hughes Meadow was channelized. This channelization, three miles, continues to have negative effects on fish habitat; increased embeddedness, reduced LWD, reduced pool habitat and pool quality, reduced off-channel habitats, reduced refugia, reduced streambank conditions, and reduced floodplain connectivity (Table 69). This channelized section is also likely the cause of elevated stream temperatures. IDEQ listed Hughes Fork from the source to mouth on the 303d list of impaired waters for exceeding temperature standards. Hughes Fork and its tributaries; Jackson and Bench Creeks are listed as critical habitat under the 2010 critical habitat proposal (USFWS 2010).

Table 69. Management activity within the drainage.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment		X	
Nutrients and Contaminants	X		
Physical Barriers		X	
Substrate		X	
Large Woody Debris		X	
Pool Frequency		X	
Pool Quality		X	

Off-channel Habitat		X	
Prime Habitat (refugia)		X	
Pool Width/depth ratio	X		
Streambank condition		X	
Floodplain connectivity		X	
Peak and Base Flows	X		
Drainage Network		X	
Road Network		X	
Disturbance History	X		
RHCAs	X		
Disturbance Regime	X		

Table 70 provides information pertaining to roads within this 6th code HUC (Project file documents, IPNF Road/Stream Crossings 2010, Colville Road/Stream Crossings 2010, IPNF RHCA miles 2010, Colville RHCA miles 2010).

Table 70. Road information within Hughes Fork HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Jackson-Hughes	52	9.66	14.57	-
Salmo-Priest	0	0.04	0	-
Total	52	10.06	14.57	0.54

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull trout status: Redd surveys in Hughes Fork have been conducted annually since 1992. Prior to 1992 surveys were conducted in 1985 and 1986. These surveys were of a different length than current surveys, but they produced the highest number of redds found in this drainage 40 and 19 respectively. Between 1992-2008 surveys have averaged 3.2 redds/year (range 0-9). The highest number of redds were in the earliest years of the surveys; 1992 and 1994. Since 2002 redd counts have ranged from 0-3 redds/year with no redds being found in 2007 and 2008. Tributaries to Hughes Fork (Bench and Jackson Creeks) produced 0.6 redds/year between 1992 and 2008. No redds have been found in Bench Creek since 1996. One redd was found in Jackson Creek in 2006, prior to that the last time a redd was found was in 1992. Hughes Fork is experiencing a similar decline as that found in the rest of the Priest Lake and upper Priest River Core Area (IDFG 2008). Table 71 summarizes environmental baseline species indicators for the Hughes Fork.

Table 71. Summary of Hughes Fork drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation		X	
Growth and Survival		X	
Life History Diversity and connectivity		X	
Persistence and Genetic Integrity		X	

Summary of Environmental Baseline: The integration of species and habitat conditions was rated as functioning at risk (USFS 2006). This rating is due primarily to of the influence of non-native trout and the effects of the channelized section of stream.

Gold Creek (170102150105)

Habitat Characteristics: Gold Creek was identified as critical habitat under the 2010 critical habitat proposal (USFWS 2010). Table 72 displays the ratings for the environmental baseline indicators for habitat within the Gold Creek drainage.

Table 72. Habitat environmental baseline indicators within the drainage.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature	X		
Sediment		X	
Nutrients and Contaminants	X		
Physical Barriers		X	
Substrate		X	
Large Woody Debris		X	
Pool Frequency		X	
Pool Quality		X	
Off-channel Habitat		X	
Prime Habitat (refugia)		X	
Pool Width/depth ratio		X	
Streambank condition		X	
Floodplain connectivity	X		
Peak and Base Flows	X		
Drainage Network		X	
Road Network			X
Disturbance History		X	
RHCAs		X	
Disturbance Regime		X	

Table 73 provides information pertaining to roads within this 6th code HUC (Project file documents, IPNF Road/Stream Crossings 2010, Colville Road/Stream Crossings 2010, IPNF RHCA miles 2010, Colville RHCA miles 2010).

Table 73. Road information within Gold Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Jackson-Hughes	20	5.34	13.43	-
Kalispell-Granite	20	4.59	20.59	-
Sullivan Hughes	0	0.47	0.3	-
Total	40	10.4	34.32	1.63

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status: Redd surveys in Gold Creek have been conducted annually since 1992. Prior to 1992 surveys were conducted in 1985 and 1986. These surveys were of a different length than current surveys, but they produced the highest number of redds found in this drainage 24 and 23, respectively. Between 1992-2008 surveys have averaged 2.5 redds/year (range 0-9). The highest number of redds were in 2000 (9 redds). Table 74 summarizes environmental baseline species indicators for the Gold Creek.

Table 74. Summary of Gold Creek drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation		X	
Growth and Survival		X	
Life History Diversity and connectivity		X	
Persistence and Genetic Integrity		X	

Lower Priest Lake Watershed

The Lower Priest Lake Watershed includes four 6th code HUCs which are also in bear management units.

Habitat Characteristics: Kalispell Creek and Granite Creek are likely the best available habitat for bull trout from Priest Lake (USFS 2003). Kalispell Creek has residential development at its mouth as does Granite Creek.

Bull trout status in HUC: Bull trout are “functionally non-existent” in this watershed predominantly due to the presence of lake trout in Priest Lake (Fredericks and Venard 2000). The eastern half of this watershed is owned exclusively by the State of Idaho.

The decline of bull trout in Priest Lake is coupled with the increase of lake trout. Between 1956-1978 anglers reported catching an average of 1,200-2,300 bull trout annually. By 1986, anglers caught no bull trout during the same annual period. Lake trout, however, replaced the bull trout. Lake trout catch by anglers average less than 300 fish/year for the period between 1956-1970. In 1978, lake trout harvest was estimated at 5,700 fish and by 1994 around 14,000 lake trout were caught. This dramatic increase is probably due to the introduction of *Mysis relicta* (mysis shrimp) in 1965. Habitat deterioration, overharvest, and interaction with lake trout have all contributed to the significant decline of bull trout in this watershed (Fredericks et al. 1999). Historically, bull trout were present in Granite Creek, Kalispell Creek, Beaver Creek and Lion Creek as well as several face drainages of Priest Lake. Based on limited surveys in the 1990s by IDFG and the Forest Service, bull trout were absent in Kalispell Creek, Granite Creek, and Beaver Creek; Lion Creek wasn’t surveyed (PBTTAT 1998c).

Bull trout presence in this watershed is known to occur due to limited bull trout migration from the UPL (Fredericks et al. 2000). Due to lack of sufficient surveys within the tributaries and the lake itself, coupled with an anticipated very low level of bull trout, population dynamics are difficult to develop. More information is necessary for this watershed to adequately characterize the bull trout status.

Granite Creek (1701021503)

Granite Creek is comprised of three 6th code HUC watersheds.

North Fork Granite (170102150302)

Habitat Characteristics: Table 75 provides a summary of environmental baseline indicators for habitat (USFS 2006).

Some of the more notable ratings are for the temperature, roads and RHCA indicators. IDEQ has listed Granite Creek from its mouth to headwaters as 303d water quality limited due to exceeding temperature standards, this listing includes the North Fork of Granite. A major road parallels this stream for over 80 percent of the stream's length. Overall roads are located in valley bottoms. Due to placement of roads in riparian areas there has been loss of proper riparian function.

Table 75. Habitat environmental baseline indicators within the drainage.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment	X		
Nutrients and Contaminants	X		
Physical Barriers	X		
Substrate	X		
Large Woody Debris		X	
Pool Frequency		X	
Pool Quality		X	
Off-channel Habitat	X		
Prime Habitat (refugia)		X	
Pool Width/depth ratio		X	
Streambank condition	X		
Floodplain connectivity	X		
Peak and Base Flows	X		
Drainage Network			X
Road Network			X
Disturbance History	X		
RHCAs		X	
Disturbance Regime		X	

Table 76 provides information pertaining to roads within this 6th code HUC (Project file documents, IPNF Road/Stream Crossings 2010, Colville Road/Stream Crossings 2010, IPNF RHCA miles 2010, Colville RHCA miles 2010).

Table 76. Road information within North Fork Granite HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Jackson-Hughes	4	1.19	1.79	-
Kalispell-Granite	41	14.97	21.03	-
Sullivan-Hughes	0	0.23	0.31	-
Total	45	16.39	23.13	0.77

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull trout status: A few individuals are present but reproduction has not been observed in years. Table 77 summarizes environmental baseline species indicators for the North Fork Granite Creek (USFS 2006)..

Table 77. Summary of North Granite Creek drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation		X	
Growth and Survival		X	
Life History Diversity and connectivity		X	
Persistence and Genetic Integrity		X	

Summary of Environmental Baseline: The integration of species and habitat conditions was rated as Functioning at Risk (USFS 2006). This rating is because some habitat components are in an impaired condition, others are functioning appropriately and some are in a state of recovery, and the biological components are all functioning at risk.

South Fork Granite (170102150301)

Habitat Characteristics: Portions of South Fork Granite Creek are listed as critical habitat for bull trout (USFWS 2005b). Table 78 provides a summary of environmental baseline indicators for habitat (USFS 2006).

Table 78. Habitat environmental baseline indicators within the drainage.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment		X	
Nutrients and Contaminants	X		
Physical Barriers		X	

Substrate		X	
Large Woody Debris	X		
Pool Frequency		X	
Pool Quality		X	
Off-channel Habitat	X		
Prime Habitat (refugia)			X
Pool Width/depth ratio		X	
Streambank condition	X		
Floodplain connectivity	X		
Peak and Base Flows		X	
Drainage Network	X		
Road Network		X	
Disturbance History		X	
RHCAs		X	
Disturbance Regime		X	

Table 79 provides information pertaining to roads within this 6th code HUC (Project file documents, IPNF Road/Stream Crossings 2010, Colville Road/Stream Crossings 2010, IPNF RHCA miles 2010, Colville RHCA miles 2010).

Table 79. Road information within South Fork Granite HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Kalispell-Granite	79	13.51	16.59	-
LeClerc	8	1.83	7.69	-
Total	87	15.34	24.28	0.69

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull trout status: A few individuals are present but reproduction has not been observed in years. Table 80 summarizes environmental baseline species indicators for the South Fork Granite Creek (USFS 2006).

Table 80. Summary of South Fork Granite Creek drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation			X
Growth and Survival			X
Life History Diversity and connectivity			X
Persistence and Genetic Integrity			X

Summary of Environmental Baseline: The integration of species and habitat conditions was rated as Functioning at Unacceptable Risk (USFS 2006). This rating is because few habitat components are functioning appropriately and the biological components are all functioning at unacceptable risk.

Lower Granite Creek (170102150303)

Habitat Characteristics: Portions of Granite Creek are listed as critical habitat for bull trout (USFWS 2005b). Granite Creek, and its tributaries; North and South Granite Creeks, were identified as critical habitat under the 2010 critical habitat proposal (USFWS 2010).

A habitat survey in 2002, shows Granite Creek as a wide and shallow creek with an average width to depth ratio of 38 percent. Pool habitat accounts for only 17 percent of all available habitat types with riffle habitat making up the remainder. Road density is high at 2.3 mi/mi^2 and the ECA is moderate at 12 percent. Granite Creek is listed as an impaired water, by IDEQ, due to exceeding temperature standards. Table 90 provides a summary of environmental baseline indicators for habitat (USFS 2006).

Table 90. Habitat environmental baseline indicators within the drainage.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment		X	
Nutrients and Contaminants	X		
Physical Barriers		X	
Substrate		X	
Large Woody Debris		X	
Pool Frequency		X	
Pool Quality		X	
Off-channel Habitat	X		
Prime Habitat (refugia)		X	
Pool Width/depth ratio		X	
Streambank condition	X		
Floodplain connectivity		X	
Peak and Base Flows		X	
Drainage Network			X
Road Network			X
Disturbance History			X
RHCAs		X	
Disturbance Regime		X	

Table 91 provides information pertaining to roads within this 6th code HUC (Project file documents, IPNF Road/Stream Crossings 2010, Colville Road/Stream Crossings 2010, IPNF RHCA miles 2010, Colville RHCA miles 2010).

Table 91. Road information within Lower Granite Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Kalispell-Granite	90	21.75	40.99	-
Lakeshore	11	3.57	25.55	-
Not in BMU	2	0.89	13.93	-
Total	103	26.21	80.47	2.3

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status: A few individuals are present but reproduction has not be observed in years. Table 92 summarizes environmental baseline species indicators for the Lower Granite Creek.

Table 92. Summary of Lower Granite Creek drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation			X
Growth and Survival			X
Life History Diversity and connectivity			X
Persistence and Genetic Integrity			X

Summary of Environmental Baseline

The integration of species and habitat conditions was rated as Functioning at Unacceptable Risk (USFS 2006). This rating is because few habitat components are functioning appropriately and the biological components are all functioning at unacceptable risk.

Kalispell Creek (170102150208)

Habitat Characteristics: Portions of Kalispell Creek are listed as critical habitat for bull trout (USFWS 2005b), but was not listed in the 2010 proposed critical habitat (USFWS 2010). IDEQ has listed Kalispell Creek as a 303d water quality limited stream with sediment as the pollutant of concern (IDEQ 2001). The mainstem of Kalispell Creek does not have major barriers but access to seven headwaters streams is cut off by impassable culvert barriers (USFS 2004). The Forest road network has a higher density than the stream network within the watershed and within the RHCA (USFS 2005). Road density is high with roads, 1.85 mi/mi^2, concentrated in the valley bottoms. A major road parallels several miles of Kalispell Creek. Table 93 provides a summary of environmental baseline indicators for habitat (USFS 2006).

Table 93. Habitat environmental baseline indicators within the drainage.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature			X
Sediment			X
Nutrients and Contaminants	X		
Physical Barriers		X	
Substrate		X	
Large Woody Debris			X
Pool Frequency			X
Pool Quality			X

Off-channel Habitat		X	
Prime Habitat (refugia)		X	
Pool Width/depth ratio		X	
Streambank condition	X		
Floodplain connectivity		X	
Peak and Base Flows		X	
Drainage Network			X
Road Network			X
Disturbance History		X	
RHCAs		X	
Disturbance Regime		X	

Table 94 provides information pertaining to roads within this 6th code HUC (Project file documents, IPNF Road/Stream Crossings 2010, Colville Road/Stream Crossings 2010, IPNF RHCA miles 2010, Colville RHCA miles 2010).

Table 94. Road information within Kalispell Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Kalispell-Granite	40	14.85	43.79	-
Lakeshore	5	1.59	6.4	-
Not in BMU	18	5.47	22.09	-
Total	63	21.91	72.28	1.85

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status: Bull trout have not been observed in Kalispell Creek since the early 1980s. Fish surveys failed to find any bull trout in Kalispell Creek but did find brook trout. (Weidich 2002, meeting notes April 1-2, 2003). Eastern brook trout are distributed and abundant throughout the system. Table 95 summarizes environmental baseline species indicators for the Kalispell Creek.

Table 95. Summary of Kalispell Creek drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation			X
Growth and Survival			X
Life History Diversity and connectivity			X
Persistence and Genetic Integrity			X

Summary of Environmental Baseline

The integration of species and habitat conditions was rated as Functioning at Unacceptable Risk (USFS 2006). This rating is because few habitat components are functioning appropriately and the biological components are all functioning at unacceptable risk.

Kootenai Recovery Unit

The Kootenai Recovery unit is comprised of four bull trout core areas (Figure 3). Lake Koocanusa, and Sophia Lake, will not be analyzed because they are not included in the project area. Kootenay Lake and River (Lower Kootenai) core area and Bull Lake core area are both included in the grizzly recovery area. Table 96 displays the threat to bull trout in core areas of this recovery unit.

Figure 3: Map of core areas in the Kootenai River Recovery Unit.

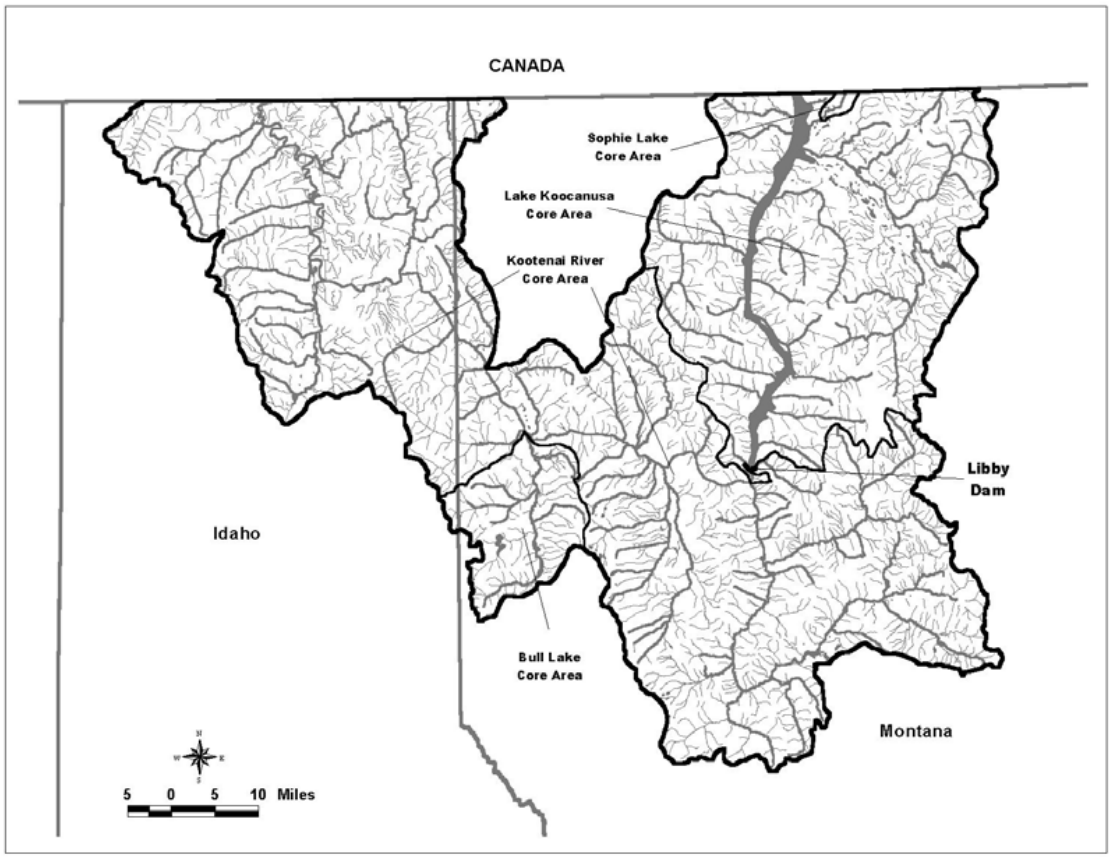


Table 96. Summary of three threat categories, and risk ratings within bull trout core areas.

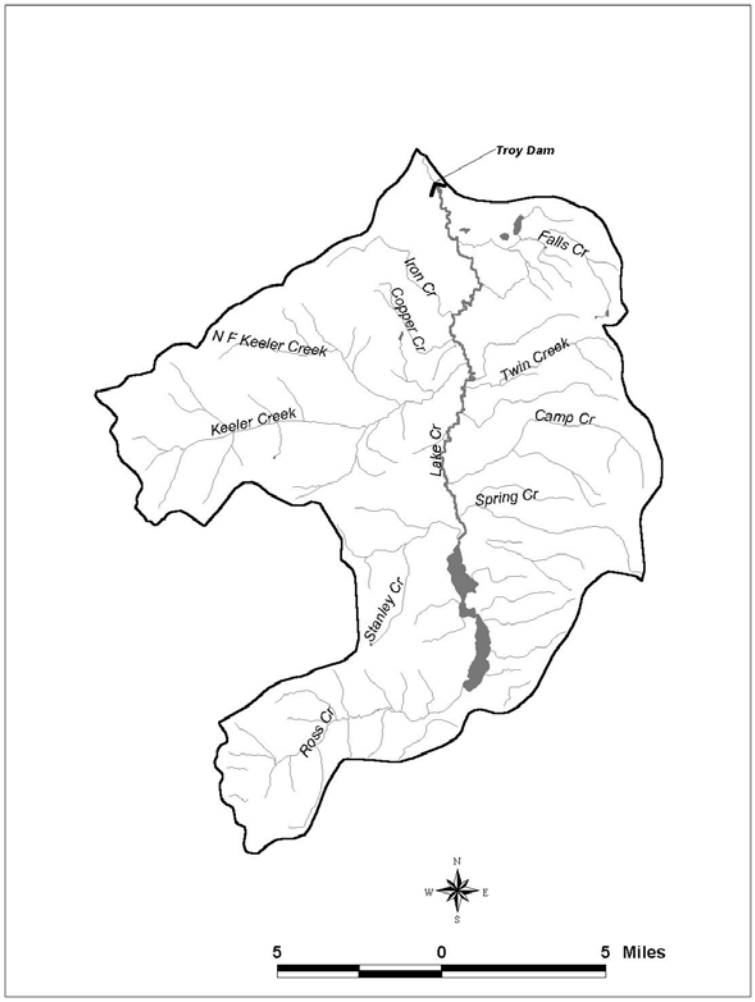
Recovery Unit	Bull Trout Core Area	Brook Trout (% of key streams occupied)*	Road Density (mi/mi^2)**	Water Quality Key habitat on State 303(d) lists^	Short-term trend	Threat Rank	Final Rank
Kootenai	Bull Lake	100	1.2	elevated	Stable	Moderate, non-imminent	At Risk
	Kootenai River	87	2.0	moderate	Stable	Moderate, imminent	At Risk

* Estimated based on GIS data comparing key stream recovery habitat occupied by brook trout as a percentage of total core area key recovery habitat occupied by bull trout.
** Based on enter core area. State GIS data layers are not precisely comparable (e.g. a little used forest road may be included in one State's GIS layer and a comparable road not included in another State's GIS layer) and should be used with caution.
^ Based on proportion of key stream recovery habitat for bull trout within a core area that is 303(d) listed: lowe = 0-25%; moderate = 26-50%; elevated = 51-75%; high =76-100%. Some States have not completed the process identifying water quality impaired streams.

Bull Lake BT Core Area

Bull Lake is comprised of one local population and four 6th code HUCs (Figure 4).

Figure 4: Bull Lake core area showing watersheds and major features.



<u>Lake Creek Disjunct Population (Upper Lake Creek (170101010903) and Lower Lake Creek (170101010905))</u>

<u>Habitat Characteristics:</u> Portions of Lower Lake Creek are listed as critical habitat for bull trout (USFWS 2005b).

Lake Creek is a 135,000 acre drainage flowing north out of Bull Lake to its confluence with the Kootenai River near Troy, Montana. Approximately 79 percent of the watershed is under Forest Service jurisdiction (USFS 2002a). Due to the presence of the Troy Dam, an upstream migration barrier located several miles upstream of its confluence with the Kootenai River, Lake Creek constitutes a disjunct population of bull trout. Bull trout use Bull Lake, located in the upper portion of the Lake Creek watershed as rearing habitat and predominantly use Keeler and Stanley Creeks as spawning habitat. Keeler and Stanley Creeks serve as Core Areas for this disjunct population while Bull Lake and Lake Creek serve as nodal habitat (MBTSG1996c).

The Lake Creek drainage is subject to frequent rain-on-snow events and averages between 33 and 113 inches of rain annually (USDA Forest Service 2002a). The Forest Service (2002a) identified channel intermittency and subsurface flow within the Lake Creek drainage as common. North and South Fork Keeler Creeks and upper Stanley Creeks are examples of side

drainages which only have flow during spring runoff events approximately 2-4 months/year. Springs contribute a significant portion of the yearly flow in Stanley Creek as well as providing base flows in portions of North and South Forks of Keeler Creek (ibid).

Table 97 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings 2010 and Kootenai RHCA miles, 2010).

Table 97. Road information within Upper and Lower Lake Creek HUCs.

BMU	6th code HUC	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Cedar	Upper Lake Creek	17	4.35	19.34	-
Snow		7	0.64	4.68	-
Spar		9	1.09	11.69	-
Not in a BMU		55	11.68	77.95	
Subtotal Upper		88	17.76	113.66	1.89
Spar	Lower Lake Creek	19	4.15	17.88	-
Not in a BMU		61	16.47	111.58	-
Callahan		0	0.05	1.9	-
Subtotal Lower		80	20.67	131.36	3.28

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status in HUC: Based upon redd counts (74, 59, and 92 between 1996-1998, respectively) the bull trout population in the Lake Creek watershed was estimated to be 155, 124, and 193 between 1996-1998, respectively (USFS 2002a). This resulted in a FAR determination for the "Subpopulation Size" indicator in the Framework (USDA Forest Service 2002a). Additionally, with a road density of 2.6 mi/mi^2, and an ECA 5 percent including significant riparian harvest (19 percent in Stanley Creek and 20 percent in Keeler Creek; USFS 2001) a FAR determination was made for this watershed for those indicators (ibid). The combination of these impacts coupled with the disjunct nature of the population and the presence of the non-native brook trout lead to a FUR determination for an integration of the species and habitat indicators as defined in the Framework (ibid).

Stanley Creek (170101010902)

Habitat Characteristics: Portions of Stanley Creek are listed as critical habitat for bull trout (USFWS 2005b). Springs are a main source of flow to Stanley Creek. Portions of Stanley Creek are listed by the State of Montana as Water Quality limited. The cause for this listing is a large silver/copper mine (the ASARCO mine) that operated in the Stanley Creek drainage in the 1980s and early 1990s. Its tailings ponds span over about half a square mile. The tailings are aluminum silicate, which is inert (USDA Forest Service 2000a). Stanley Creek has very high fine sediment quantities, is highly embedded and provides no suitable spawning habitat (USFS 2000a). Table 98 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 98. Road information within Stanley Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Spar	78	14.98	69.27	-
Not in BMU	1	0.33	0.39	-
Total	79	15.31	69.66	2.49

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status within HUC: Stanley Creek determination of bull trout status was combined with Lake Creek and Keeler Creek determined to be Functioning at Risk for all indicators except for Life History Diversity and connectivity, which received a rating of Functioning appropriately.

Keeler Creek (170101010904)

Habitat Characteristics: Portions of Keeler Creek are listed as critical habitat for bull trout (USFWS 2005b). Much of the large Woody debris that should have been in Keeler Creek was removed in the 1980s (USDA Forest Service 2000a). The majority of the pool habitat and the large pool habitat within the Lake Creek drainage occurs in Keeler Creek. Keeler Creek streambank condition continues to be affected by work done since the 1970s to protect FS road #473 from channel movement. Much of the length is riprapped (USFS 2000a). Keeler Creek is listed as Water Quality limited by the State of Montana partially due to the alterations in streamflow which could affect cold-water fisheries (USFS 2000a). Road decommissioning and road storage work has occurred in the upper portion of the North Fork Keeler. Table 99 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 99. Road information within Keeler Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Spar	157	30.07	85.79	-
Not in BMU	1	0.23	3.29	-
Total	158	30.3	89.08	1.75

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

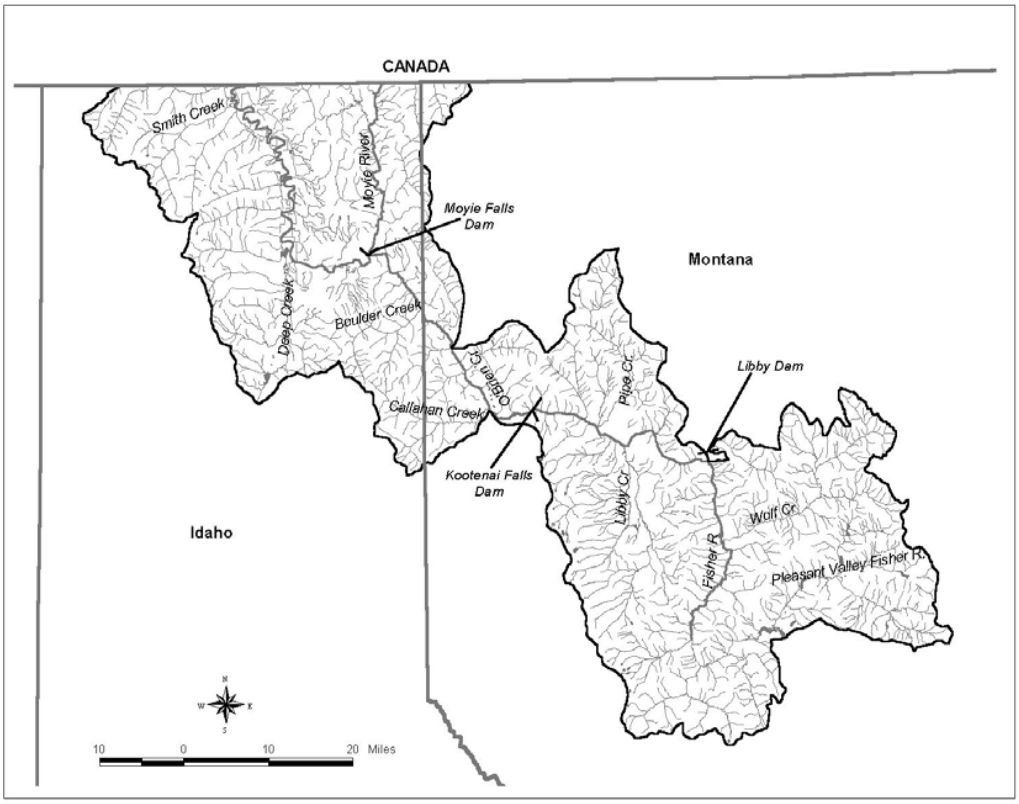
Bull Trout Status in HUC: Most bull trout in the Lake Creek drainage are thought to spawn in Keeler Creek. Brook trout are known to inhabit Keeler Creek threatening the future persistence of this disjunct population (USDA Forest Service 2000a)

Integrated status of bull trout and habitat: Keeler Creek is Functioning Appropriately for the barrier indicator, Functioning at Risk for Pool habitat indicator, and Functioning at unacceptable risk for the temperature and sediment indicators. (Appendix A).

Kootenai River BT Core Area

The Kootenai River Bull Trout Core Area is comprised of six local populations and 24 6th code HUC watersheds (Figure 5).

Figure 5: Map of Kootenai River/Kootenay Lake core area showing watersheds and major features.



Habitat Characteristics: The Kootenai River drainage is an international watershed, with approximately two-thirds of its acreage within the province of British Columbia, Canada (Knudsen 1994). It is the second largest tributary to the Columbia River and has an average annual flow measured near the Montana-Idaho border of 14,150 cfs (cubic feet per second) (USGS 1995). The total drainage area is 14,000 mi^2 27% of which is in Montana (Knudsen 1994).

The United States' portion of the watershed is primarily public land administered by the Forest Service. Management activities include forest practices associated with timber management, grazing, recreation and special uses. Private land is used for similar purposes as well as commercial and domestic development. The major population centers in this watershed include, Eureka, Libby, and Troy, Montana and then Bonners Ferry, Idaho. There are several other small areas of suburban development distributed throughout the watershed.

In Idaho, the drainage area for the Kootenai subbasin is 1,960 square miles or 11% of the entire basin. The majority of the river flows through private land, including the town of Bonners Ferry. Its main tributary is the Moyie River, which is also a subbasin and originates in British Columbia. About 53 percent of the Kootenai subbasin is National Forest System (NFS) lands; of which, 45 percent are within grizzly bear management units.

The Idaho Panhandle National Forests has completed individual subbasin assessments for the middle portion of the Kootenai River, the Moyie River, Pend Oreille Lake and Priest River

Subbasins. The assessments assigned a watershed "Functioning" Condition rating for watersheds based on three categories: overall inherent sensitivity, watershed disturbance, and riparian disturbance. Overall sensitivity of the drainage evaluates the percentage of sensitive landtypes and rain-on-snow acres to the total acres of the drainage. Watershed disturbance is derived from evaluating the combination of upland road densities, hydrologic openings and percentage disturbance on sensitive landtypes. Riparian disturbance is based on miles of encroaching roads, riparian road density and steam crossing frequency.

For the middle Kootenai Subbasin, the overall condition rating was determined "functioning at risk" due to a high overall inherent sensitivity, low riparian disturbance, and moderate watershed disturbance. "Functioning at risk" implies the subbasin is essentially still functioning but may exhibit trends or has known risks that are likely to compromise its ability to fully support beneficial uses in the future. Watershed disturbance activities have occurred throughout the basin, especially within the Boulder Creek Watershed and certain Selkirk drainages. Disturbance activities include past road construction, timber harvesting and mining activities.

Bull Trout Status: Bull trout are known to occur in the following tributaries to this section of the Kootenai River: Fisher River and its tributaries (Silver Butte Fisher River, and West Fisher Creek), Libby Creek, Flower Creek, Parmenter Creek, Pipe Creek, Bobtail Creek and Quartz Creek. Additionally, bull trout are found in several tributaries to the aforementioned streams particularly Bear Creek, a tributary to Libby Creek. Currently, bull trout are limited to one high quality spawning stream, Quartz Creek, and several tributaries to the Kootenai River with lesser quality of spawning habitat (Pipe Creek, and Libby Creek and Fisher River tributaries) (MBTSG 1996b). The majority of spawning within this section of the Kootenai River occurs in Quartz Creek and the West Fork of Quartz Creek. Since 1995, these two creeks combined have averaged 87 redds (range 47-154 redds). Bear Creek (tributary to Libby Creek) averaged 16 redds (range 4-36 redds) since 1995 while Pipe Creek averaged 21 redds (range 5-36 redds) over that same period (MFWP unpublished data). Resident bull trout populations exist in the upper reaches of Libby Creek and Flower Creek as well.

Fisher River (170101020402)

Habitat Characteristics: Portions of the Fisher River are listed as critical habitat for bull trout (USDI Fish and Wildlife Service 2005b). Table 100 summarizes environmental baseline habitat indicators for the Fisher Creek drainage including the mainstream Fisher, West Fork Fisher, East Fork Fisher, Silver Butte, Pleasant Valley Fisher River and Wolf Creek. Detailed information about these indicators can be found in Section 7 Consultation Watershed Baseline; Middle Kootenai River, Montana (Appendix A).

Table 100. Summary of Fisher Creek drainage environmental baseline habitat indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature			X
Sediment	X	X	
Nutrients and Contaminants		X	X
Physical Barriers		X	
Substrate		X	
Large Woody Debris		X	
Pool Frequency			X

Pool Quality			X
Off-channel Habitat		X	
Prime Habitat (refugia)		X	
Pool Width/depth ratio	X		
Streambank condition		X	
Floodplain connectivity			X
Peak and Base Flows			X
Drainage Network			X
Road Network			X
Disturbance History			X
RHCAs			X
Disturbance Regime			X

Bull Trout Status: Table 101 summarizes environmental baseline species indicators for the Fisher Creek drainage including the mainstream Fisher , West Fork Fisher, East Fork Fisher, Silver Butte, Pleasant Valley Fisher River and Wolf Creek (USFS 2000b).

Table 101. Summary of Fisher Creek drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation		X	
Growth and Survival		X	
Life History Diversity and connectivity		X	
Persistence and Genetic Integrity		X	

East Fisher Creek (170101020203)

Table 102 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 102. Road information within East Fork Fisher Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Silver Butte-Fisher	30	4.99	27.66	-
Not in BMU	77	10.48	64.33	-
Total	107	15.47	91.99	2.56

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Silver Butte Fisher River (190101020204)

Habitat Characteristics: Silver Butte Fisher River originates on the east slopes of the Cabinet Mountains. Approximately 90 percent of the drainage is now in Forest Service ownership. Timber production, mining, and recreation are the primary land uses with minor amounts of land development. Channel instability characterizes the lower 6 to 7 miles of the stream; channel migration and bank cutting are common. Potential pollution from mine-tailing seepage could negatively influence stream productivity.

Table 103 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 103. Road information within Silver Butte Fisher Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Silver Butte-Fisher	57	10.52	47.08	-
Not in BMU	9	2.29	5.54	-
Total	66	12.81	52.62	1.12

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status: A bull trout redd count was conducted on Silver Butte Fisher Creek in 2000 and identified three redds over a survey length of nine miles (USFS 2000b). Determination of condition for Silver Butte Fisher was combined with Fisher River (Table 101).

Summary of Environmental Baseline: This stream is rated as Functioning at Unacceptable Risk due to the above identified habitat threats and the low bull trout population numbers.

West Fork Fisher Creek (170101020205)

Habitat characteristics: The West Fisher originates on the east slope of the Cabinet Mountains and has approximately 85 percent Forest Service ownership. Approximately 15% of the drainage is now in private ownership. Portions of West Fork Fisher Creek are listed as critical habitat for bull trout (USDI Fish and Wildlife Service 2005b).

Channel instability characterizes the lower 4 to 5 miles of stream; channel migration and bank cutting are common. Timber production, mining, and recreation are the primary land uses in the drainage. Several mines exist within this watershed and contribute to poor water quality (USFS 2002a). Currently, that watershed is FUR for the “Road Density and Location” indicator due to a road density of 2.16 mi/mi^2 and the “Disturbance History” is also FUR due to past natural events such as fire (USFS 2002a).

Table 104 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 104. Road information within West Fork Fisher Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)

Wanless	80	15.59	88.56	-
Not in BMU	2	1.18	8.71	-
Total	82	16.77	97.27	2.16

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status: Bull trout use West Fisher Creek as both spawning and rearing habitat (USFS 2002a). Redd counts have identified between 0 and 27 redds between 1993 and 2008 (IDFG 2009). Rainbow trout, brook trout, mountain whitefish, sculpins, and dace were observed during shocking surveys conducted in 1988. Subsequent surveys have identified westslope cutthroat trout and bull trout as well. Determination of condition for West Fisher was combined with Fisher River (Table 101).

Summary of Environmental Baseline: Bull trout and their associated habitat are FUR for an integration of the sub-population and habitat indicators for the West Fork Fisher Creek.

Libby Creek

Habitat Characteristics: Libby Creek is a 150,000 acre watershed with its beginnings in numerous tributaries in the Cabinet Mountains Wilderness and its mouth at the confluence with the Kootenai River near the town of Libby. Portions of Libby Creek are listed as critical habitat for bull trout (USDI Fish and Wildlife Service 2005b).

Table 105 summarizes environmental baseline habitat indicators for the Libby Creek drainage including the mainstream Libby, Granite, Big Cherry, Bear and Poorman Creeks (USFS 2000b).

Table 105. Summary of Libby Creek drainage environmental baseline habitat indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	X
Sediment			X
Nutrients and Contaminants			X
Physical Barriers		X	
Substrate		X	
Large Woody Debris		X	
Pool Frequency			X
Pool Quality			X
Off-channel Habitat		X	
Prime Habitat (refugia)			X
Pool Width/depth ratio		X	
Streambank condition		X	
Floodplain connectivity			X
Peak and Base Flows			X
Drainage Network		X	X
Road Network			X
Disturbance History			X
RHCAs			X

Disturbance Regime			X

Bull Trout Status: Table 106 summarizes environmental baseline species indicators for the Libby Creek drainage including the mainstream Libby, Granite, Big Cherry, Bear and Poorman Creeks (USFS 2000b).

Table 106. Summary of Libby Creek drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation		X	
Growth and Survival		X	
Life History Diversity and connectivity		X	
Persistence and Genetic Integrity		X	

Summary of Integration of species and habitat: The Libby Creek drainage is rated as functioning at unacceptable risk due to the low bull trout densities and the low quality habitat.

Upper Libby Creek (170101010701)

Habitat Characteristics: Table 107 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 107. Road information within Upper Libby Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Saint Paul	113	21.25	104.13	-
Not in BMU	71	11.24	102.66	-
Total	184	32.49	206.79	3.09

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status: A resident bull trout population exists in the Upper Libby Creek drainage. Determination of condition for Upper Libby Creek was combined with Libby River (Table 106).

Summary of Integration of species and habitat: The Upper Libby Creek drainage is rated as functioning at unacceptable risk due to the low bull trout densities and the low quality habitat.

Granite Creek (170101010703)

Habitat Characteristics: Land development has been a major impact of the lower reaches of Granite Creek. Although Lukens Hazel mine, which is situated on Shaughnessey and Horse Creeks, tributaries to Granite, is no longer active there are likely continued impacts from the mine to the watershed.

Table 108 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 108. Road information within Granite Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Snowshoe	6	1.98	9.54	-
Not in BMU	1	0.20	2.15	-
Total	7	2.18	11.69	0.43

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull trout status: Bull trout are known to occur in Granite Creek to the falls in section 10. Determination of condition for Granite Creek was combined with Libby River (Table 106).

Summary of Integration of species and habitat: The Granite Creek drainage is rated as functioning at unacceptable risk due to the low bull trout densities and the low quality habitat.

Big Cherry Creek (170101010704)

Habitat characteristics: Big Cherry Creek is the largest tributary to Libby Creek. It enters Libby Creek below Highway 2. The Snowshoe Mine is situated on Snowshoe Creek in the Big Cherry portion of the drainage and had major impacts to water quality and fisheries in both streams. Acid mine drainage from the Snowshoe Mine has affected trout populations in 15 miles of Big Cherry Creek for over 70 years. Other impacts to the drainage include land development and non-native fish species.

LWD is limited as is pool habitat. There is water diversion on Big Cherry Creek (Levinson). Montana Fish Wildlife and Parks has approached the caretaker of the Levinson ditch about installing a screen on that ditch as well (USFS 2000). Table 109 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 109. Road information within Big Cherry Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
SaintPaul	0	0	0.06	-
Snowshoe	42	12.98	56.34	-
Not in BMU	43	6.14	56.11	-
Total	85	19.12	112.51	1.91

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status: Bull trout are known to occur in the lower reaches of Big Cherry Creek to its confluence with Smearl Creek. Determination of condition for Big Cherry Creek was combined with Libby River (Table 106).

Summary of Integration of species and habitat: The Big Cherry Creek drainage is rated as functioning at unacceptable risk due to the low bull trout densities and the low quality habitat.

Flower Creek (170101010801)

Habitat Characteristics: Flower Creek is a tributary to the Kootenai River. There are two reservoirs located in the upper Flower Creek drainage, which provides water for the town of Libby, MT. Table 110 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 110. Road information within Flower Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Cedar	4	0.64	4.32	-
Not in BMU	19	2.85	23.07	-
Total	23	3.49	27.39	1.44

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status: A resident bull trout population exists in the Flower Creek drainage (Project file document, Section 7 Consultation Watershed Baseline, Middle Kootenai River MT 2000).

Parmenter Creek (170101010802)

Habitat characteristics: Parmenter Creek is a tributary to the Kootenai River. Table 111 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 111. Road information within Parmenter Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Cedar	1	0.41	1.79	-
Not in BMU	20	3.19	21.33	-
Total	79	15.31	23.12	1.28

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull trout status: One bull trout was captured in Pamenter Creek (Project file document, Section 7 Consultation Watershed Baseline, Middle Kootenai River MT 2000).

Pipe Creek

Habitat Characteristics: Pipe Creek is approximately 67,720 acres. The majority of the drainage is under US Forest Service management. There are two 6th code HUC in this drainage which

are also within a BMU. Portions of Pipe Creek are listed as critical habitat for bull trout (USFWS 2005b).

Table 112 summarizes environmental baseline habitat indicators for the Pipe Creek drainage including East Fork Pipe Creek (USFS 2000b).

Table 112. Summary of Pipe Creek drainage environmental baseline habitat indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment	X		
Nutrients and Contaminants	X		
Physical Barriers	X		
Substrate	X		
Large Woody Debris		X	
Pool Frequency		X	
Pool Quality	X		
Off-channel Habitat	X		
Prime Habitat (refugia)		X	
Pool Width/depth ratio	X		
Streambank condition	X		
Floodplain connectivity	X		
Peak and Base Flows	X		
Drainage Network		X	
Road Network			X
Disturbance History			X
RHCAs		X	
Disturbance Regime	X		

Bull Trout Status: Pipe Creek supports both resident and migratory bull trout (USFS 2002a). Table 113 summarizes environmental baseline species indicators for the Pipe Creek drainage, including , upper Pipe Creek and East Fork Pipe Creek (USFS 2000b).

Table 113. Summary of Pipe Creek drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation		X	
Growth and Survival		X	
Life History Diversity and connectivity		X	
Persistence and Genetic Integrity		X	

East Fork Pipe Creek (170101010803)

Habitat Characteristics: This watershed is 13,850 acres; however, only the headwater portion of this watershed is contained within the action area (BMU 17). The US Forest Service owns 94 percent of this watershed with the remaining 6 percent under Plum Creek Timber Company (PCT) ownership. The Framework determinations are the same as Pipe Creek (170101010804). This watershed has been strongly impacted in the past with an ECA of 18 percent and a road density of 2.04 mi/mi^2. Additionally, the riparian area has been heavily impacted with less than 72 percent of the riparian zone intact, a riparian road density of 5.4 mi/mi^2, and a high stream crossing density of 4.1 crossings/mi^2 (USFS 2001). McNeil core samples (an indicator of substrate embeddedness) show high percentages of fine materials in the East Fork Pipe Creek from 1995-1999. Table 114 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 114. Road information within East Fork Pipe Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Big	14	3.55	1.32	-
Not in BMU	99	22.32	43.58	-
Total	113	25.87	44.9	2.04

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status: Anecdotal information is available that suggests that fluvial bull trout used the East Fork Pipe Creek extensively but little historical information is available. Determination of bull trout status for East Fork Pipe Creek was combined with Pipe Creek (Table 113).

Upper Pipe Creek (170101010804)

Habitat characteristics: Table 115 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 115. Road information within Upper Pipe Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Big	2	0.43	1.16	-
Roderick	4	1.40	10.77	-
Not in BMU	170	33.78	151.32	-
Total	176	35.61	163.25	3.02

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status: Bull trout are known to spawn upstream of the confluence with Loon Creek. Redd counts have been conducted in the upper Pipe Creek area since 1995 and have averaged 21 redds (range 6-36) (MFWP unpublished data). Spawning sites are located downstream of a culvert spanning Forest Road 68 which is believed to constitute a fish barrier immediately upstream of the confluence with the East Fork Pipe Creek (USFS 2002a). Based upon several

MFWP electroshocking surveys in the 1990's, bull trout are not believed to occur upstream of this culvert barrier. Determination of bull trout status for Upper Pipe Creek was combined with Pipe Creek (Table 113).

Intergrated Bull trout and habitat: Bull trout and their associated habitat are FAR for an integration of the sub-population and habitat indicators in the Framework for the Upper Pipe Creek watershed. This determination is due to several riparian roads (riparian road density of 3.9 mi/mi^2), a high stream crossing density (3.1 crossings/mi^2) and past riparian harvest activities (20 percent of riparian zone) (USFS 2001). In 2002, the Forest Service conducted several restoration efforts in the mainstem of Pipe Creek below the culvert barrier in an attempt to restore spawning and rearing habitat. It is too soon after the actions to determine whether those efforts were successful.

Quartz Creek (170101010807)

Habitat Characteristics: Quartz Creek has approximately 23,000 acres. Land ownership is predominantly US Forest Service with very little private or PCT lands. Portions of Quartz Creek are listed as critical habitat for bull trout (USFWS 2005b). Table 116 summarizes environmental baseline habitat indicators for the Quartz Creek drainage. This watershed has been heavily managed in the past having over 29 percent of the watershed logged including 17 percent of the riparian area (draft Subbasin review USFS 2000). The ECA is 17 percent of the watershed resulting in the FUR determination. The road density throughout the drainage is 2.33 mi/mi^2 while the riparian road density is at 2.5 mi/mi^2 (USFS 2002a). The Forest Service determined that this results in a FAR determination for this habitat indicator; however, the Framework defines this high level of road density coupled with a high level of riparian roads as FUR. The high amount of roads crossing streams (2.4 crossings/mi^2) results in a greater level of road induced sediment delivery (USFS 2001). Table 116 summarizes habitat environmental baseline indicators for Quartz Creek (USFS 2000b).

Table 116. Summary of Quartz Creek drainage environmental baseline habitat indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature	X		
Sediment	X		
Nutrients and Contaminants	X		
Physical Barriers	X		
Substrate		X	
Large Woody Debris		X	
Pool Frequency		X	
Pool Quality	X		
Off-channel Habitat		X	
Prime Habitat (refugia)		X	
Pool Width/depth ratio	X		
Streambank condition		X	
Floodplain connectivity	X		
Peak and Base Flows		X	

Drainage Network		X	
Road Network		X	
Disturbance History			X
RHCAs		X	
Disturbance Regime		X	

Table 117 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 117. Road information within Quartz Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Pulpit	50	7.07	45.58	-
Not in BMU	42	8.85	38.38	-
Total	92	15.92	83.96	2.33

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status: This watershed is considered the strongest bull trout 6th code HUC subpopulation in this section of the Kootenai River (USFS 2002a). Annual redd surveys conducted between 1995-2002 averaged 79.5 redds (range 47-154) (MFWP unpublished data). In the late 1980s MFWP trapped between 50-100 adults annually. During this same period a concurrent study estimated 1,200 young-of-the-year in this watershed which indicated a strong source of bull trout recruitment (USFS 2002a). Table 118 summarizes environmental baseline species indicators for the Quartz Creek drainage (USFS 2000b).

Table 118. Summary of Quartz Creek drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation	X		
Growth and Survival		X	
Life History Diversity and connectivity	X		
Persistence and Genetic Integrity		X	

Summary of Integration of Species and Habitat: Currently, based on the integration of subpopulation and habitat indicators, Quartz Creek is FUR (USFS 2002a).

O'Brien Creek (170101011001)

Habitat Characteristics: This watershed is 30,838 acres and flows in a southerly direction from its headwaters in the Purcell Mountains north of Troy, Montana. Portions of O'Brien Creek are listed as critical habitat for bull trout (USFWS 2005b). O'Brien Creek is a municipal watershed. Table 119 summarizes environmental baseline habitat indicators for the O'Brien Creek drainage (USFS 2000a).

Table 119. Summary of O'Brien Creek drainage environmental baseline habitat indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature			X[1]
Sediment			X[1]
Nutrients and Contaminants	X		
Physical Barriers	X		X[1]
Substrate		X	
Large Woody Debris		X	
Pool Frequency		X	
Pool Quality		X	
Off-channel Habitat		X	
Prime Habitat (refugia)		X	
Pool Width/depth ratio	X		
Streambank condition		X	
Floodplain connectivity	X		
Peak and Base Flows		X	
Drainage Network			X
Road Network			X
Disturbance History			X
RHCAs	X		
Disturbance Regime	X		

X[1] factors identified in the 2010 Environmental baseline updates

Table 120 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 120. Road information within O'Brien Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Pulpit	199	37.11	102.49	-
Not in BMU	9	3.01	25.57	-
Total	208	40.12	128.06	2.67

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status: The Forest Service identified this watershed as one of the few strongholds for bull trout in the lower Kootenai River. O'Brien Creek has averaged 29 redds since 1991 (range

6-47 redds) (USFS 2002a). Table 121 summarizes the species environmental baseline indicators for the O'Brien Creek drainage (USFS 2000a).

Table 121. Summary of O'Brien Creek drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation		X	
Growth and Survival		X	
Life History Diversity and connectivity		X	
Persistence and Genetic Integrity		X	

Summary of Integration of species and habitat: Due to the presence of brook trout and brown trout and the smaller population size than expected, this watershed is FAR for an integration of population and habitat indicators according to the Framework (USFS 2002a).

Callahan Creek (170101011004)

Habitat Characteristics: Callahan Creek, a tributary to the Kootenai River, is downstream of Troy, Montana. Portions of Callahan Creek are listed as critical habitat for bull trout (USFWS 2005b). The Callahan Creek watershed is approximately 82 square miles in size. The lower portion of Callahan Creek below a natural barrier, is FUR due to high summertime temperatures which may present a thermal barrier to both upstream migrants as well as outmigrants. Table 122 summarizes environmental baseline habitat indicators for the Callahan Creek drainage including the mainstream Callahan Creek, North Fork Callahan, South Fork Callahan, Ruby and Star Creeks (USFS 2000a).

Table 122. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature			X
Sediment	X		
Nutrients and Contaminants	X		
Physical Barriers	X		
Substrate	X		
Large Woody Debris		X	
Pool Frequency			X
Pool Quality		X	
Off-channel Habitat			X
Prime Habitat (refugia)		X	
Pool Width/depth ratio	X		
Streambank condition	X		
Floodplain connectivity		X	
Peak and Base Flows		X	
Drainage Network		X	

Road Network		X	
Disturbance History			X
RHCAs		X	
Disturbance Regime		X	

Bull trout Status: Callahan Creek supports both resident and fluvial bull trout. In 1999, MFWP found three outmigrants from Callahan Creek in a fish trap placed downstream of a suspected natural fish barrier located one mile upstream of the confluence with the Kootenai River. Anecdotal information suggests that "large bull trout" have been harvested in the Idaho portion of the watershed indicating that this barrier may not be intact throughout the year. Table 123 summarizes environmental baseline species indicators for the Callahan Creek drainage including the mainstream Callahan Creek, North Fork Callahan, South Fork Callahan, Ruby and Star Creeks (USFS 2000a).

Table 123. Summary of Callahan Creek drainage environmental baseline species indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Subpopulation		X	
Growth and Survival		X	
Life History Diversity and connectivity		X	
Persistence and Genetic Integrity		X	

Summary of Environmental Baseline: Due to the susceptibility of disturbance as well as the threat of illegal harvest of bull trout this watershed is FAR for an integration of population and habitat indicators according to the Framework (USFS 2002a).

South Fork Callahan (170101011002)

The following information about the South Fork Callahan developed for Section 7 Consultation Watershed Baseline; Lower Kootenai River, Montana (USFS 2000b).

Habitat Characteristics: The entire South Fork Callahan River is accessible to fish. Large woody debris quantities are lower than historic quantities due to extensive riparian harvest in the early 1900s. Water temperatures exceeded 59° on 17 days in 1997 (Appendix A). Table 124 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 124. Road information within South Fork Callahan Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Callahan	63	8.88	27.53	1.25

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status: Bull trout redd surveys have been conducted on the South Fork of Callahan Creek, upstream of the Idaho/Montana border since 2002. Counts range from 0 to 10 redds per year (IDFG 2009). Determination of bull trout status for South Fork Callahan Creek was combined with Callahan Creek (Table 123).

North Fork Callahan (170101011003)

Habitat Characteristics: The following is detailed information about the North Fork Callahan developed for the Section 7 Consultation Watershed Baseline; Lower Kootenai River, Montana (USFS 2000a). The North Fork of Callahan Creek is almost twice as large as the South Fork. There is a migration barrier approximately one mile upstream of the confluence of the North and South Forks. Water temperatures exceeded 59° on 14 days in 1998. The majority of the riparian area in the NF is intact. (Appendix A). There has been extensive road storage and decommissioning in the upper North Fork (Project File document; Core Areas Kootenai River Callahan Creek, 2010). Table 125 provides information pertaining to roads within this 6th code HUC (Project file document, Kootenai Road/Stream Crossings and Kootenai RHCA miles, 2010).

Table 125. Road information within North Fork Callahan Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Callahan	47	7.16	11.02	0.32

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status: Bull trout redd surveys have been conducted on the North Fork of Callahan Creek, upstream of the Idaho/Montana border since 2002. Counts range from 3 to 30 redds per year (IDFG 2009). Determination of bull trout status for North Fork Callahan Creek was combined with Callahan Creek (Table 123).

Yaak River (170101030305)

Habitat characteristics: A barrier falls (Yaak Falls) is located approximately 11 kilometers (7 miles) upstream (MBTSG 1996b). The channel through this area is high gradient and comprised of large substrate. The Yaak River is a large system with average discharges around 4.25 to 5.66 cubic meters per second (150 to 200 cubic feet per second) during August through October. Because of the substrate composition and the size of the stream, redds may be hard to detect.

Bull Trout Status: Low numbers of small bull trout were present during electrofishing surveys downstream of Yaak Falls. Field crews found no redds in the Yaak River, from its junction with the Kootenai River to Yaak Falls. Additional survey work is needed to determine potential bull trout utilization of the Yaak River below the falls. Extensive sampling upstream of Yaak Falls has failed to document the presence of bull trout in the United States (MBTSG 1996b).

Boulder Creek (1701010402) (Boulder Creek below MF boulder Creek (includes MF and EF Boulder Creek--170101040202)

Habitat Characteristics: Approximately 1.25 miles upstream from the confluence with the Kootenai River is a natural fish passage barrier. Boulder Creek is listed as critical habitat to this barrier (USFWS 2010). Lower Boulder Creek has a high amount of bedload due to past mining activities which has resulted in a degraded condition. A railroad bridge also constricts the channel near the mouth and is dredged. Flow alterations of the Kootenai River also affect conditions at the mouth. Based upon a visual inspection, the Forest Service determined that this watershed was "Functioning Appropriately" for presence of fine material, meaning that fine material was present in appropriate amounts. Excess bedload (cobble) is the substrate issue in this watershed. This watershed has a relatively low road density (1.63 mi/mi^2) and a low ECA (6 percent) which indicates that any instability in this watershed is likely natural. Table 126 provides information pertaining to roads within this 6th code HUC (Project file document, IPNF Road/Stream Crossings and IPNF RHCA miles, 2010).

Table 126. Road information within Boulder Creek below MF Boulder Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Boulder		9.78	45.6	1.63

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status: In 2001 and 2002, surveys by IDFG identified bull trout spawning (4 redds and 2 redds respectively) in the 1.25 mile long reach upstream of the confluence with the Kootenai River (IDFG unpublished data). Electrofishing surveys in 1994 and 1995 upstream of the falls failed to find any bull trout. Brook trout occur both upstream and downstream of the barrier fall.

Boulder Creek above MF Boulder Creek (170101040201)

Habitat characteristics: Upper Boulder Creek has been impacted by past natural disturbance events such as fires and floods. Table 127 provides information pertaining to roads within this 6th code HUC (Project file document, IPNF Road/Stream Crossings and IPNF RHCA miles, 2010).

Table 127: Road information within Boulder Creek above MF Boulder Creek

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Total Road Density (mi/mi^2)
Boulder	72	15.93	35.3	1.01

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Deep Creek (1701010404)

Deep Creek above McArthur Lake outlet (170101040401)

Habitat Characteristics: Fine sediment (sands) occur in high concentrations creating little spawning habitat. This 6th code HUC was rated as Properly Functioning based on watershed

factors (Project File; IPNF 6 all HUC model). Table 128 provides information pertaining to roads within this 6th code HUC (Project file document, IPNF Road/Stream Crossings and IPNF RHCA miles, 2010). High sediment loads and embeddedness are rated as functioning at risk.

Table 128. Road information within Deep Creek above McArthur Lake outlet HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Grouse			2.43	-
Not in BMU	18	3.34	54.92	-
Total	18	3.34	57.35	1.91

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status: Bull trout status was unknown but suitable habitat was present and connected (Project file:HUC 6 IPNF Salmonid multi-scale assessment, 2002). IDFG has reported juvenile bull trout in lower Deep Creek.

Deep Creek above Brown Creek (170101040402)

Habitat Characteristics: Table 129 provides information pertaining to roads within this 6th code HUC (Project file document, IPNF Road/Stream Crossings and IPNF RHCA miles, 2010). High sediment loads and embeddedness are rated as functioning at risk.

Table 129. Road information within Deep Creek above Brown Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Grouse	66	17.76	87.18	-
Not in BMU	30	16.62	56.67	-
Total	96	34.38	143.85	4.64

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status: Bull trout status is unknown but spawning and rearing habitat is available (Project file:HUC 6 IPNF Salmonid multi-scale assessment, 2002)

Brown Creek (includes Twentymile Creek) (170101040406)

Habitat characteristics: The Twentymile drainage has a streamside road contributing sediment, the channel is downcut and as a result cannot access its floodplain. The HWY 95, Twentymile road culvert is a fish barrier. Table 130 provides information pertaining to roads within this 6th code HUC (Project file document, IPNF Road/Stream Crossings and IPNF RHCA miles, 2010).

Table 130. Road information within Brown Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Boulder	1	0.39	4.83	-
Grouse	45	7.65	55.52	-
Not in BMU	41	11.31	41.29	-

Total	87	19.35	101.64	3.91

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout status: Bull trout status was unknown but suitable habitat was present and connected (Project file:HUC 6 IPNF Salmonid multi-scale assessment, 2002). Overall extinct risk is considered extreme.

Summary of integration of species and habitat: Due to the extreme risk of species extinction, the sediment and habitat issues this HUC is rated as functioning at unacceptable risk.

Myrtle Creek (170101040502)

Habitat Characteristics: The lowest reach of Myrtle Creek was identified as critical bull trout habitat in the 2010 proposed designation (USWFS 2010). Portions of Myrtle Creek are listed by IDEQ as 303d water quality limited for temperature exceedences. Past logging and road building have increased sediment levels in Myrtle Creek. Planned road decommissioning and reconditioning projects should reduce these sediment levels as well as reduce any increase to the drainage network and the road network. A large natural barrier (~120' high) is located upstream of the West side road. Localized streambank instability is a result of natural mass failure events due to landtype association. Table 131 provides the ratings for the habitat environmental baseline indicators.

Table 131. Summary of habitat environmental baseline indicators.

Indicator	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Temperature		X	
Sediment		X	
Nutrients and Contaminants	X		
Physical Barriers	X		
Substrate		X	
Large Woody Debris		X	
Pool Frequency	X		
Pool Quality	X		
Off-channel Habitat	X		
Prime Habitat (refugia)		X	
Pool Width/depth ratio	X		
Streambank condition		X	
Floodplain connectivity	X		
Peak and Base Flows	X		
Drainage Network		X	
Road Network		X	
Disturbance History		X	
RHCAs		X	
Disturbance Regime	X		

Table 132 provides information pertaining to roads within this 6th code HUC (Project file document, IPNF Road/Stream Crossings and IPNF RHCA miles, 2010).

Table 132. Road information within Myrtle Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Myrtle	61	13.84	0	-
Not in BMU	2	2.60	6.5	-
Total	63	15.84	6.5	0.15

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull trout Status: Environmental baseline indicators for species were all listed as Functioning at Unacceptable Risk (Project file document Environmental Baseline for the Road Maintenance Programmatic BA 2007).

Summary of Integration of species and habitat: Habitat connectivity remains available but fluvial forms are very low and resident forms appear to be absent. Habitat conditions have had a negative affect on the availability of spawing gravel. These factors combine to result in a Functioning at Risk status for Myrtle Creek.

Boundary Creek (1701010408)

Habitat characteristics: Of the 60,000 acres within the Boundary Creek watershed, 42,000 acres (69 percent) are located within the U.S. (IPNF unpublished data). Within this watershed the Forest Service owns almost 98 percent of the lands within the U.S. and, with the exception of the Continental Mine located in the headwaters of Blue Joe Creek, the majority of the private land ownership is located at the mouth of Boundary Creek.

The Forest Service has identified Boundary Creek as an important fisheries stream in their current LRMP, due to the absence of a low-water passage barrier at the mouth of the creek, as well as suitable spawning and rearing habitat in the headwater portions of Boundary Creek and one of its tributaries (Grass Creek) (meeting notes between IPNF and Service on April 1-2, 2003). The mainstem of Boundary Creek and Blue Joe Creek (a tributary) may be unsuitable due to contamination from the now-defunct Continental Mine located on Blue Joe Creek; however, further analysis is needed to determine level of water quality degradation. Additionally, the lower 3 miles of Boundary has been channelized to form the U.S.-Canada border.

Bull Trout status: Bull trout presence in Boundary Creek is unknown; however, PBTTAT (1998a) reported that bull trout have been documented in the past within this watershed. A screw trap placed at the mouth of Boundary Creek during the summer of 1999 failed to document bull trout. Additionally, redd counts in 2000 failed to identify any bull trout redds.

Boundary Creek above Grass Creek (170101040801)

Habitat characteristics: The dominate issue in this HUC is the effects from the Continental Mine. ECAs were at 6% and ECA in riparian was 99% intact. Table 133 provides information pertaining to roads within this 6th code HUC (Project file document, IPNF Road/Stream Crossings and IPNF RHCA miles, 2010).

Table 133. Road information within Boundary Creek above Grass Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)

Bluegrass	21	4.95	23.63	-
Not in BMU	0	0.12	29.08	-
Total	21	4.95	52.71	1.95

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status: Bull trout status is present/depressed for a spawning and rearing stream (Project file:HUC 6 IPNF Salmonid multi-scale assessment, 2002)

Grass Creek (170101040802)

Table 134 provides information pertaining to roads within this 6th code HUC (Project file document, IPNF Road/Stream Crossings and IPNF RHCA miles, 2010).

Table 134. Road information within Grass Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Bluegrass	46	10.47	37.33	-
Not in BMU	0	0.09	0.2	-
Total	46	10.56	37.53	1.39

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull trout status: Bull trout status is unknown but spawning and rearing habitat is available (Project file:HUC 6 IPNF Salmonid multi-scale assessment, 2002)

Boundary Creek below Grass Creek (170101040803)

Table 135 provides information pertaining to roads within this 6th code HUC (Project file document, IPNF Road/Stream Crossings and IPNF RHCA miles, 2010).

Table 135. Road information within Boundary Creek below Grass Creek HUC.

BMU	Number of Road / stream crossings*	Road in RHCA (miles)	Road Miles	Road Density (mi/mi^2)
Bluegrass	30	8.80	30.6	-
Not in BMU	0	0.05	46.68	-
Total	30	8.85	77.28	1.88

*The number of crossings, within a 6th code HUC, were generated using GIS mapping which does not distinguish between aquatic passage culverts, barrier culverts, bridges, or fords

Bull Trout Status: Bull trout status is present/depressed for a spawning and rearing stream (Project file:HUC 6 IPNF Salmonid multi-scale assessment, 2002)

Environmental Consequences

It is well documented that elevated levels of sediment in stream gravels pose a threat to bull trout (Shepard et al. 1984, Fraley and Shepard 1989 and MBTSG 1998) and roads are

recognized as a long-term sediment source even after erosion control measures have been implemented (Furniss et al. 1991, Belt et al. 1992). Sediment can affect bull trout and other salmonids in several ways. One of the most likely ways is through effects on egg incubation and fry emergence. The level of impact is closely related to timing of activity and location of activity (adjacent or above) to spawning areas. Rearing habitat may also be affected by filling of interstitial spaces of stream rubble and filling of pool habitat (Goetz 1997, Jakober 1995). Long-term, chronic sediment delivery from roads can affect channel structure and stability. If intensity and duration of ground disturbance is great enough in a limited area, it can affect channel structure and stability (Furniss et al. 1991). Bull trout are most sensitive to changes that occur in headwater areas encompassing important spawning and rearing habitats for fluvial and adfluvial stocks, as well as resident populations (Quigley et al. 1997). With many forest roads in headwater areas, there is high potential for native fishes to be influenced by road related activities. Road failures would directly affect sediment delivery to streams and potentially affect bull trout and their respective habitat. Increased sediment production could decrease habitat diversity, degrade spawning and rearing habitat, and reduce aquatic insect productions.

Road treatments which are designed to create hydrologically stable road prisms, include but are not limited to; removal of culverts, recontouring of the road prism, removal of unstable fill material, road ripping.

Direct and Indirect Effects: Alternative E Updated represents programmatic decisions that would guide future decisions about access as it relates to specific activities and projects, and therefore, will have no direct effects on the watershed and fisheries resources in the analysis area. Any direct effects would be caused by implementing future subsequent site-specific decisions about wheeled motorized access status on roads and trails. The effects identified in this analysis are based on assumptions about implementing future projects and levels of future uses that might occur under various projects. While these future actions and their effects are highly uncertain, this analysis is useful for a relative comparison of the alternatives. Alternative E Updated would affect BMUs that overlap with occupied bull trout habitat.

Alternative E Updated would change access within BMUs in the SRZ and CYRZ. For the BMUs requiring future management to comply with the proposed standards, road access would change as appropriate. To meet these standards, selected roads would be gated or barriered. Each action has both short-term negative and long-term beneficial effects. The level or intensity of effects to aquatic resources would vary depending on the location of selected roads, associated aquatic resources, and the level of treatment selected for the specific road.

Gating or constructing barriers across roads have the greatest long-term risk to aquatics when roads are closed but are not made hydrologically stable prior to closure. Once a road is closed to administrative access, maintenance is discontinued, which may increase the potential risk to aquatic resources as the lack of maintenance is the primary cause for road failures and subsequent sedimentation to stream channels (USDA 1998b; USFS 1999a: and USFS 2000b). Road failures include culvert failures, fill slope failures, ditch failures, and surface erosion. Road failures would directly affect sediment delivery to streams and potentially affect bull trout and their respective habitat. Increased sediment production could decrease habitat diversity, degrade spawning and rearing habitat, and reduce aquatic insect production.

These failures and their associated effects are typically reduced or avoided through road maintenance. Subsequent site-specific decisions at the project level will consider hydrologic needs when gates or barriers are proposed for road status changes. Design elements for Alternative E Updated include allowances for entering Core Area to stabilize existing roads (see DSEIS Design Elements starting on page 17 and page 21).

Road treatments could also increase sediment delivery to streams and affect fish and aquatic habitat; however, the effects tend to be isolated and of short duration. Monitoring of road treatment activities on the Libby Ranger District (KNF) and Priest Lake Ranger District (IPNFs) has documented that the increase in turbidity and sedimentation is isolated to the project site and of very short duration (USDA 1998c; Foltz et al. 2008). Associated sediment transport is also very limited. The long-term benefits of reducing water routing, sediment input, the potential for road failures, and restoring fish passage would outweigh the short-term negative effects of the work required to make proposed roads (hydrologically) stable.

The treatments of barriered roads pose a short-term negative impact with a long-term beneficial effect to the watershed and associated fisheries habitat. Short-term effects are associated with sediment generated in close proximity to active channel stream crossings. The greatest short-term effects are associated with removing culverts in live stream crossings. After treatments, negative effects from sediment would be reduced as disturbed areas are revegetated. Activities associated with treatments such as unstable fill removal, ripping road prisms, and recontouring can be done in time for revegetation to occur prior to fall rains. When vegetation occurs prior to fall rains, associated sediment generation is usually negligible.

One key factor in reducing the risk of road failure is culvert removal. Removing culverts would prevent them from plugging and the associated fill slope failures from occurring, thereby preventing large increases in stream channel sediment. Channel widths, slope, and streambed forms are artificially altered upstream and downstream of culverts (Lee et al. 1997). By removing culverts and reconstructing the stream channels where the culverts were located, the stream channel and fish habitat would begin to be restored.

Alternative E Updated would affect Water Quality Limited Streams (WQLS) and Stream Segments of Concern (SSC). Beneficial effects would occur where roads are treated to meet wheeled motorized vehicle access management criteria. Restoration of the natural drainage pattern for surface and subsurface flow would benefit these watersheds.

The potential for long-term negative effects to WQLS and SSC would exist where roads were closed without first being made hydrologically stable. The potential for road failures and increased sediment would be elevated over the existing condition.

The proposed action would result in a changed to wheeled motorized vehicle access management (Table 136) and would also provide a decrease in net associated risk of sediment delivery to streams associated with road densities.

Table 136. Miles of Road Status changes across all BMUs.

Proposed Road Status Change	Existing (miles)	Proposed (miles)
Open to Barriered	20	60
Open to Gated	8	24
Gated to Barriered	86	258

The net associated risk would only be reduced when roads are made hydrologically stable to reduce water routing, sediment input, the potential for road failures and restore fish passage.

Alternative E Updated would provide the opportunity to address watershed concerns through site-specific projects developed to meet OMRD, TMRD, and Core Area objectives. This would potentially benefit aquatic resources as needs were identified through project level NEPA analysis.

Cumulative Effects

The proposed action would have an influence on aquatic resources throughout the Kootenai, Clark Fork, Pend Oreille, and Priest Lake subbasins. Increasing bear security within any BMU would be accomplished through changes in road access. As stated earlier, access restrictions would potentially increase risk to watersheds through road failures if roads were not made hydrologically stable. Treatment of roads would create short-term effects associated with implementation but would provide long-term benefits to the watershed and aquatic species.

Presently, there are 29 BMUs in which national forest management comprises between 81 to 99 percent of the BMU. There are two BMUs in which national forest management occurs on 54 or 64 percent of the BMU. Activity on non-Forest Service managed lands can and does affect the fisheries resource but because of the low percentage of the area under non-Forest Service management, it has limited influence. With that in mind, continued management activities that would affect wheeled motorized vehicle access management would include, but are not limited to: timber, silviculture, mineral related activities, grazing, watershed restoration, recreation, and fire suppression actions. Implementing these activities often requires modification of the existing transportation system. Changes would be developed through project level NEPA decisions that address site-specific details. Generally, the changes would require adjusting road densities, building new roads, either temporary or permanent, and road treatments such as placing roads into intermittent stored service or decommissioning existing roads.

Road construction, either for temporary or system roads, would contribute sediment to stream systems as well as altering the existing drainage pattern by either routing surface flow or intercepted ground water. Negative impacts of temporary road construction would be short-term and associated with construction and decommissioning. Construction of new system road would further alter the existing surface drainage pattern and would potentially intercept groundwater. Effects of new roads would be additive to the effects of roads put into intermittent stored service under future project level decisions. These effects would occur either on NFS lands, other federal lands, state lands, or on private lands.

Currently under the proposed action, 22 BMUs meet the proposed standards for OMRD, 19 BMUs meet the standards for TMRD, and 17 BMUs meet the standards for Core Area. The remaining BMUs would require increased miles of gated and barriered roads to meet the proposed standards. These gated and barriered roads would receive less road maintenance, which translates into greater risk of road failure with subsequent sedimentation to streams.

Selecting the proposed action would require reducing TMRD and/or OMRD in BMUs Spar (3), Bull (4), Wanless (6), Silver Butte-Fisher (7), Vermillion (8),Roderick (11), EF Yaak (16), Boulder (18), Grouse (19), N. Lightning (20), Scotchman (21), Mt. Headley (22), and Kalispell-Granite as management decisions are implemented to meet proposed standards. Actions implemented in BMUs Bull (4), St. Paul (5), Wanless (6), Silver butte-Fisher (7), Pulpit (1), Roderick (11), EF Yaak (16), Boulder (18), Grouse (19), Mt. Headley (22), Blue-Grass, Kalispell-Granite and Lakeshore would also be affected by the proposed Core Area standard. Activities implemented to meet these standards, along with other management activities discussed in this section and

in the introduction to this chapter, would cause increased short-term sediment levels to streams. Provided that the treatments of barriered and gated roads are adequate to reduce the risk of failure to acceptable levels for the life of the closure there would be a long-term benefit to water quality and fisheries resources as road densities are reduced, stream crossings removed and the risk of road failure is reduced in these same BMUs through the implementation of proposed action.

Continued implementation of Forest Plans as amended by INFISH (USDA 1995b) would require the improvement of existing transportation systems to address watershed concerns. Stream crossings would continue to be upgraded to accommodate 100-year flood events. Fish passage barriers would be removed to accommodate historic movements, except in Montana where isolated pure-strain westslope cutthroat populations are protected by migration barriers. This is consistent with the Memorandum of Agreement between the USFS and MDFWP for the Conservation of Westslope Cutthroat Trout (MDFWP 2007).

Determination of Effects

Based on the analysis above the proposed action **may affect, and are likely to adversely affect** bull trout. This determination for the proposed action is based on the superimposition of affected BMUs on occupied bull trout habitat. Impacts associated with implementing the proposed action would result in the potential for short-term negative impacts to habitat and the possible harm or harassment to individuals. Implementation of the proposed action could affect designated critical habitat, therefore the action **may affect is likely to adversely affect** designated critical habitat.

White Sturgeon

Reference Condition

Kootenai River white sturgeon (USDI Fish and Wildlife Service 2008). Designated critical habitat for Kootenai River white sturgeon is limited to 18.3 river miles (RM) of the mainstem Kootenai River from below the confluence with the Moyie River (RM 159.7) to downstream of Shorty's Island (RM 141.4). The segment does not pass through NFS lands.

Affected Environment

Population Status

There were an estimated 1,469 adult white sturgeon (95% C.I.=740 to 2,197) in Kootenay Lake, British Columbia, and the Kootenai River downstream of Bonners Ferry, Idaho in 1995 (Paragamian et al. 1997). This equates to an average of 18 fish per mile of river below Bonners Ferry. Above Bonners Ferry, Graham (1981) estimated a total of only 1 to 5 individuals; however, a census by the Montana Fish, Wildlife and Parks resulted in the capture of only one individual.

Habitat Status

Potential habitat for white sturgeon includes waters flowing through the Kootenai National Forest. The white sturgeon is restricted to 168 miles of the Kootenai River from Cora Linn Dam, Canada, upstream to Kootenai Falls, Montana. The Yaak River below Yaak Falls is considered

to be potential habitat for white sturgeon. White sturgeon migrate freely throughout the Kootenai River (Andrusak 1980), but are uncommon upstream of Bonners Ferry, Idaho (Graham 1981; Apperson and Anders 1991). There are no published reports of sturgeon using lateral tributaries in Idaho or Montana (Partridge 1983); however, accounts by local residents suggest that sturgeon may occur, if not actually rear, in several lateral tributaries of the Kootenai River. Approximately 45 percent of the known potential habitat on the Kootenai National Forest is under joint State/Federal management. The remaining known sturgeon habitat is managed by private and corporate landowners.

Sturgeon require boulder and cobble (3 to 5" diameter) substrates and high water velocities (3 to 7 ft/sec) for spawning. These appear to be the two most critical spawning elements known to date. White sturgeon spawn during spring peak flows when velocities are high and turbidity is elevated. The fertilized eggs sink to the bottom, and then hatch within a few weeks. The newly hatched sac-fry briefly drift with the current before retreating into the substrate for up to a month. The juveniles eventually emerge from the substrate and begin a free-roaming life. Older white sturgeon are relatively sedentary in the deepest locations of the Kootenai River drainage, often selecting low velocity waters greater than 20 feet deep. They are opportunistic feeders, and subsist on insects, clams, snails and fish. Kokanee from Kootenay Lake were once an important prey item prior to the collapse of the salmon fishery in the mid-1970s.

Operation of Libby Dam is considered the primary cause for decline of the white sturgeon (Holton 1980; Apperson and Anders 1991). Changes in the annual hydrograph (magnitude and timing of flows) have eliminated the spring (May to July) high flows required for successful reproduction, and produce large daily/weekly fluctuations in discharge that degrade habitat as well as increase mortality risk. Operation of the dam has also modified the annual thermal regime that sturgeon likely use (in part) as cues for spawning. Elimination of juvenile rearing habitat in Idaho due to agricultural diking and bank stabilization may also be adversely affecting juveniles because sloughs and side channels were important rearing and foraging habitat for young sturgeon and their prey (Partridge 1983).

Mining (copper) pollution and other chemical pollutants (lead, zinc, vermiculite, PCB's and organochlorides) are suspected to be potential threats to sturgeon reproduction (Partridge 1983; Apperson 1992). Evidence of declining Kootenai River and Kootenay Lake productivity (Daley et.al. 1981) due to pollution abatement and dam operations has led to speculation that population recovery will be inhibited as a result. The degree of threat that water quality represents is unknown.

Non-point source pollution from forest management activities has not been identified as a factor in the decline of the Kootenai River stock of white sturgeon. However, the direct and indirect effects of timber harvest and related actions can influence the magnitude and timing of peak stream flows (Harr 1981). Forestry and related actions can also affect stream temperatures and nutrient and sediment loads (Scrivener 1982; Furniss et.al. 1991). Depending on the magnitude of cumulative actions and the proximity of activities to potentially affected habitat, a host of other physical characteristics of the environment may also be affected. Forestry and related activities rarely result in chemical pollution, but could indirectly remobilize materials stored in stream substrate by altering peak flows. Unless ecological research on juvenile Kootenai River white sturgeon demonstrates a relationship between forestry and white sturgeon populations, the primary threats to the species are related to operation of Libby Dam.

Critical Habitat: Designated critical habitat for Kootenai River white sturgeon is limited to 18.3 river miles (RM) of the mainstem Kootenai River from below the confluence with the Moyie River (RM 159.7) to downstream of Shorty's Island (RM 141.4). The segment does not pass through NFS lands. The Yaak River below Yaak Falls is considered to be potential habitat for white sturgeon.

Environmental Consequences

Direct, Indirect, and Cumulative Effects

The majority of occupied sturgeon habitat occurs outside both the Cabinet Yaak and Selkirk Recovery Zones. All habitat identified as critical habitat lies outside the Recovery Zones. Effects associated with barrierring/obiterating/decommissioning roads in tributaries to the Kootenai River have not been shown to be significant to sturgeon or their habitat. Effects within the smaller watersheds would be diluted by the larger volume of the Kootenai River. As a result there is no chance for direct or indirect effects nor there any cumulative effects as a result of implementing the access amendment.

Determination of Effects

Forest activities are not listed among the threats to the Kootenai River white sturgeon or their habitat (USDI 1994a, USDI 2008a). Changes in access and potential road treatments under Alternative E Updated will have **no effect** to Kootenai River white sturgeon or designated critical habitat in the mainstem Kootenai River.

PLANT SPECIES

Spalding's Campion

Spalding's campion *(Silene spaldingii)* is a species of Palouse Prairie grasslands. These grasslands are composed largely of wheatgrass and Idaho fescue and have scattered ponderosa pine. Elevations range from 2,700 to 3,500 feet.

Affected Environment

This species occurs on lands that have historically been well suited to agricultural production, including grazing, hay, and other crop production. These lands are also desirable for residential development. Noxious weed introduction into western grasslands and domestic livestock grazing has also had a detrimental effect on this species.

This species is known to occur on private lands within the boundaries of the Kootenai National Forest, but has not yet been located on any National Forest lands in Montana, or elsewhere. In addition to Lincoln County, Montana, this species is known to occur in Lake and Sanders Counties, but is presumed extinct from Flathead County. This species is also known to occur in southeastern British Columbia, southeastern Washington, northeast Oregon, and northern Idaho (Lesica and Shelly 1991). The population in northwest Montana is the largest known population of this species in the world with at least 90 percent of all known individuals found in this area (Schassberger 1998).

Environmental Consequences

Direct and Indirect Effects

Because the proposed action represents a programmatic decision, there would be no direct effects on the following to Spalding's campion. Any direct effects would occur later at the project level when site-specific decisions are made about road and trail use restrictions. Most of the effects identified in this analysis would be indirect effects because they would occur later in time as a result of programmatic decisions.

Both positive and negative indirect effects to known or potential plant species habitat could result from decisions to reduce wheeled motorized vehicle access to NFS lands. For instance, changes in road status from open to gated or barriered status would reduce the potential for physical trampling. Conversely, less access may reduce the amount of monitoring and treatment for noxious weed infestations that may negatively impact the ability of this threatened species to successfully compete in it preferred habitat.

The effects related to the proposed action focus primarily on managing and controlling access on existing roads and trails to achieve specific objectives and standards for each BMU. The effects related to habitat manipulation are not addressed because it is not part of the proposed action.

Although the proposed action places greater limitations on human use of motorized roads and trails and provides an overall improvement in security for grizzly bears, it provides opportunities for management and public use. These opportunities arise from BMUs that exceed their numeric standards for core habitat and road density, thereby, providing a chance for management activities/public use while adhering to the management goals set for each. However, these are opportunities, not requirements, and will receive their own scrutiny at the time those actions are proposed. Consequently, the results of opportunities are not expected to have meaningful effects to Spalding's campion.

Cumulative Effects

Implementation of the proposed action would establish management direction for NFS lands within the SRZ, which overlaps Spaulding's campion habitat. However, the SRZ and CYRZs also includes State and private lands. Decisions made by these landowners regarding management of wheeled motorized roads and trails on their lands, as well as vegetation changes could potentially result in cumulative effects to Spalding's campion plants. The numbers used for road densities and Core Area in this analysis include consideration of roads on State and private lands within the 30 grizzly bear BMUs considered in this Biological Assessment, even though standards set by Design Elements will apply only to NFS lands (Tables 1 and 2). In addition, the linear miles of open and total roads in the seven BORZ areas includes consideration of roads on State and private lands, even though the standards set by Design Elements will only apply to NFS lands (Table 3). Therefore, the analysis included the consideration of cumulative effects on State and private lands within the evaluation area for Spaulding's campion.

Determination of Effects

Spalding's campion is a species of grassland habitats. Their habitat will not be impacted by implementation of the proposed action, nor has this species been found on the Kootenai, Idaho Panhandle or Lolo National Forests. Therefore this project would have **no effect** on this species.

Water Howellia

Water howellia (*Howellia aquatilis*) is an aquatic plant found only in small pothole ponds and river oxbows. These ponds generally are shallow and are filled by snowmelt and spring rain. They dry out by late summer. These ponds are surrounded by black cottonwood, quaking aspen, or other deciduous species. The bottom of these wetlands consists of firm clay and organic sediments (Shelly 1994). Elevations in Montana range from 3,100 to 4,420 feet.

The life history of water howellia is poorly understood. Although there appears to be enough suitable habitat for this plant, it seems to occur in a restricted number of ponds. Studies are needed to identify what mechanisms control reproduction and distribution.

Affected Environment

Viable populations have been located in Washington and Idaho, with the closest population to the Selkirk and Cabinet-Yaak grizzly bear recovery zones occurring on the Flathead National Forest in Montana (Shelly 1994). Half of the known populations in Montana are adjacent to disturbed sites resulting from logging and road construction (Lesica and Shelly 1991).

Environmental Consequences

Direct and Indirect Effects

Because the proposed action represents a programmatic decision, there would be no direct effects on the following to water howellia. Any direct effects would occur later at the project level when site-specific decisions are made about road and trail use restrictions. Most of the effects identified in this analysis would be indirect effects because they would occur later in time as a result of programmatic decisions.

Both positive and negative indirect effects to known or potential TES plant species could result from decisions to reduce wheeled motorized vehicle access to NFS lands. Indirect effects include changes in road status from open to gated or barriered status and may reduce the potential for physical trampling. Conversely, new construction or opening of barriered roads may increase the potential for physical trampling.

The effects related to the proposed action would focus primarily on managing and controlling access on existing roads and trails to achieve specific objectives and standards for each BMU. The effects related to habitat manipulation are not addressed because it is not part of the proposed actions.

Although the proposed action places greater limitations on human use of motorized roads and trails and provides an overall improvement in security for grizzly bears, it provides opportunities for management and public use. These opportunities arise from BMUs that exceed their numeric standards for core habitat and road density, thereby, providing a chance for

management activities/public use while adhering to the management goals set for each BMU. However, these are opportunities, not requirements, and will receive their own scrutiny at the time those actions are proposed. Consequently, the results of opportunities are not expected to have meaningful effects to water howellia.

Cumulative Effects

Implementation of the proposed action would establish management direction for NFS lands within the SRZ, which overlaps water howelli habitat. However, the SRZ and CYRZs also includes State and private lands. Decisions made by these landowners regarding management of wheeled motorized roads and trails on their lands, as well as vegetation changes could potentially result in cumulative effects to water howelli plants. The numbers used for road densities and Core Area in this analysis include consideration of roads on State and private lands within the 30 grizzly bear BMUs considered in this Biological Assessment (Appendix D), even though standards set by Design Elements will apply only to NFS lands (Tables 1 and 2). In addition, the linear miles of open and total roads in the seven BORZ areas includes consideration of roads on State and private lands, even though the standards set by Design Elements will only apply to NFS lands. Therefore, the analysis included the consideration of cumulative effects on State and private lands within the evaluation area for water howellia.

Determination of Effects

Water howellia is a plant of glacial ponds and river oxbows that dry out in late summer. This species has not been located on the Kootenai, Idaho Panhandle, or Lolo National Forest nor would its habitat be impacted with implementation of the proposed action. Therefore this project would have **no effect** on this species.

MANDATORY CONSERVATION MEASURES

There are no identified Mandatory Conservation Measures identified to avoid or minimize potential effects to listed species and habitat.

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Appendix A: Record of Consultation with the U.S. Fish and Wildlife Service

Consultation history regarding the Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones, 2002-2010.

Date	Consultation
May 10, 2002	Forests submit Biological Assessment to U.S. Fish & Wildlife Service with request for formal consultation. FWS Helena office received 5/16/03. Consultation assigned to FWS Spokane Office who received BA 6/27/03.
June 24, 2002	USFWS requests clarification of aspects of B.A. (meeting notes). USFWS noted that they could not commit to the 135-day time frame
July 1, 2002	USFWS contacted IPNF about missing information in Appendix B of the BA. The request was that we supply information regarding threats to populations at the 4th code HUC level, and sediment and cobble embeddedness information at the 6th code HUC level for bull trout streams in BMUs not meeting standards. USFWS wanted this information for the Environmental Baseline for bull trout.
July 19, 2002	Forests provide clarification in response to 6/24/02 request. Clarified 13 major points in the BA. Provided updated habitat conditions (2001 OMRD, TMRD, and Core values) for every BMU (30 total). Identified potential changes to 2001 habitat values from possible cumulative effect projects.
August, 2002 (2nd week)	IPNF e-mailed draft information requested on July 1. USFWS responded that more information was needed. Arranged to meet on August 21 but postponed due to fire.
August 27, 2002	USFWS and IPNF met to determine level of information necessary to complete bull trout Environmental Baseline. Agreed that the following information would be provided: • Characterizations of the 4th-code HUC watersheds (there are 4 of them); • Bull trout populations and major threats to those populations at the 4th-code HUC level; • Characterizations of the 6th-code HUC watersheds (there are approximately 35) • Status of bull trout populations at the 6th-code HUC level, with supporting data and documentation. • Current condition of sediment and substrate embeddedness at the 6th-code HUC level, including data and documentation. • Determinations of whether the populations and substrate condition are functioning appropriately, functioning at risk, or functioning at unacceptable risk.
Oct. 1, 2002	USFWS requests additional information on grizzly bear (distribution outside recovery zone and baseline habitat conditions) from KNF via informal phone call.
Nov. 18, 2002	KNF provides additional information in response to 10/1/02 request (including grizzly bear outside recovery zone data). This included: determine grizzly bear reoccurring use outside the recovery zone, determine estimate of bear numbers, analyze habitat conditions relative to linear open and total road densities on eight very large analysis areas, analyze food attractant and storage problems in each analysis area, and evaluate conflicts between grizzly bear and livestock grazing in each area. In addition, the analysis had to display all steps to minimize take, based on existing management direction.

Date	Consultation
Dec. 3, 2002	USFWS formally requests additional information on bull trout (baseline habitat and population data) from IPNF and grizzly bear (distribution outside recovery zone and baseline habitat conditions) from KNF, IPNF and LNF.
Jan. 22, 2003	Forests provide additional information in response to 12/3/2002 request on bull trout. This required detailed baseline analysis on habitat at the 4th code watershed level (three watersheds) and populations at the 6th code level (many more individual streams).
Feb. 24, 2003	USFWS requests additional information on lynx – current habitat condition of each Lynx Analysis Unit (LAU) (on the KNF, IPNF and those LAUs on the Lolo NF in the SCY grizzly recovery zone) relative to three parameters (% denning, % unsuitable, % change) in the Lynx Conservation Assessment and Strategy (LCAS).
Mar. 14, 2003	Forests provide updated information on grizzly bears outside recovery zone in response to 12/3/2002 request. Each Forest had to determine estimate of bear numbers, analyze habitat conditions relative to linear open and total road densities on eight very large analysis areas, analyze food attractant and storage problems in each analysis area, and evaluate conflicts between grizzly bear and livestock grazing in each area. In addition, the analysis had to display all steps to minimize take, based on existing management direction.
Mar. 27, 2003	Forests provide additional lynx information in response to 2/24/03 request. This involved three analyses (percent denning, percent unsuitable, percent change) for each of 125 LAUs (47 on KNF, 73 on IPNF and 5 on Lolo NF).
April 1 & 2, 2003	USFWS reps and IPNF fisheries biologists met to answer additional questions related to information USFWS felt was needed to complete Environmental Baseline for bull trout on IPNF. USFWS requested a copy of an Excel spreadsheet with physical data. By meeting's end, USFWS declared they had enough information to complete the Environmental Baseline.
April 3, 2003	Excel spreadsheet requested at April 1 & 2 meeting sent electronically to USFWS.
April 3, 2003	USFWS sent an electronic request for information on four Kootenai River tributaries outside of the action area but wanted for Environmental Baseline on bull trout.
April 7, 2003	Additional information on the four Kootenai River tributaries requested on 4/3 was sent electronically to USFWS.
April 7, 2003	USFWS sent an electronic request for clarification on how Equivalent Clear-cut Acres were calculated (regarding information in the Excel spreadsheet sent on 4/3), especially regarding Boulder Creek.
April 7, 2003	IPNF responded electronically regarding ECA calculations and conditions in Boulder Creek.
April 28 2003	USFWS requests additional information on grizzly bear (linear road densities in BMUs; Northern Continental Divide Grizzly recovery zone BMU habitat status) and lynx (Lolo NF – all lynx data per 2/24/03 request now wanted for all LAUs); and acknowledgement of use of LCAS as interim management for Lynx).

Date	Consultation
May 23, 2003	Forests provide additional information in response to 4/28/03 request. Provided Core, OMRD, TMRD for each NCDE BMU. Each forest provides a statement acknowledging use of LCAS. KNF provides historical data on linear vs. moving windows analysis of OMRD and TMRD. All three forests provide final lynx data package with the 3 LCAS parameters for each individual LAU (125 LAUs x 3 analyses = 375 analyses).
June 17, 2003	USFWS requests additional information on core for BMUs 3, 5, 10, & 13 via phone call.
June 30, 2003	Meeting with FWS held to discuss and provide data in response to 6/17/03 request. Final data provided 7/3/03 as documented in meeting notes. BMUs 3, 5, 10, and 13 standards modified.
July 30, 2003	KNF discovers data error in Tables in 3/14/03 document. Provides corrected tables to FWS. All FWS requests for additional biological data now met.
Sept. 16,2003	FS receives DRAFT Biological Opinion (BO)
Sept. 30, 2003	Conference call with USFWS and KNF and IPNF to discuss DRAFT BO
Oct. 6, 2003	FS letter to USFWS with review comments on Draft BO
Oct. 14, 2003	USFWS and FS representatives meet to discuss FS 10/6/03 letter to FWS on draft BO
Oct. 21, 2003	IPNF and FWS Bios meet to continue discussions on draft BO
Oct. 22, 2003	KNF and IPNF Bios met with USFWS Biologist to discuss final Terms and Conditions of BO
Oct. 29, 2003	Forest Supervisors meet with USFWS to finalize discussion on Terms and Conditions of BO
Nov. 4, 2003	KNF provides USFWS written comments per 10/29/2003 meeting
Nov. 18, 2003	IPNF provides USFWS written comments per 10/29/2003 meeting plus additional comments on BO
Dec. 2, 2003	Meeting between Forest Supervisors and USFWS to discuss comments from 11/4 and 11/18/03 FS written comments.
Feb. 9, 2004	USFWS releases the Access Amendment BO with Reasonable and Prudent Measures, Mandatory Terms and Conditions and Discretionary Conservation Recommendations.
Feb. 26, 2004	Wayne Johnson provides direction for grizzly bear analysis outside the recovery zones per BO and identifies the road flexibility available for management activities.
March 24,2004	Access Amendment ROD with BO Terms and Conditions released to the public
Dec. 13, 2006	District Court (Molloy) releases lawsuit opinion setting aside as contrary to law the Access Amendment ROD and remands project back to USFS for further analysis.
May 17, 2007	USFWS withdraws their Feb. 9, 2004 B.O. due to District Court Decision and remanded ROD.
April 16, 2007	Letter to Susan Martin (USFWS, Spokane Office) notifying her of the Forest Service's intent to prepare a SEIS in response to the District Court's decision, that the previous access strategy was no longer in place, and that the Forest Service would consult with the USFWS prior to adoption of a final strategy.
April 16, 2007	Letter to Mark Wilson (USFWS, Helena Office) notifying him of the Forest Service's intent to prepare a SEIS in response to the District Court's decision, that the previous access strategy was no longer in place, and that the Forest Service would consult with the USFWS prior to adoption of a final strategy.

Date	Consultation
July 3, 2007	Biologists' Meeting with USFWS Ben Conard, USFWS Wayne Kasworm, USFWS Bryan Holt and Wayne Wakkinen regarding process for identifying road management opportunities to improve habitat conditions for grizzly bear, identify rationale for establishing the Core, OMRD and TMRD standards set in the Alternative E, and rationale why higher core and lower OMRD and TMRD standards can not be set, or show proposed new standards where real opportunities exist.
Aug. 7, 2007	IDT Meeting with USFWS Wayne Kasworm, USFWS Bryan Holt and Wayne Wakkinen regarding review of BMU summary sheets and spreadsheets; decision whether or not to develop a new alternative.
Sept. 11, 2007	Conference Call with USFWS Ben Conard, USFWS Bryan Holt, USFWS Wayne Kasworm, and IDFG Wayne Wakkinen regarding mapping of core area and OMRD/TMRD standards
Feb. 14, 2008	Letter to USFWS offices (Mark Wilson, Susan Martin) providing update on the Draft SEIS Access Amendment progress to date, including issues raised in the District Court, Wakkinen and Kasworm's paper and development of a range of alternatives, including Alternative D.
Feb. 21, 2008	Letter to USFWS offices (Mark Wilson, Susan Martin) to update on project decision to analyze Alternative D Modified with Wakkinen and Kasworm's optimal habitat values of 72 percent Core, 17 percent OMRD and 14 percent TMRD; and to propose conference call date (March 14, 2008) for USFWS Mark Wilson, Susan Martin and consultation biologists.
Feb. 22, 2008	IPNF Supervisor Ranotta McNair meets with USFWS Susan Martin (Spokane Office) providing preliminary information for March 14 conference call. Paul Bradford calls USFWS Mark Wilson (Helena Office) with same information.
March 14, 2008	Conference call with USFWS discussing Alternative D Modified description, reasonably foreseeable actions, identification of lead USFWS office, communications, priorities and draft timeline
April 9, 2008	Letter from Spokane USFWS (Audet) to Ranotta McNair updating the Idaho Panhandle's bi-annual species list, to be addressed for the SEIS.
June 10, 2008	IDT Meeting with USFWS Wayne Kasworm and IDFG Wayne Wakkinen discussing extension of CYRZ bear year to November 30 based on known den entry/exit information. Wayne Wakkinen and Wayne Kasworm were asked to review their original recommendations on administrative use levels (Wakkinen and Kasworm letter to D. Wright, 5/14/1999) and how a change in the bear year might affect those levels. Also discussed DSEIS Alternatives D Modified and E Updated and inclusion of Terms and Conditions from the 2004 B.O., including the BORZ.
June 12, 2008	Wayne Kasworm e-mails Wayne Johnson with reply to June 10, 2008 request. He and Wayne Wakkinen recommend administrative use by season (spring 18 trips, summer 23 trips, fall 19 trips) totaling 60 trips, using the same process from their 1999 letter.
June 18, 2008	IDT Meeting with USFWS Wayne Kasworm, USFWS Ben Conard and USFWS Bryan Holt updating the Access Amendment progress/status, and discussing Alternative E Terms and Conditions and BMU standards, BORZ terminology, Bear year changes and administrative use, activity time limit in core area, timeframes to achieve standards, and display of Terms and Conditions. Alternative D was also reviewed.

Date	Consultation
June 21, 2008	Telephone conversation between Anne Vandehey and Mark Wilson (USFWS, Helena Office) and Wayne Johnson, (Kootenai National Forest) regarding the potential for a Likely to Adversely Affect project in the CYE to be conducted without jeopardizing grizzly bears.
June 19, 2008	Obtained the list of Threatened, Endangered and Candidate species to be addressed for the SEIS from the USFES Helena Office website for the Kootenai National Forest.
June 19, 2008	Obtained the list of Threatened, Endangered and Candidate species to be addressed for the SEIS from the USFES Helena Office website for the Lolo National Forest.
July 1, 2008	Phone conversation between Wayne Kasworm (USFWS) and Wayne Johnson (KNF) regarding grizzly bear movements between Recovery Zones.
July 2, 2008	IDT Meeting with USFWS Wayne Kasworm, USFWS Ben Conard and USFWS Bryan Holt discussing follow-up items from the June 18 meeting: bear year dates, BORZ baseline conditions, Core baseline conditions, 3-year activity time limit, timeframes to achieve standards and display of Terms and Conditions.
July 21, 2008	IDT Meeting with USFWS Wayne Kasworm, USFWS Ben Conard and USFWS Bryan Holt discussing bear year change, FS final Alternative D Modified and Alternative E Updated language for T&Cs, reviewed Alternative tables
August 8, 2008	Conference call between Paul Bradford, Ranotta McNair, Randy Hojem, Wayne Johnson, Alan Campbell, and Mark Wilson, Rich Torqumada, and Bryon Holt. Level 2 discussion concerning the access amendment's proposed action- specifically the scope of the analysis. Decision, amongst the three FS line officers, was that the scope of the analysis will continue to be consistent with the FEIS and ROD. The scope of the analysis for the FEIS/ROD is limited to wheeled, motorized access management. Future options for access management planning will occur during and/or after forest plan revision
May 12, 2009	IDT Meeting with USFWS Ben Conard, Lowell Whitney,Wayne Kasworm, Byron Holt and Anne Vandehay to introduce new biologists and review timelines for implementation and Design Elements (T&C) from April 2009 release of draft SEIS—including 3 year time limit in Core. Issues identified for further discussion between FWS biologists included entrance in core within a BMU "once every 10 years" as well as need for BORZ review.
August 20, 2009	IDT Meeting with USFWS Ben Conard, Wayne Kasworm and Bryon Holt to discuss BORZ delineation and associated data. Develop draft guidelines for recurring use areas for grizzly bears.
August 21, 2009	Day two of IDT Meeting with USFWS Ben Conard, Wayne Kasworm and Bryon Holt to discuss BORZ delineation and review Design Element language- especially in regards to core block areas and ability to enter "once every 10 years".
September 10, 2009	IDT Meeting with USFWS Ben Conard, Wayne Kasworm and Bryon Holt and Idaho Fish and Game biologist Wayne Wakkinen to discuss BORZ delineation and associated data for Idaho Panhandle SRZ and CYRZ.
September 12, 2009	IDT Meeting with USFWS Ben Conard, Wayne Kasworm and Bryon Holt to discuss BORZ delineation and associated data for KNF and LNF CYRZ.
March 1, 2010	IDT Team meeting with USFWS Wayne Kasworm and Ben Conard to finalize BORZ re-delineation and associated Design Element language.

Date	Consultation
April 26, 2010	Level II conference between Ranotta McNair (IPNF), Paul Bradford (KNF), Barb Beckes (LNF), Shanda Dekome (IPNF), Rich Torquemada (USFWS), Bryon Holt (USFWS), John Carlson (KNF), Mark Wilson (USFWS), Karl Dekome (IPNF), Anne Vandehey (USFWS). *Present by phone:* Lydia Allen (IPNF), Ben Conard (USFWS), Randy Hojem (LNF), Dave Wrobleski (LNF).Meeting was called to consider adjusting standards for 3 BMUs (Sullivan-Hughes, Blue Grass, and Keno) and discuss the use of a Single Standard versus No net loss of core and use of temporary loss of core.
July 1, 2010	Level I Meeting with USFWS Ben Conard and USFS Lydia Allen, Karl Dekome, Annie Dueker, John Carlson, Jeremy Anderson, Joe Madison, and Brett Lyndaker to finalized Design Elements.
July 22, 2010	Final Forest Service edits sent to USFWS Ben Conard and Bryon Holt for review and comment.

Appendix B: Mortality Data for Selkirk and Cabinet-Yaak Ecosystems, 2002-2009.

Grizzly bear mortalities, Selkirk Mountains Recovery Zone, 1982-2009. From W. Wakkinen pers. Comm. 2010.

Mortality Date	Tag #	Sex	Age	Location	Ownership	Mortality Cause	<500 Meters from Open Road
Spring 1982	None	M	AD	Priest River, ID	USFS	Human, Poaching	Yes
Autumn 1982	None	Unk	Unk	LeClerc Creek, WA	USFS	Human, Unknown	Unk
1985	867-85a	Unk	Cub	N/A		Natural	Unk
Summer 1985	9491	M	4.5	US/BC border	UNK	Human, Unknown	Unk
Autumn 1986	8981	F	1.5	Grass Creek, ID	USFS	Human, Mistaken ID	Unk
1986	None	M	Unk	BC Unit 4-8	BC	Human, Management	Yes
Spring 1987	1005[1]	M	10.5	Wall Mtn, BC	BC	Human, Poaching	Unk
Autumn 1987	962[1]	M	7.5	Trapper Creek, ID	USFS	Human, Poaching	No
Autumn 1988	1085[1]	F	3.5	Cow Creek, ID	USFS	Human, Mistaken Identity	No
Spring 1988	None	M	Unk	Hunting mortality BC Unit 4-7	BC	Human, Hunting	Unk
Summer 1989	1044[1]	F	20+	Laib Creek, BC	BC	Natural, Conspecific	No
Autumn 1988	10501	M	1.5	Porcupine Creek, BC	BC	Natural	UNK
Autumn 1990	1042	F	3.5	Maryland Creek, BC	BC	Human, Poaching	Yes
1990	None	M	Unk	Non-hunting mortality BC Unit 4-8	BC	Human, Management	Yes
1991	876-92	Unk	1.5	N/A		Natural	UNK
Summer 1991	10761	F	20+	Next Creek, BC	BC	Natural	NO
Summer 1992	10901	M	5.5	Laib Creek, BC	BC	Unkown	YES
Summer 1992	None	M	Unk	Lost Creek, BC	BC	Human, Management	Yes
Autumn 1992	1015	F	12.5	Monk Creek, BC	BC	Human, Self Defense	No
Spring 1993	None	M	Unk	Hunting mortality BC Unit 4-7	BC	Human, Hunting	Unk
Autumn 1993	867[1]	F	15.5	Willow Creek, WA	USFS	Human, Poaching	No
Autumn 1993	867-93a[1]	Unk	0.5	Willow Creek, WA	USFS	Human, Poaching	No
Autumn 1993	867-93b[1]	Unk	0.5	Willow Creek, WA	USFS	Human, Poaching	No
1993	None	M	Unk	Non-hunting mortality BC Unit 4-8	BC	Human, Management	Yes
Spring 1994	None	M	Unk	Hunting mortality BC Unit 4-7	BC	Human, Hunting	Unk
Spring 1994	13	M	AD	Hunting mortality BC Unit 4-20[2]	BC	Human, Hunting	Unk
Spring 1995	None	F	1.5	Boundary Creek, ID	USFS	Human, Unknown	Yes
Autumn 1995	1100[1]	M	2.5	Granite Pass, WA	USFS	Human, Mistaken Identity	Yes
1996	1027-96	Unk	Cub	N/A		Natural	UNK
Autumn 1996	1022	M	2.5	Boswell, BC	BC	Human, Management	Yes
Autumn 1997	None	M	1.5	Salmo, BC	BC	Human, Management	Yes
Spring 1998	1023	M	4.5	Hunting mortality BC Unit 4-26[2]	BC	Human, Hunting	Unk
Summer 1998	None	M	3.5	Usk, WA	PRIVATE	Human, Under investigation	Yes
Autumn 1999	9810	M	10	Smith Creek, ID	USFS	Human, Under Investigation	Unk
Autumn 1999	None	M	22	Wyndell, BC	BC	Human, Management	Yes
Autumn 1999	1032	M	18	Procter, BC	BC	Human, Management	Yes
Autumn 2000	None	Unk	Unk	Hughes Meadows	USFS	Unknown	Yes
Autumn 2001	7	F	13	Porcupine Creek, BC	BC	Natural, Conspecific	No
Autumn 2001	None	M	Unk	Cottonwood Creek, BC	BC	Human, Management	Yes
Spring 2002	17	M	3.5	Nelway, BC	BC	Human, Depredation	Yes
Autumn 2002	None	F	Ad	Blewett, BC	BC	Human, Under Investigation	Yes
Autumn 2002	None	Unk	1	Blewett, BC	BC	Human, Under Investigation	Yes

Mortality Date	Tag #	Sex	Age	Location	Ownership	Mortality Cause	<500 Meters from Open Road
Autumn 2002	None	Unk	1	Blewett, BC	BC	Human, Under Investigation	Yes
Autumn 2002	None	Unk	1	Blewett, BC	BC	Human, Under Investigation	Yes
Autumn 2002	19	M	3.5	Lamb Creek, ID	USFS	Human, Under Investigation	Yes
Spring 2003	None	Unk	Unk	Apple Orchards lower Smith Ck	Private	Human, Under investigation	Yes
Summer 2003	30	F	2.5	Salmo, BC	BC	Human, Management	Yes
Autumn 2003	None	F	Ad	Blewett, BC	BC	Human, Under Investigation	Yes
Autumn 2003	None	F	1	Blewett, BC (offspring of above)	BC	Human, Under Investigation	Yes
Spring 2004	None	M	Ad	Hughes Meadows	USFS	Human, Under Investigation	Yes
Autumn 2004	32	M	7	Nordman / Bismark Meadows	Private	Human, Under Investigation	Unk
Spring 2005	31	M	5	East of Creston, BC	BC	Human, Hunting season	Unk
Spring 2005	None	Unk	Unk	E. Fk. Priest River	IDL	Likely human caused	Unk
Spring 2006	None	Unk	Ad	Procter, BC	BC	Human, Mgmt./Sanitation	Yes
Autumn 2006	None	Unk	Yrlng	Blewett, BC	BC	Human, Mgmt./Sanitation	Yes
Autumn 2006	None	Unk	Yrlng	Blewett, BC	BC	Human, Mgmt./Sanitation	Yes
Autumn 2006	None	F	Ad	Blewett, BC	BC	Human, Mgmt./Sanitation	Yes
Summer 2007	29	F	Ad	Kootenay Pass, Hwy 3, BC	BC	Vehicle collision	Yes
Autumn 2007	1000	F	Ad	Pass Ck Pass, WA	USFS	Human, Illegal, Mis. ID(?)	Yes
Autumn 2007	5394	M	Sub	Priest River, ID	Private	Human, Mgmt/Sanitation	Yes
Autumn 2008	119	M	Ad	Salmo, B.C.	Private	Sanitation, Illegal Kill	No

Grizzly bear mortalities, Cabinet-Yaak Recovery Zone, 1982-2009. From W. Kasworm pers. Comm. 2010.

Mortality Date	Tag #	Sex	Age	Location	Ownership	Mortality Cause	<500 Meters from Open Road
October 1982	None	M	AD	Grouse Creek, ID	USFS	Human, Poaching	No
October 1984	None	Unk	Unk	Harvey Creek, ID	USFS	Human, Mistaken Identity	Yes
9/21/1985	14	M	AD	Lyons Gulch, MT	USFS	Human, Self Defense	No
7/14/1986	106 cub	Unk	Cub	Burnt Creek, MT	USFS	Natural	Unk
10/25/1987	None	F	Cub	Flattail Creek, MT	USFS	Human, Mistaken Identity	No
5/29/1988	134	M	AD	Moyie River, BC	BC	Human, Hunting	Yes
10/31/1988	None	F	AD	Seventeen Mile Creek, MT	USFS	Human, Self Defense	No
7/6/1989	129	F	3	Burnt Creek, MT	USFS	Human, Research	Yes
1990	192	M	2	Poverty Creek, MT	USFS	Human, Poaching	Yes
1992	678	F	37	Trail Creek, MT	USFS	Unknown	No
7/22/1993	258	F	7	Libby Creek, MT	USFS	Natural	No
7/22/1993	258-cub	Unk	Cub	Libby Creek, MT	USFS	Natural	No
10/4/1995	None	M	AD	Ryan Creek, BC	Private	Human, Management	Yes
5/6/1996	302	M	3	Dodge Creek, MT	USFS	Human, Under Investigation	Yes
October 1996	355	M	AD	Gold Creek, BC	BC	Human, Under Investigation	Yes
1997	None	M	AD	Libby Creek, MT	Private	Human, Poaching	Unk
6/4/1999	106	F	21	Seventeen Mile Creek, MT	USFS	Natural, Conspecific	No
6/4/1999	106-cub	Unk	Cub	Seventeen Mile Creek, MT	USFS	Natural, Conspecific	No
6/4/1999	106-cub	Unk	Cub	Seventeen Mile Creek, MT	USFS	Natural, Conspecific	No
10/12/1999	596	F	2	Hart Creek, BC	BC	Human, Self Defense	Yes
11/15/1999	358	M	15	Yaak River, MT	Private	Human, Management	Yes
6/1/2000	538-cub	Unk	Cub	Hawkins Creek, BC	BC	Natural	Unk
6/1/2000	538-cub	Unk	Cub	Hawkins Creek, BC	BC	Natural	Unk
7/1/2000	303-cub	Unk	Cub	Fowler Creek, MT	USFS	Natural	Unk
11/15/2000	592	F	3	Pete Creek MT	USFS	Human, Under Investigation	Yes
5/5/2001	None	F	1	Spread Creek, MT	USFS	Human, Mistaken Identity	Yes
6/18/2001	538-cub	Unk	Cub	Cold Creek, BC	BC	Natural	Unk
6/18/2001	538-cub	Unk	Cub	Cold Creek, BC	BC	Natural	Unk
October 2001	None	F	AD	Elk Creek, MT	MRL	Human, Train collision	Yes
6/24/2002	None	Unk	Unk	Bloom Creek, BC	BC	Human, Hounds	Yes
7/1/2002	577	F	1	Marten Creek, MT	USFS	Natural	Yes
10/28/2002	None	F	4	Porcupine Creek, MT	USFS	Human, Under Investigation	Yes
11/18/2002	353/584	F	7	Yaak River, MT	Private	Human, Poaching	Yes
11/18/2002	None	F	Cub	Yaak River, MT	Private	Human, Poaching	Yes
11/18/2002	None	Unk	Cub	Yaak River, MT	Private	Human, Poaching	Yes
11/18/2002	None	Unk	Cub	Yaak River, MT	Private	Human, Poaching	Yes
10/15/2004	None	F	AD	Newgate, BC	Private	Human, Management	Yes
5/15/2005	31	M	AD	Russell Creek, BC	BC	Human, Hunting	Yes
10/9/2005	None	F	AD	Government Creek, MT	MRL	Human, Train collision	No
10/9/2005	694	F	2	Pipe Creek, MT	Private	Human, Under Investigation	Yes
10/19/2005	688	M	3	Yaak River, MT	Private	Human, Mistaken Identity	Yes
5/28/2006	None	F	8	Cold Creek, BC	BC	Human, Research	Yes
6/1/2006	292	F	5	Moyie River, BC	Private	Human, Management	Yes
9/22/2007	354?	F	11	Canuck Creek, MT	USFS	Human, Self Defense	Yes
9/24/2008	?	?	?	Fishtrap Creek, MT	Private	Human, Under Investigation	Yes
10/20/2008	790	F	3	Clark Fork River. MT	Private	Human, Poaching	Yes
10/20/2008	635	F	2	Clark Fork River. MT	MRL	Human, Train collision	Yes
11/15/2008	651	M	13	Hawkins Creek, BC	BC	Human, Wolf Trap	Yes
6/5/2009	675-cub	Unk	Cub	Copper Creek, ID	USFS	Natural	Unk
6/5/2009	675-cub	Unk	Cub	Copper Creek, ID	USFS	Natural	Unk

Mortality Date	Tag #	Sex	Age	Location	Ownership	Mortality Cause	<500 Meters from Open Road
6/7/2009	None	M	SA?	Bentley Creek, ID	Private	Human, Mistaken Identity	Yes
11/1/2009	None	F	AD	E. Fork Bull River, MT	USFS	Human, Self Defense	No

Appendix C. Interagency Grizzly Bear Guidelines wildlife management elements for Management Situations 1, 2, and 3 (IGBC 1986).

Direction for maintaining and improving habitat and minimizing grizzly-human conflict potential.

Grizzly Bear Management Situations		
1	**2**	**3**
1. Maintain close contact with research organizations to assure that current research data are being used in resource planning and administration affecting grizzly bears	1. Maintain close contact with research organizations to assure that current research data are being used in resource planning and administration affecting grizzly bears	Grizzly habitat needs are not a consideration. 1. Complete a biological of existing and proposed uses (under Recreation, Range, Timber and Fire, and Minerals, Watershed and Special Uses Management Systems) which could affect grizzlies and/or their habitat. FS (1977 and Interagency CE assessment (1986) may be used.
2. Complete a biological assessment procedures and Interagency Cumulative Effects Assessment of existing or proposed land uses (under Recreation, Range, Timber and fire, and Minerals, Watershed and Special Uses management systems) which could affect grizzlies and/or their habitat.	2. Complete a biological assessment (may use USDA 1977) procedures and Interagency Cumulative Effects Assessment (1986) of existing or proposed land uses (under Recreation, Range, Timber and fire, and Minerals, Watershed and Special Uses management systems) which could affect grizzlies and/or their habitat.	2. Use cumulative effects analysis to assess spatial and temporal effects on mortality risk.
3. Use cumulative effects analysis to assess spatial and temporal effects on habitat suitability and availability and mortality risk.	3. Use cumulative effects analysis to assess spatial and temporal effects on habitat suitability and availability and mortality risk.	3. Initiate consultation procedures with the U.S. Fish and Wildlife Service, as necessary, if the biological assessment results in a “may affect” determination.
4. Initiate consultation procedures with U.S. Fish and Wildlife Service, as necessary, if the biological assessment results in a “may affect” determination.	4. Initiate consultation procedures with U.S. Fish and Wildlife Service, as necessary, if the biological assessment results in a “may affect” determination.	4. Identify grizzly-human conflict potential within different resource management systems and recommend procedures to minimize conflict potential.
5. With full awareness of the Biological Opinion, recommend project or land use modification which will provide compatibility between grizzly bears and other land uses without degrading conditions for grizzlies. If projects or land uses cannot be made compatible, recommend	5. If grizzly bear population and habitat use is likely, and with full awareness of the Biological Opinion, recommend project or land use modification which will provide compatibility between grizzly bears and other land uses without degrading conditions for grizzlies. If projects or land	

Grizzly Bear Management Situations		
1	**2**	**3**
project or use elimination	uses cannot be made compatible, and grizzly needs are great (as in Managemetn Situation 1) then recommend area be reclassified under MS 1. If grizzly use does not constitute need for species survival and recovery then recommend proceeding with the activity.	
6. With full awareness of the Biological Opinion, specify measures to be taken within different management systems which will protect, maintain and improve (NF, BLM) grizzly bear populations and habitat.	6. In necessary cases, specify, with full awareness of the Biological Opinion, specify measures to be taken within the different resource management systems which will protect and maintain grizzly bears and habitat.	
7. With full awareness of the Biological Opinion, specify measures to be taken within the different resource management systems which will protect, maintain and improve (NF, BLM) grizzly bear populations and habitat. For example, inform the public of agency grizzly bear management goals and objectives. Enlist their support in meeting these goals and objectives	7. If applicable, specify feasible measures to be taken independent of other resource management systems, to improve grizzly bear management. For example inform the public of agency grizzly bear management goals and objectives. Enlist their support in meeting these goals and objectives.	
8. Monitor the application of these guidelines to assure they are properly and effectively used. Recommend improvements in guidelines and application procedures. Identify grizzly-human conflict potential within the different resource management systems and recommend measures to minimize conflict potential	8. Monitor the application of these guidelines to assure they are properly and effectively used. Recommend improvements in guidelines and application procedures.	

Appendix D. Administrative use within the Cabinet-Yaak and Selkirk ecosystems, 2009.

Seasonal administrative use within the Cabinet-Yaak Recovery Zone by Bear Management Unit (BMU) in 2009. Once roads exceeded allowable round trips, they were considered "open" for analysis purposes for the remainder of the bear year.

Bear Management Unit	Number of Restricted Roads With Administrative Use During Bear Year 2009	Number of Restricted Roads Exceeding Seasonal and Total Administrative Use Levels During Bear Year 2009			
		Spring Use Period 4/1-6/15 (≤18 trips)	Summer Use Period 6/16-9/15 (≤23 trips)	Fall Use Period 9/16-11/15 (≤19 trips)	Total Use 4/1-11/15 (≤60 trips)
1-Cedar	6	0	1	1	1
2-Snowshoe	4	3*	3*	3*	3*
3-Spar	9	0	0	0	0
4-Bull	0	0	0	0	0
5-St. Paul	7	1**	1**	1**	1**
6-Wanless	6	0	0	0	0
7-Silver Butte-Fisher	6	0	1	1	1
8-Vermillion	1	0	0	0	0
9-Callahan	6	0	0	0	0
10-Pulpit	7	2	2	2	2
11-Roderick	4	0	0	0	0
12-Newton	4	0	0	0	0
13-Keno	1	0	0	0	0
14-NW Peaks	5	0	0	0	0
15-Garver	7	0	0	0	0
16-East Fork Yaak	11	0	0	0	0
17-Big Creek	4	0	0	0	0
18-Boulder	7	0	1	0	1
19-Grouse	3	0	0	0	0
20-North Lightning	4	0	1	0	0
21-Scotchman	2	0	0	0	0
22-Mt. Headley	5	0	0	0	0
Total	109	6	10	8	9

*ATV trespass on barriered roads 4785, 4791 and 4791V estimated to exceed allowable trips.
**ATV trespass on barriered road 5184 estimated to exceed allowable trips.

Seasonal Administrative Use within the Selkirk Recovery Zone by Bear Management Unit, 2009. Once roads exceeded allowable round trips, they were considered "open" for analysis purposes for the remainder of the bear year.

Bear Management Unit	Number of Restricted Roads with Administrative Use During Bear Year 2009	Number of Restricted Roads Exceeding Administrative Use Levels in 2009			
		Spring 4/1-6/15 (≤19 round trips)	Summer 6/16-9/15 (≤23 round trips)	Fall 9/16-11/15 (≤15 round trips)	Total Use 4/1-11/15 (≤57 round trips)
Blue Grass	12	0	1	0	0
Long Smith	2	0	0	0	0
Kalispell Granite	11	0	1	2	0
Salmo Priest	13	3	3	3	3
Sullivan Hughes	6	0	2	3	2
Myrtle	4	0	0	0	0
Ball Trout	5	0	0	0	0
LeClerc	14	0	0	0	0
Lakeshore	2	0	0	0	0
Total	69	3	7	8	5

Appendix E. Bear Management Units (BMU) 2009 Core Area by land ownership.

Table 1. Cabinet-Yaak Recovery zone core area by land ownership.

Bear Management Unit (BMU)	Size (Acres)			Open Motorized Road Density		Total Motorized Road Density		Core Area[1] (%)		
					2009		2009		2009 Conditions	
	Total	Forest Service	Other	Standard	OMRD	Standard	TMRD	Standard	Forest Service	Other
1-Cedar	56,818	56,373	445	15	14	15	10	80	83.3%	0%
2-Snowshoe	65,241	61,268	3,973	20	20	18	16	75	75.1%	1.2%
3-Spar	75,701	72,353	3,348	33	27	26	26	59	61.7%	0.2%
4-Bull	81,750	68,962	12,788	36	37	26	29	63	60.2%	1.8%
5-St. Paul	70,210	67,970	2,240	30	28	23	23	60	57.6%	0.2%
6-Wanless	64,148	54,480	9,668	34	29	32	34	55	52.4%	1.1%
7-Silver Butte-Fisher	63,151	58,377	4,774	26	32	23	23	63	62.2%	0.2%
8-Vermillion	68,567	63,582	4,985	32	33	21	24	55	53.5%	1.3%
9-Calahan	85,617	76,678	8,939	33	27	26	26	55	58.1%	0.4%
10-Pulpit	95,924	91,255	4,669	44	44	34	29	52	50.9%	0.5%
11-Roderick	77,746	74,729	3,017	28	28	26	28	55	53.2%	0.3%
12-Newton	51,562	47,637	3,925	45	42	31	29	55	57.1%	0.9%
13-Keno	51,235	51,002	233	33	34	26	25	59	58.7%	0.5%
14-NW Peak	83,027	82,947	80	31	28	26	26	55	55.5	<<0.1%
15-Garver	58,842	55,143	3,699	33	29	26	25	55	54.3%	0.2%
16-East Fork Yaak	97,586	93,916	3,670	33	33	26	26	55	53.8%	<0.1%
17-Big Creek	83,724	82,737	987	33	30	26	26	55	57.8%	
18-Boulder	62,379	58,072	4,307	33	31	29	35	55	49.1%	0.9%
19-Grouse	65,086	36,127	28,959	59	60	55	59	37	32.7%	0
20-North Lightning	68,724	65,408	3,316	35	36	20	20	61	61.4%	0.6%
21-Scotchman	62,288	50,108	12,180	34	35	26	27	62	62.7%	0.3%
22-Mt. Headley	162,917	148,197	14,720	33	38	35	37	55	51.2%	<0.1%

[1]Core Area is reported as whole percentage points in annual reports to the U.S. Fish and Wildlife Service. This data reports core area to the nearest tenth in order to display the fraction of core that occurs on private and state lands within an individual Bear Management Unit.

Table 2. Selkirk Recovery zone core area by land ownership.

Bear Management Unit (BMU)	Size (Acres / % of Total)			Open Motorized Road Density		Total Motorized Road Density		Core Area[1] (%)		
					2009		2009		2009 Conditions	
	Total	Forest Service	Other	Standard	OMRD	Standard	TMRD	Standard	Forest Service	Other
Blue Grass	57,325	56,427	898	33	33	26	28	55	49.6%	0.2%
Long-Smith	65,735	59,245	5,490	25	21	15	14	67	69.1%	3.9%
Ball-Trout	57,907	54,487	3,420	20	17	13	11	69	71.6%	0%
Myrtle	63,781	54,520	9,261	33	29	24	20	56	56.2%	3.8%
Salmo-Priest	87,115	87,115	0	33	30	26	24	64	66.0%	0%
Sullivan-Hughes	78,210	78,210	0	24	24	19	19	61	61.2%	0%
Kalispell-Granite	85,644	82,440	3,204	33	31	26	28	55	48.9%	0.3%
Lakeshore	17,972	15,265	2,707	82	82	56	54	20	18.2%	0.9%

[1]Core Area is reported as whole percentage points in annual reports to the U.S. Fish and Wildlife Service. This data reports core area to the nearest tenth in order to display the fraction of core that occurs on private and state lands within an individual Bear Management Unit.

Appendix F. Guidelines and data used to delineate the recurring grizzly bear use areas known as Bears Outside of Recovery Zones (BORZ) (dated 12/10/2010).

Process

- **Proposed Delineation**
  - Recovery Zones + Recurring Use Areas (RUAs) + Unoccupied HUCs
  - 6th order HUCs used to objectively delineate a boundary around a given set of bear observation data
  - HUCs in one general area are aggregated to create a 'Bears Outside of Recovery Zone' (BORZ).

- **Grizzly Bear Data used for Classification**
  - Determination should be based on evidence of multiple individuals with females + cubs given high priority, *with*
  - multiple years of use (typically at least 3 observations within the last 15 years[40]), *and*
  - radio collar documentation being given a high priority, *and*
  - additional information such as credible sightings, captures, and mortality sites also be taken into consideration

- **Additional Considerations in Selecting HUCs for inclusion as RUAs**
  - Proximity to the Recovery Area boundary
  - Recurring use in adjacent HUC's
  - Suitable habitats
  - Importance of identified and potential linkages zones

- **Potential Exceptions to Inclusion of Entire 6th Order HUC**
  - Areas that include high concentrations of private lands or recreational residences on FS lands where it has been determined that grizzly bear use should be discouraged[41]

- **Maximum RUAs Boundaries**

  - SRZ
    - Canadian border on the north and the IPNF boundary on the west
    - 6th order HUCs that lie between the SRZ and the CYRZ in the Kootenai River valley could be considered for inclusion into the process
    - Southern boundary will extend to the FS administrative boundary for the Access Amendment[42]

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[40] All known observations were incorporated into the database included sightings from the 1970's. Sightings of bears outside of the recovery zones started to become more frequent in the 1990's. For this effort, recurring use was defined by examining sightings that were more recent in nature (i.e. the last 15 years).

[41] Similar to Management Situation 3 lands within the Recovery Zone boundaries (FWS 1993 Recovery Plan)

[42] It is possible that non-FS lands within 10 miles of the Recovery Zone boundaries could also be identified as RUAs using this process. This information is useful to the US Fish and Wildlife Service in their efforts to manage for grizzly bear recovery into the future. However, only grizzly bear use that is occurring on FS lands outside of the recovery area boundary is being taken into consideration with the forest plan amendments on the IPNF and KNF.

- CYRZ
  - Canadian border on the North, to the KNF border on the east (excluding NCDE), and to the state line on the south
  - Consider the entire KNF because of the merging of CYRZ and NCDE
  - Southern boundary will extend no further than the Clark Fork River on the IPNF portion of the CYRZ[2]

CABINET-YAAK Recovery Zone

Datasets Considered

- Forest Service IPNF sightings
- U.S. Fish and Wildlife Service (USFWS) sightings (category 4[43] and 5[44]) for the last 48 years (1960-2009)[45].
- USFWS radio collared, VHF, and GPS data[3].
- Montana Fish, Wildlife and Parks data for NCDE (radio telemetry and sightings)

Occupied 6th order HUCs (BORZ) surrounding the Cabinet-Yaak Grizzly Bear Recovery Zone (KNF). Updated version 12/10/2010[46].

BORZ	6th Order HUC		Grizzly Bear Use Details	Recurring Use Area? Yes or No
	Name	Number		
West Kootenai BORZ	Sink Creek	170101010402	1993, 2003, 2004 sightings & tracks; 2003 two males & 1 female captures	Yes
	Young Creek	170101010403	1996 sightings; 1998 sighting; 1998 female w/cubs; 2002 female w/cubs; 2003 female w/cubs	Yes
	Dodge Creek	170101010405	1991 radio collared adult male; 1996 male mortality; 2005 radio collared adult male; 2005 sighting adult male; 2005 radio collared sub-adult male	Yes
	Sullivan Creek	170101010406	1990 sightings (2); 1990 radio collared sub-adult male; 2001 sighting; 2005 radio collared adult male; 2006 radio collared sub-adult male	Yes
	Lake Koocanusa-Poverty Creek	170101010409	1990 radio collared sub-adult male mortality;1994 tracks; 2005 radio collared sub-adult male; 2005 sighting—all sightings west of lake boundary. Cut HUC on east side of reservoir into North and South portions on Black lake road 7283 from reservoir east to Rd 758 then north to Eureka. North of this road turn off; south of this road turn on.	Yes & No
	Upper South Fork Big Creek	170101010501	1994 sighting;1998 radio collared adult male; 2004 radio collared adult male	Yes
	Lower South Fork Big Creek	170101010502	1971 female w/cubs; 1981 sighting;1997 sighting; 1998 sighting; 2003 sighting; 2003 radio collared sub-adult male	Yes
	Big Creek	170101010503	1971 sighting of female w/cubs; 1988 adult male; 1990 radio collared sub-adult male; 2003 sub-radio collared sub-adult male; 2005 radio collared adult male; 2005 radio collared sub-adult male;	Yes
	Boulder Creek	170101010601	1993 sighting; 2001 sighting; 2005 sighting; 2005 radio collared adult male; 2006 female w/cub; 2006 two additional sightings	Yes
	Lake Koocanusa-Gold Creek	170101010604	1990 radio collared adult male; female w/cub 2001; 2003 sub-adult male; 2005 sub-adult male	Yes
	Parsnip Creek	170101010605	2003 and 2004 radio collared sub-adult male (augmentation bear); 2004 sighting	Yes
	Lake Koocanusa – Geibler Creek	170101010607	1993 sighting (on east side of lake); sighting 2003; 2004 radio collared sub-adult male; 2004 radio-collared adult male	Yes
	Upper Seventeenmile Creek	170101030303	Most of this HUC is in the RZ; 1 radio-collared male in HUC outside of RZ; HUC surrounded by other HUCs that have recurring use	Yes
	Bristow Creek	170101010702	1991 radio collared adult male; 1998 sighting; 2003 radio collared sub-adult male.	Yes
	Barron Creek	170101010704	2004 radio-collared sub-adult male	No
	Jackson Creek	170101010706	2003 radio collared sub-adult male	No

[43] Credible sighting where the researcher talked with the observer and had a relatively high level of confidence that it was a grizzly bear

[44] Documented sighting (e.g. trapping location, observation, photograph, video, or track—most often by USFWS, USFS, or MTFWP biologists)

[45] U.S. Fish and Wildlife Service data reviewed on site courtesy of W. Kasworm. Data is not on file with the Kootenai or Idaho Panhandle NFs. See footnote 46 for inclusion of some of the 2010 U.S. Fish and Wildlife Service radio-collared data.

[46] Review of the 2010 radio-collared information for the Cabinet-Yaak ecosystem indicated that there were enough recent observations in the West Fisher River HUC (Cabinet Face BORZ) to add the NFS lands from this area into the overall BORZ. This includes observations of two different female bears in conjunction with the 2006 sighting of a male bear along the border of this HUC. This combination of observations constitutes sufficient evidence of recurring use. (Kasworm 2010f pers. comm.)

BORZ	6th Order HUC Name	6th Order HUC Number	Grizzly Bear Use Details	Recurring Use Area? Yes or No
	Lake Koocanusa-Little Jackson Creek	170101010708	1987 & 1989 sightings of males	No
	Rainy Creek	170101010710	2003 sighting	No
	Upper Kootenai River	170101010711	1986 sighting; 1989 sighting	No
	East Fork Pipe Creek	170101010901	Adult female w cubs 1997, 1998, 2000; female w/cubs 2004; female w/cubs 2007	Yes
	Upper Pipe Creek	170101010902	1997 sighting; 1998 adult male; 1999 adult male; 2003 sub-adult male; 2004 sighting; 2004 sub-adult male; 2005 mortality of a female; 2005 capture of nuisance bear (sub-adult male)	Yes
	Lower Pipe Creek	170101010903	1990 sighting; 1996 sighting	No
	Bobtail Creek	170101011003	2004 Sighting	No
Tobacco BORZ	Swamp Creek-Lake Creek	170101010201	1995 female w/cubs; 2004-'05 radio collared adult female; 2003 female w/cubs; 2007 female w/cubs	Yes
	Upper Fortine Creek	170101010202	1997 sighting; 2004 collared female w' cub; 2006 sighting; 2007 sighting.	Yes
	Sunday Creek	170102100102	1995 sighting; 2001 large tracks near Louis lake; 2004 collared adult female – lactating when caught; 2003 adult female w/cubs on periphery; 2009 tracks in meadow & Harvey creek; reports of tracks during hunting season every year (FWP)	Yes
	Edna Creek	170101010203	2003-04 radio collared female; 2003 female w/cubs; 2003, 2004, 2005, 2007 sightings	Yes
	Middle Fortine Creek	170101010204	2003 radio collared adult female; 2003 female w/cubs; 2004 female w/cubs; 2005 sighting; 2006 sighting	Yes
	Deep Creek	170101010205	HUC is all PVT land outside of recovery area.	No
	Meadow Creek	170101010206	1992 sighting; 2003,2004,2005 radio collared female w/young	Yes
	Lower Fortine Creek	170101010207	1995 female w/cubs; 2004 radio collared female w/cub; 2006 female w/cubs	Yes
	Therriault Creek	170101010303	One third of HUC in RZ; FS has small in-holdings surrounded by PVT	No
	Sinclair Creek	170101010304	One-half of HUC is in RZ; half in PVT, except for small FS in-holdings	No
	Lower Grave Creek	170101010302	Two-thirds of HUC in Recovery; only 5% of rest in FS in-holdings.	No
	Upper Stillwater River-Hellroaring Creek	170102100103	2003 track & dig site; 2003 sighting; 2007 track.	Yes
	Indian Creek	170101010305	HUC is all PVT land outside of recovery area.	No
	Tobacco River	170101010306	1979 sighting; 1998 sighting; 2003 radio collared adult female, 2005 radio collared adult female; Cut off portion of HUC NE of Hwy 93 due to Private land & isolated FS parcels	Yes
	Phillips Creek	170101010404	85-90% of HUC is PVT. Small portion of FS along reservoir/border in P-Pine habitat. FS portion in unroaded mgmt. 9/04 yearling griz killed on hwy near border.	No
	Upper Pinkham Creek	170101010407	1987 dig site; 1990 female w/cubs; 1995 adult female capture; 1999 female w/cubs; 2003, 2004, 2005 radio collared female, plus additional sightings	Yes
	Lower Pinkham Creek	170101010408	2003 radio collared female; 2004 female w/cubs; 2005 radio collared female; 2006 sighting	Yes
	Sutton Creek	170101010602	1995 female w/cubs; 2002 sighting; 2004-05 radio collared adult female	Yes
	McGuire Creek	170101010603	1972-74 sightings; 2005 radio collared adult female; 2006 radio collared adult female	Yes
	Tenmile Creek	170101010606	1974 sighting; 2000 sighting; 2002 sighting; 2003 sighting; 2004-2005 radio collared adult female	Yes
	Fivemile Creek	170101010701	1986 sighting of female w/cubs; 2003-2004 radio collared female 2003; linkage	Yes
	Warland Creek	170101010703	No data	No
	Cripple Horse Creek	170101010705	1969 & 1971 sightings; 2005 sighting	No
	Canyon Creek	170101010707	No data	No
	Weigel Creek	170101020301	2003 Sighting	No
	Upper Wolf Creek	170101020302	No data	No

BORZ	6th Order HUC Name	6th Order HUC Number	Grizzly Bear Use Details	Recurring Use Area? Yes or No
	Dry Fork Creek	170101020303	2003 sighting; 2005 sighting	No
Cabinet Face BORZ	Swamp Creek-Cowell Creek	170101010802	2 radio-collared sub-adult females (augmentation bears) 1994, 2006, 2008; 2006 sighting. No use west of Hwy 2—cut HUC off at highway due to lack of sightings and lack of habitat.	Yes*
	Granite Creek	170101010802	2007 observation	No
	Big Cherry Creek	170101010804	1981 sighting; 1991 radio-collared augmentation bears; 2002 sighting; 2005 sighting of bear crossing Hwy 2; 2007 sightings; 2007 video of 2 bears.	Yes
	Upper Libby Creek	170101010801	1975 sighting; 1995 sighting; 1999 sighting; radio collared sub-adult female 2005, radio collared sub-adult female 2008	Yes
	Lower Libby Creek	170101010805	1997 mortality of male; 2005 sighting west of Highway 2; 2006 sighting. Area west of highway little info and not a linkage zone. Cut HUC off at highway due to lack of sightings and habitat.	Yes*
	Flower Creek	170101011001	1991 sub-adult female	No
	Parmenter Creek	170101011002	No data	No
	Middle Kootenai River	170101011005	Sighting in 1980's; 1990 augmentation female	
	Island Creek	170101020102	2001 sighting of an adult male and track	No
	Pleasant Valley Creek	170101020103	No data	No
	Pleasant Valley Fisher River-Pearsons Reservoir	170101020104	No data	No
	Pleasant Valley Fisher River-Barnum Creek	170101020105	2006 relocated male captured on the Flathead	No
	Elk Creek	170101020106	No data	No
	McGinnis Creek	170101020107	2006 sub-adult male sighting—augmentation bear	No
	Pleasant Valley Fisher River-Loon Lake	170101020108	No data	No
	East Fisher Creek	170101020201	1983 sighting; 1985 sighting; 2008 sighting	No
	Silver Butte Fisher River	170101020202	2007 sighting (most of HUC in RZ)	No
	Little Wolf Creek	170101020304	No data	No
	Middle Wolf Creek	170101020305	No data	No
	Dunn Creek	170101010709	No data	No
	Lower Wolf Creek	170101020306	1987 sighting; 2006 sighting	No
	West Fisher Creek	170101020401	2006 sighting; radio telemetry location of two different augmentation females in 2010 along border of HUC.	Yes
	Upper Fisher River	170101020402	1986 sighting; 1992 sighting; 1996 sighting; 1997 female w/cubs; 2008 radio-collared sub-adult female; identified linkage zone. HUC cut off at Hwy 2 due to lack of sightings and lack of habitat.	Yes
	McKillop Creek	170101020403	No data	No
	Cow Creek	170101020404	No data	No
	Middle Fisher River	170101020405	No data	No
	Lower Fisher River	170101020406	No data	No
	McGregor Creek	170102130101	No data	No
	Thompson Lakes	170102130102	No data	No
	Lower Kootenai River	170101011207	Most of HUC is in RZ; 1990 sub-adult female	No
	Radio Creek	170102130401	Lolo-No data	No
	Upper Fishtrap Creek	170102130402	Lolo	No
	Upper Vermillion	170102130801	Lolo	No

BORZ	6th Order HUC Name	6th Order HUC Number	Grizzly Bear Use Details	Recurring Use Area? Yes or No
Clark Fork BORZ	Upper Big Beaver Creek	170102130701	1 peripheral sighting in 1995	No
	Little Beaver Creek	170102130702	1979 sighting; 1993 peripheral sighting	No
	White Pine Creek	170102130703	1984 and 1985 radio-collared adult male	No
	Lower Big Beaver Creek	170102130704	1980 sighting; 1984 and 1985 radio-collared adult male; 1992 and 1993 sightings	No
	Lower Vermillion River	170102130803	No data	No
	Graves Creek	170102130901	No data	No
	Noxon Reservoir-Squaw Creek	170102130902	No data	No
	Deep Creek	170102130903	No sightings outside RZ	No
	Noxon Reservoir-Mosquito Creek	170102130904	1979 sighting	
	Noxon Reservior-Bear Creek	170102130905	No sightings outside RZ	No
	Upper Trout Creek	170102131001	1984 and 1985 radio-collared adult male; 1984 sighting; 1995 sighting	No
	Lower Trout Creek	170102131002	1984 and 1985 radio-collared adult male	No
	Noxon Reservoir-Belgian Gulch	170102131003	No Data	No
	Marten Creek	170102131004	1980 sighting; 1984 sighting; 1984 radio collared adult male;1987 sighting; 1991 sighting; 2002 sighting; 2003 sub-adult male (cub) and 2003 sub-adult female (cub-later died)(cubs were moved there after death of sow)	Yes
	Swamp Creek	170102131006	No data	No
	Noxon Reservoir-Stevens Creek	170102131006	1984 and 1985 radio-collared adult male; 2008 sighting; potential linkage corridor	Yes
	Pilgrim Creek	170102131302	1980 sighting on edge of HUC; 2009 sighting. Surrounded by other RUAs so added to BORZ.	Yes
	Upper Cabinet Gorge Reservoir	170102131303	1985 radio-collared adult female, 2007 adult female w/cubs, 2008 sighting of female	Yes
	East Fork Elk Creek	170102131304	2002 radio-collared sub-adult male; 2005 adult male. Linkage	Yes
	Elk Creek	170102131305	1993 sighting; 2003 sighting; 2005 adult female w/cubs	Yes
	Lower Cabinet Gorge Reservoir	170102131306	2001 adult female w/cubs-later died on RR tracks; 2002 tracks; 2003 three yearlings; 2008 radio-collared female	Yes
	Clari Fork River-Cabinet Gorge Dam	17010213309	No data	No
Mission-Moyie (formerly Deer Ridge) BORZ	Mission Creek	170101040508	1990 radio-collared male; 1990 sighting; 1997 sighting; 1999 radio-collared female; 1999 tracks; 2000 sighting; 2005 capture site; 1 radio-collared sub-adult female in 2005; radio-collared sub-adult male in 2006; another radio-collared sub-adult male in 2006 and 2007	Yes
	Round Meadows Creek	170101050303	2000 sighting; 2006 sighting; 2006 track, another 2006 track; 1 radio-collared sub-adult female in 2005; sub-adult male in 2006; another sub-adult male in 2006 and 2007	Yes
	Moyie River above Feist Creek	170101050203	1986 sighting; radio-collared male in 1997; 1998 sighting of female w/cubs; radio collared female in 2000; sightings in 2004 and radio-collared male in 2004; radio-collared female in 2007; female with cubs in 2009	Yes
	Moyie River above Placer Creek	170101050301	2 sub-adult males 2007; tracks of grizzly in 2001; and radio collared sub-adult male in 2004	Yes
	Meadow Creek	170101050304	No data	No
	Lower Moyie River	170101050306	No data	No
	Deer Creek	170101050308	Most of this HUC is in the RZ; no other sightings at lower elevations outside of the RZ boundary	No
	Curley Creek	170101040103	No data	No
	Pine Creek	170101040102	No data	No
	Kootenai River above Bonners Ferry	170101040304	No data	No
	Kootenai River	170101040303	No data	No

BORZ	6th Order HUC		Grizzly Bear Use Details	Recurring Use Area? Yes or No
	Name	Number		
	above Cow Cr			
	Kootenai R above Dobson Cr	170101040302	No data	No
	Kootenai R above Sand Cr	170101040301	No data	No
	Kootenai R abv Bonners Ferry	170101040101	No data	No
	Brown Creek including Twentymile Creek	170101040406	No data	No
	Deep Creek above Brown Creek	170101040402	No data	No
	Rapid Lightning Creek	170102140506	Most of this HUC is in the RZ; no other sightings at lower elevations outside of the RZ boundary	No
	Grouse Creek	170102140505	Most of this HUC is in the RZ; no other sightings at lower elevations outside of the RZ boundary	No
	Lower Pack River	170102140504	Portions of this HUC is in the RZ; no other sightings at lower elevations outside of the RZ boundary.	No
	Strong Creek	170102140401	Most of this HUC is in the RZ; no other sightings at lower elevations outside of the RZ boundary.	No
	Lightning Cr below EF Lightning Creek	170102131304	Most of this HUC is in the RZ; no other sightings at lower elevations outside of the RZ boundary.	No
	Lower Clark Fork at mouth	170102131204	Portion of this HUC is in the RZ; no other sightings at lower elevations outside of the RZ boundary.	No
	Lower Clark Fork below Cabinet Gorge	170102131201	Most of this HUC is in the RZ; no other sightings at lower elevations outside of the RZ boundary.	No

SELKIRK Recovery Zone

Datasets Considered

- Forest Service IPNF sightings (1948-2008)
- IDF&G sightings (category 4[47] and 5[48]) for the last 10 years (1999-2009)[49]
- IDF&G radio collared and VHF information (1999-2009)[3]

Occupied 6th order HUCs (BORZ) surrounding the Selkirk Grizzly Bear Recovery Zone. Version dated 3/1/2010.

BORZ	6th Order HUC		Grizzly Bear Use Details	Recurring Use Area? Yes or No
	Name	Number		
PRIEST LAKE BORZ	Lower Granite	170102150303	2007 habituated sub-adult male	No
	Reeder	170102150206	2007 two sub-adult males including a habituated bear	No
	Kalispell	107102150208	2005 sighting; 2 sub-adult males including 1 habituated bear (2007), 2005 sighting	Yes*
	Reeder (Reynolds Cr)	170102150206	1997 sighting; 2007 two sub-adult males including habituated bear (turn on due to juxtaposition between Kalispell and Lamb Cr)	Yes*

[47] Reliable sighting with a relatively high level of confidence
[48] Highly reliable sighting (e.g. trapping location or sighting by IDF&G personnel or experienced grizzly bear biologists
[49] Idaho Fish and Game data reviewed on site courtesy of W. Wakkinen. Data is not on file with the Idaho Panhandle NFs.
*Areas east of Highway 57 within these RUAs have issues related to a higher level of private property and recreational residences where we do not want to manage for grizzly bear occupancy. Emphasis here is on education and sanitation.

BORZ	6th Order HUC		Grizzly Bear Use Details	Recurring Use Area? Yes or No
	Name	Number		
	Lamb Creek	170102150401	Female with cubs 1989; radio-collared female in 1989; sub-adult male in 2007; another sub-adult male in 2007	Yes*
	Priest River below Outlet Bay including Binarch Creek	170102140402	2007 habituated sub-adult male	No
	Upper W. Branch below Solo Creek	170102150502	2007 habituated sub-adult male, 2001 radio collared sub-adult male, close proximity to location where 2 sub-adult males caught and moved in 2001	Yes
	Upper W. Branch above Solo Creek	170102150501	1990 sighting; 2007 sub-adult male. Turned on in part because of juxtaposition to RZ boundary, and linkage between HUCs further to the south that have recurring use.	Yes
	Goose Creek	170102150503	2001 two sub-adult males caught and moved, female likely in area. Turned on in part because of juxtaposition to RZ boundary, and linkage between HUCs further to the south that have recurring use.	Yes
	Lower W. Branch above Flat Cr	170102150701	1986 sighting; 2001 sub-adult male; 2004 sighting; 2007 radio-collared sub-adult male.	Yes
	Lower W. Branch below Flat Cr	170102150702	No data	No
	Priest River above East River	170102150403	2007 habituated sub-adult male	No
	Moore's Creek	170102150703	No data	No
	Lower Pend Oreille River	170102150406	No data+	No
	Priest River below Big Creek	170102150405	No data	No
	Big Creek	170102150404	2006 sighting	No
	Priest Lake East Face (NFS)	170102150502	No data	No
	Middle Fork East River	170102150601	No data	No
	North Fork East River (NFS)	170102150603	No data	No
	Lower Priest River	170102150406	No data	No
PACK RIVER BORZ	Pack River above Caribou Creek	170102140201	3 bears (radio collared)—sub-adult male 2001 & 2007 and adult male in 2001, plus sightings in 1996, 1998, 2000	Yes
	Deep Creek above McArthur Lake outlet	170101040401	2006 sighting of female w/cubs; 2009 *two* sub-adult bears—one captured and relocated.	Yes
	Pack River above Jeru Creek	170102140201	Radio-collared male 1986; sighting in 1999; radio-collared male in 2000; tracks in 2000; female with cubs 2000; female with cubs in 2005; tracks in 2009.	Yes
	Fall Creek	170101040403	2007 sub-adult male; 2003 sub-adult female capture + other bears in vicinity; 2007 sow w/cubs; 2001 adult male; 2007 sighting	Yes
	Soldier Creek (NFS lands)	170102150210	3 radio collared bears (sub-adult male 2007, sub-adult male 2001) and 2000	Yes
	Pack River above Sand Creek	170102140503	2000 radio collared bear	No
	Deep Cr below Brown Creek	170101040405	2001 adult male; 2007 radio collared sub-adult male	No
	Snow Creek	170101040408	2007 subadult male	No

Appendix G. Forest Plan Management Areas that contain Goals and Standards for motorized access that may be beneficial to grizzly bears occurring outside the Recovery Zone.

Table 1. Kootenai National Forests Forest Plan Management Area Standards for motorized access in areas outside of the Cabinet-Yaak Recovery Zone.

MA	Standards for motorized access that are beneficial to grizzly bears
Forest-wide Goals Applicable to All MAs Across the Forest	Goal #2: Construct the minimum number of roads necessary to permit the efficient removal of timber and mineral resources… Goal #3: Maintain a balance of open and closed roads to continue present levels of motorized access, insure big game [potential grizzly bear prey] habitat security, ….and insure grizzly bear security to meet recovery goals. Goal #5: Maintain or enhance sufficient grizzly bear habitat [including road densities] to meet the population recovery goals established in the Grizzly Bear Recovery Plan.
2 Semi-primative, Non-motorized Recreation	Recreation #3: Trails will normally be closed to all motorized vehicles. Recreation #4: Roads [listed in the Forest Plan] may be used by snowmobiles unless conflicts with non-motorized use such as …spring grizzly bear use occurs. Cross-country use of snowmobiles will generally be allowed unless conflicts with seasonal grizzly bear use or denning areas occur. Wildlife and Fish #2: Any activity that conflicts with grizzly bear management in MS1 will be modified or prohibited. Standards and guidelines specified in Appendix 8 (Grizzly Management Situation Guidelines) will be applied to all activities in Situation lands. Wildlife and Fish #3: …habitat enhancement for grizzly bear recovery will take precedence over recreation use [aimed at vegetation management but could app/y to access management for habitat enhancement]. Minerals and Geology #2: Surface occupancy for oil and gas purposes is generally not permitted. …Seasonal constraints to minimize conflicts with grizzly bears will apply to geophysical activities. Facilities #1: No roads will be constructed except for certain permitted mineral activities Facilities #2: Construction or reconstruction of trails must not conflict with grizzly bear recovery goals
3 Semi-primitive, Motorized Recreation	Recreation #3: Roads and trails will normally be open to motorized vehicles except seasonal closures may occur on grizzly Situation 1 and 2 lands to prevent grizzly/human conflicts. Wildlife and Fish #2: Any activity that conflicts with grizzly bear management on Situation 1 and 2 lands will include compensation. Standards and guidelines specified in Appendix 8 (Grizzly Management Situation Guidelines) will be applied to all activities in grizzly habitat. Wildlife and Fish #6: Road construction will avoid important wildlife habitat such as …wet meadows, riparian zones, denning, etc. Minerals and Geology #1: Seasonal restrictions [on activities and access] may occur. Facilities #2: No additional permanent roads permitted except as required for semi-primitive recreational needs or for certain permitted mineral activities. Facilities #3: New roads will be low standard, primitive, designed to enhance semi-primitive recreational experience as much as possible. Facilities #7: Roadside seeding on open roads will not include any component (e.g., clovers) which may attract grizzly bears.
5 Viewing Areas	Minerals and Geology #1: Seasonal restrictions [on activities and access] may occur. Minerals and Geology #2: Seasonal constraints [on activities and access] for wildlife [grizzly bear] protection may apply to geophysical activities.
6 Developed Recreation	Wildlife and Fish #2: New recreation sites [including access] will be located away from important wildlife habitat such as …meadows, winter range, etc. If the only available sites are on wildlife habitat, the recreation use season will be adjusted to avoid conflict with important wildlife [grizzly bear] use seasons.

MA	Standards for motorized access that are beneficial to grizzly bears
	Wildlife and Fish #3: New recreation sites [including access] will not be constructed in grizzly bear Situation 1 or 2 lands.
10 Big Game Winter Range (Unsuitable Timber)	Recreation #1: Motorized access, including snowmobiles, is generally not permitted during important [big game] wintering periods (12/1-4/30). However, some traditionally used roads through this MA may remain open unless continued snowmobile use limits use of the area by big game, in which case, the road would be closed. [potential grizzly bear prey and food source, especially in the spring]. Wildlife and Fish #5: Management activities [including access] will be conducted so as not to interfere with wildlife movement patterns. Wildlife and Fish #6: Standards and guidelines as specified in Appendix 8 (Grizzly Management Situation Guidelines) will be applied in all management activities on grizzly habitat. Minerals and Geology #1: Seasonal restrictions [on activities and access] may occur. Minerals and Geology #2: Seasonal constraints [on activities and access] will be stipulated for oil and gas leases and geophysical activities. Lands #1: Special uses, right-of-ways, …and easements may be permitted but will include provisions for scheduling to prevent conflict during periods of wildlife use. Facilities #1: Local roads and collectors will normally be seasonally restricted during periods of winter wildlife use (12/1-4/30).
11 Big Game Winter Range (Suitable Timber)	Recreation #1: Motorized access, including snowmobiles, is generally not permitted during important [big game] wintering periods (12/1-4/30). However, some traditionally used roads through this MA may remain open unless continued snowmobile use limits use of the area by big game, in which case, the road would be closed. [potential grizzly bear prey and food source, especially in the spring]. Wildlife and Fish #5: Standards and guidelines as specified in Appendix 8 (Grizzly Management Situation Guidelines) will be applied in all management activities in grizzly habitat. Wildlife and Fish #6: Key habitat components (…wet meadows, etc.) will be avoided when constructing roads. Timber #2: The timing (season) of timber operations, including road construction, will be coordinated with big game [potential grizzly bear prey] requirements to minimize conflict. Minerals and Geology #1: Seasonal restrictions [on activities and access] may occur. Minerals and Geology #2: Seasonal constraints [on activities and access] will be stipulated for oil and gas leases and geophysical activities. Lands #1: Special uses, right-of-ways, …and easements may be permitted but will include provisions for scheduling to prevent conflict during periods of wildlife use. Facilities #2: Roads will normally be closed during periods of big game [potential prey] winter use (12/1-4/30).
12 Big Game Summer Range	Recreation #1: ORV [off-road vehicle] use will be regulated, including permanent or seasonal use restrictions where ORV use conflicts with big game [potential prey]. Wildlife and Fish #2: Developments or uses [roads] which increase the potential for conflicts with grizzlies on Situation 1 or 2 habitat will be compensated for. Standards and guidelines as specified in Appendix 8 (Grizzly Management Situation Guidelines) will be applied for all activities on grizzly habitat. Wildlife and Fish #8: Key habitat components (…wet meadows, etc.) will be avoided when constructing roads. Minerals and Geology #1: Seasonal restrictions [on activities and access] may occur. Minerals and Geology #2: Seasonal constraints [on activities and access] will be stipulated for oil and gas leases and geophysical activities. Facilities #1: Facilities which require frequent maintenance or occupancy will normally not be allowed. Existing facilities will be evaluated and moved. If existing facilities cannot be moved, a maintenance or occupancy schedule that does not conflict with grizzly seasons of use will be established. Facilities #2: Road densities will be the minimum necessary to accomplish the timber

MA	Standards for motorized access that are beneficial to grizzly bears
	harvest goals of this MA, and construction to standards will be emphasized. Facilities #3: Roads open to the public will not exceed an average density of ¾ mile per square mile within the contiguous MA. Facilities #5: Road locations will avoid key [big game prey] summer range habitat elements (wet meadows, etc.) unless there is no reasonable alternative. Maintain a buffer of at least one sight-distance around key habitat features. Facilities #6: Temporary roads will be closed, drained and revegetated. Facilities #8: When seeding areas adjacent to open roads in grizzly Situation 1 and 2, do not use any component (such as clover) which may attract grizzly bears.
13 Old Growth	Recreation #1: ORV use is normally not permitted from 5/1-11/30. Recreation #2: When this MA is adjacent to or enclosed by big game [potential prey] winter range, ORV use will normally not be permitted at any time. Wildlife and Fish #1: Uses [including access] which conflict with grizzlies in Situation 1 and 2 will be modified or prohibited. Standards and guidelines as specified in Appendix 8 (Grizzly Management Situation Guidelines) will be applied for all activities on grizzly habitat. Minerals and Geology #1: Seasonal restrictions [on activities and access] may occur. Minerals and Geology #2: Seasonal constraints [on activities and access] will be stipulated for oil and gas leases and geophysical activities. Facilities #1: Local roads will be restricted to prevent premature cutting of the snag component. Facilities #2: Temporary roads will be closed, drained and revegetated.
14 Grizzly Habitat	MA Goal: To maintain or enhance grizzly bear habitat, reduce grizzly/human conflicts, assist in the recovery of the grizzly bear, …and provide for the maintenance or enhancement of other wildlife, especially big game [potential prey]. Recreation #2: OHV use will normally be allowed except seasonal restrictions may occur in areas such as spring range or denning habitat. Some permanent closures may be necessary in areas of concentrated grizzly bear use as identified. Recreation #3: Discourage concentrated recreation use [including access] such as campgrounds, campsites, picnic areas and concentrated fishing that could create opportunities for grizzly/human conflicts. Facilities #4: Improvements [including access] are permitted only if they do not conflict with the MA goal. Improvements that concentrate human use during the same season as grizzly use are not permitted. Wildlife and Fish #3: Grizzly bear management standards to be followed on the KNF are found in the Grizzly Bear Management Guidelines in Appendix 8. Wildlife and Fish #4: Key habitat components (…wet meadows, etc.) will be avoided when constructing roads. Timber #1: Timber harvest will be coordinated with grizzly bear habitat requirements using cumulative effects analysis, scheduling of sales to provide displacement areas, road closures and restrictions on logging seasons. Timber #4: Pre-commercial thinning …is subject to the same scheduling requirements and restriction as timber harvest. Minerals and Geology #1: Seasonal restrictions [on activities and access] may occur. Minerals and Geology #2: Seasonal constraints [on activities and access] will be stipulated for oil and gas leases and geophysical activities. Human and Community Development: Work camps [and associated access] permanent or temporary, will be restricted during seasons of grizzly bear use. Facilities #1: Facilities which require frequent maintenance or occupancy will normally not be allowed. Existing facilities will be evaluated and moved. If existing facilities cannot be moved, a maintenance or occupancy schedule that does not conflict with grizzly seasons of use will be established. Facilities #2: Roads for timber management purposes are acceptable, but all roads will be managed to minimize the potential for grizzly/human conflicts. Facilities #3: All new local roads will be closed to motorized use. Existing local roads will

MA	Standards for motorized access that are beneficial to grizzly bears
	be evaluated, and most will be closed. If administrative use is demonstrated, roads may be open temporarily. Facilities #4. Existing collector roads will be evaluated for closure on a case-by-case basis, with the intent of minimizing open road densities. The goal is ¾ mile or less of open road per square mile of area during periods of grizzly bear use. Facilities #5: For roadside seeding on open roads, eliminate any component (e.g. clover) which attracts grizzlies.
15 Timber Production	Wildlife and Fish #1: Habitat [access management] to support viable populations of presently existing species [grizzly bears] will be provided. Wildlife and Fish #4: Key habitat components (…wet meadows, etc.) will be avoided when constructing roads. Facilities #2: Temporary roads will be closed, drained and revegetated. Minerals and Geology #1: Seasonal restrictions [on activities and access] may occur.
16 Timber Production with Viewing	Wildlife and Fish #1: Habitat [access management] to support viable populations of presently existing species [grizzly bears] will be provided. Wildlife and Fish #4: Key habitat components (…wet meadows, etc.) will be avoided when constructing roads. Minerals and Geology #1: Seasonal restrictions [on activities and access] may occur. Facilities #2: Temporary roads will be closed, drained and revegetated.
17 Viewing with Timber Production	Wildlife and Fish #1: Habitat [access management] to support viable populations of presently existing species [grizzly bears] will be provided. Wildlife and Fish #4: Key habitat components (…wet meadows, etc.) will be avoided when constructing roads. Minerals and Geology #1: Seasonal restrictions [on activities and access] may occur. Facilities #3: Temporary roads will be closed, drained and revegetated.
18 Regeneration Problem Areas	Wildlife and Fish #1: Habitat [access management] to support viable populations of presently existing species [grizzly bears] will be provided. Wildlife and Fish #4: If roads are constructed, they will be located to avoid key habitat compoments such as wallows, wet meadows, bogs, etc…. Wildlife and Fish #5: Standards and guidelines as specified in Appendix 8 (Grizzly Management Situation Guidelines) will be applied for all activities on grizzly habitat. Minerals and Geology #1: Seasonal restrictions [on activities and access] may occur. Facilities #1: Temporary roads will not be constructed.
19 Steep Lands	Recreation #2: ORV use is not permitted except on open roads. Wildlife and Fish #2: If a project involving vegetative disturbance does occur, the wildlife standards [including those for grizzly bear management and access] for the closest MA will be applied. Wildlife and Fish #3: Standards and guidelines as specified in Appendix 8 (Grizzly Management Situation Guidelines) will be applied for all activities on grizzly habitat. Minerals and Geology #1: Seasonal restrictions [on activities and access] may occur. Facilities #1: Road construction is not anticipated in this MA, but are not prohibited if a location can be discovered that will protect soil and water resources.
21 Special Interest Areas	Recreation #3: ORV use will normally not be allowed except on existing roads. ORV use may be allowed on trails [as designated for motorized use] where the trail provides for ORV use on both sides of the RNA. Facilities #1: New roads are not permitted.
23 Transmission Corridor	Recreation #3: Over-the-snow vehicles are allowed when conflicts with big game [potential prey] can be avoided. Wildlife and Fish #2: Security for wildlife [including grizzly bears] will be provided by regulating access along the corridor. Wildlife and Fish #3: Any activity in this MA will be required to leave no trash or other grizzly attractant. Standards and guidelines as specified in Appendix 8 (Grizzly Management Situation Guidelines) will be applied for all activities on grizzly habitat. Minerals and Geology #1: Seasonal restrictions [on activities and access] may occur.

MA	Standards for motorized access that are beneficial to grizzly bears
	Minerals and Geology #2: Seasonal restrictions [on activities and access] may be required for oil and gas leases and geophysical activities.
24 Low Productivity Areas	Recreation #2: ORV use is not permitted. Wildlife and Fish #2: Standards and guidelines specified in Appendix 8 (Grizzly Management Situation Guidelines) will be applied for all activities on grizzly habitat. Lands #1: No special uses, right-of-ways, or easements are foreseen. If they occur, they will be handled on a case-by-case basis. Minerals and Geology #1: Seasonal restrictions [on activities and access] may occur. Facilities #1: This MA requires not roads, however, the most efficient route, or even the only route, to an adjacent MA may be through this MA. Roads may be constructed only if a suitable route can be located consistent with other standards for this MA. Facilities #2: Local roads will be closed unless inconsistent with management for adjacent MAs.
29 Primitive Recreation	Recreation #3: Trails will be closed to all motorized vehicles. Recreation #3: ORV use is not permitted. Wildlife and Fish #2: Any activity that conflicts with grizzly bear management in Situation 1 and 2 lands will be modified or prohibited. Standards and guidelines specified in Appendix 8 (Grizzly Management Situation Guidelines) will be applied for all activities on grizzly habitat.
Note: There are many other Forest Plan standards beneficial to grizzly bears that are unrelated to access management, such as standards for vegetation and habitat management. In addition, Appendix 8 of the KNF Plan provides comprehensive direction for grizzly bear habitat management in Situation 1, 2 and 3 habitat. This Appendix is too large to be included here, and is incorporated by reference.	

Table 2. Bears Out of Recovery Zone (BORZ) areas in KNF Forest Plan Management Areas that contain motorized access standards beneficial to grizzly bears. Administrative sites and the Koocanusa drawdown area are not included.

KNF BORZ	Total NFS Acres	MA 2 Acres	MA 3 Acres	MA 5 Acres	MA 6 Acres	MA 10 Acres	MA 11 Acres	MA 12 Acres	MA 13 Acres	MA 14 Acres
West Kootenai	169,705	8,020	562	2,135	569	1,937	15,281	41,133	13,578	23
Tobacco	266,947	7,025	3,903	85	127	14,666	21,294	73,770	24,010	145
Cabinet Face	26,177	0	0	0	0	1	6,760	1,279	3,898	66
Clark Fork	100,223	0	1,131	1,209	43	21,011	9,151	39,512	8,915	0
KNF BORZ	**Total NFS Acres**	**MA 15 Acres**	**MA 16 Acres**	**MA 17 Acres**	**MA 18 Acres**	**MA 19 Acres**	**MA 21 Acres**	**MA 23 Acres**	**MA 24 Acres**	**MA 29 Acres**
West Kootenai	169,705	36,181	22,757	5,362	3,727	3,478	400	0	2,922	0
Tobacco	266,947	95,476	7,027	579	447	1,421	2,231	96	10,182	0
Cabinet Face	26,177	4,207	6,847	1,550	1,041	525	0	0	0	0
Clark Fork	100,223	0	2,164	0	5,678	9,787	1,520	0	77	5

Table 3. Idaho Panhandle Forests Forest Plan Management Area Standards for motorized access in areas outside of the Selkirk and Cabinet-Yaak Recovery Zones.

MA	Standards for motorized access that are beneficial to grizzly bears
Forest-wide Goals Applicable to All MAs Across the Forest	Goal #21: Roads will be developed and managed to the minimum standards and miles necessary to meet the objectives of the management area.
1 Timber Production	Wildlife and Fish #1: Road use will be based on needs identified in project level planning, Utilize road use restrictions to enhance wildlife habitat except as needed for timber management activities.
4 Timber Production and Big Game Winter Range	Wildlife and Fish #1: Road use will be based on needs identified in project level planning. Closures as needed to meet wildlife habitat needs. Recreation #2: Motorized use is generally restricted to designated routes. Within critical habitat components motorized recreation use may be restricted to provide needed wildlife security.
5 Identified Caribou Habitat	Wildlife and Fish #1: Collector and local roads generally closed to vehicles with physical barriers preferred. Arterial roads may be closed as needed to meet threshold level for each caribou management unit. Additional seasonal closures as need to protect caribou. Recreation #2: Seasonal closures of some or all uses may be needed to protect caribou or grizzly bears.

Appendix H. Implementation Strategy for the Proposed Action (Alternative E Updated)

Kootenai National Forests

As of the end of 2009, there are eight BMUs solely managed by the KNF and one BMU co-managed with the IPNF that would not be in compliance with the standards set forth in Alternative E Updated. One of these, Keno (13), will have achieved compliance in 2010. The estimated timeline is to achieve desired conditions in the remaining BMUs is as follows: Vermillion (8), , Pulpit (10), and Roderick (11) (33%) within three years of the amendment decision date; Wanless (6), Silver Butte (7), and East Fork Yaak (16) (66%) within five years of the amendment decision date; and Bull (4) and St. Paul (5) (100%) and within eight years of the amendment decision date. Where tentative plans are available, the implementation strategy to show improvements and/or achieve desired conditions for each BMU on the KNF is outlined below:

NOTE: Red type is current condition; Blue type is Alt E standard

BMU 4-Bull (Priority 2): No specific project on the Cabinet District planned at this time. Does not currently meet Alt. E Updated OMRD [37 (36)], TMRD [29 (26)] or core [62 (63)].

BMU 5-St. Paul (Priority 1): Improvements in standards could start with implementation of the Montanore Mine project on the Libby District. NEPA analysis is on-going at this time. Does not currently meet Alt. E Updated Core [58 (60)].

BMU 6-Wanless (Priority 1): Improvements in standards could start with implementation of the Miller-West Fisher and Montanore Mine projects on the Libby District. Implementation of the Miller Project was recently enjoined (6/29/10) by U.S District Court for the District of Montana. NEPA analysis on the Montanore mine project is on-going at this time. Does not currently meet Alt. E Updated TMRD [34 (32)] or Core [53 (55)].

BMU 7-Silver Butte (Priority 2): No specific project on the Libby District is planned at this time that would improve bear habitat. OMRD and core levels met standards in place at the time during the recent NEPA analysis for Miller-West Fisher, so no additional changes were proposed. Does not currently meet Alt. E Updated OMRD [32 (26)] or core [62 (63)].

BMU 8-Vermillion (Priority 3): Planned under the Cabinet District Travel Management Planning effort and separate major watershed restoration effort. Anticipate most work being done by changing gated roads to barrier with associated long-term storage or decommissioning. Does not currently meet Alt. E Updated OMRD [33 (32)] or TMRD [24 (20)].

BMU 10-Pulpit (Priority 2): The recent BPA Libby-Troy Powerline EIS ROD on the Three Rivers District included road management decisions that will bring this BMU up to standards when it is implemented. There are no other specific projects planned at this time. Does not currently meet Alt. E Updated core [51 (52)].

BMU 11-Roderick (Priority 1): Road management decisions planned as part of the Grizzly Project on the Three Rivers District will be implemented in the next year or two and will bring standards into compliance. Implementation of the Grizzly Project was recently enjoined

(6/29/10) by U.S District Court for the District of Montana. Does not currently meet Alt. E Updated TMRD [28 (26)] or core [54 (55)].

BMU 13-Keno (Priority 1): No specific project on the Three Rivers District is planned at this time, but gate installation on Bonners Ferry District was implemented in the fall of 2009 to achieve a 1% reduction in OMRD in 2010. Hence, based on 2009 baseline conditions, it does not currently meet Alt. E Updated OMRD [34 (33)] but it does as of this writing.

BMU 16-East Fork Yaak (Priority 1): Planned as part of the Northeast Yaak project on the Three Rivers District. This project has been in litigation but was recently resolved by the court. Implementation is expected within the next few years and standards will be met. Does not currently meet Alt. E Updated TMRD [27 (26)] or core [54 (55)].

Idaho Panhandle National Forests

As of 2009, there are seven BMUs managed by the IPNF (3 in the SRZ; 4 in the CYRZ[50]) that are not in compliance with the standards set forth in Alternative E. The IPNF estimates bringing two additional BMUs into compliance in the first timeframe (three years), three in the second timeframe (five years), and two in the last timeframe (eight years).

While importance was given to achieving standards by order of BMU priority other factors such as the time needed to achieve standards was a factor considered in scheduling BMU compliance. Where tentative plans are available, the implementation strategy to show improvements and/or achieve desired conditions for each BMU on the IPNF is outlined below:

NOTE: Red type is current condition; Blue type is Alt E standard.

Blue-Grass BMU (Priority 1): No specific projects planned at this time. Decisions will address restricted roads and require coordination between the Priest Lake and Bonners Ferry Ranger Districts (IPNF), as well as between the USFS and other agencies. Does not currently meet Alt. E TMRD [28 (26)] or core [50 (55)].

Kalispell-Granite BMU (Priority 1): Implementation of the Lakeview Reeder vegetation project and related watershed restoration decisions (e.g., 308 reroute). These projects will bring the BMU into full compliance with the proposed standards. Does not currently meet Alt. E OMRD [31 (33)] TMRD [28 (26)] or core [49 (55)].

Lakeshore BMU (Priority 1): Implementation of the Lakeview Reeder vegetation project will bring the BMU into full compliance with the proposed standards. Does not currently meet Alt. E Updated Core [19 (20)].

North Lightning BMU (Priority 1): Implementation of the Lightning Creek watershed restoration decision. The decision includes the decommissioning of open and restricted roads, the conversion of an open road segment to a non-motorized trail and the conversion of a motorized trail to non-motorized. This project will bring the BMU into full compliance with the proposed standards. Does not currently meet Alt. E Updated OMRD [36 (35)].

[50] One of these, Keno (13) is reported under the Kootenai NF section.

Scotchman BMU (Priority 1): Implementation of the Lightning Creek watershed restoration decision on the Sandpoint District. The decision includes the decommissioning of open and restricted roads, and the conversion of a segment of open road to a non-motorized trail. This project will bring the BMU into full compliance with the proposed standards. Does not currently meet Alt. E Updated TMRD [27 (26)].

Grouse BMU (Priority 3): No specific projects planned at this time. Strategy will likely require a Habitat Conservation Plan between USFWS and private landowners, coordination between Sandpoint and Bonners Ferry Ranger Districts (IPNF), and changes in road use agreements. Does not currently meet Alt. E Updated OMRD TMRD [OMRD 61 (59)], TMRD [59 (55)], or core [32 (37)].

Boulder BMU (Priority 3): Implement existing road closure decisions (Katka Peak EIS) in 2011-12. Leonia EA (expected decision in 2011) will improve Core Area and TMRD. Does not currently meet Alt. E Updated TMRD [35 (29)] or core [50 (55)].

Lolo National Forest

The LNF estimates bringing BMU 22 (Mt. Headley) into compliance within eight years of the amendment decision date. Does not currently meet Alt. E Updated OMRD [38 (33)] TMRD [37 (35)] or core [51 (55)].

BMU 22-Mt. Headley (Priority 3): The Plains/Thompson Falls Ranger District completed an EIS for the Fishtrap Project in 2008. This project will decrease OMRD by 0.1 % (to 38.0 %), decrease TMRD by 2.9 % (to 33.8 %) and increase Core Area by 2.3 % (to 53.7 %). This project may be completed in 2015 to 2017 and will achieve the TMRD standard. The District plans to begin a travel management project with a dual purpose of meeting the BMU 22 Core Area and OMRD standards and providing Off-Highway Vehicle (OHV) opportunities on the district in 2010. It is likely that the planning portion of the travel plan will take 2 to 5 years and the implementation of road closures will take an additional 3 years; however, these activities are dependent on funding.

Appendix I. Primary Constituent Elements (PCEs) for Proposed Bull Trout Critical Habitat and Associated Habitat Indicators

PCE #	PCE Description	Associated Habitat Indicators
1	Permanent water having low levels of contaminants such that normal reproduction, growth and survival are not inhibited	sediment, chemical contamination/nutrients, change in peak/base flows
2	Water temperatures ranging from 2° to 15°C (36° to 59°F), with adequate thermal refugia available for temperatures at the upper end of this range. Specific temperatures within this range will vary depending on bull trout life history stage and form, geography, elevation, diurnal and seasonal variation, shade, such as that provided by riparian habitat, and local groundwater influence	temperature, refugia, average wetted width/maximum depth ratio in scour pools in a reach, streambank condition, change in peak/base flows, riparian conservation areas, floodplain connectivity
3	Complex stream channels with features such as woody debris, side channels, pools, and undercut banks to provide a variety of depths, velocities, and instream structures	large woody debris, pool frequency and quality, large pools, off channel habitat, refugia, average wetted width/maximum depth ratio in scour pools in a reach, streambank condition, floodplain connectivity, riparian conservation areas
4	Substrates of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival. A minimal amount of fine substrate less than 0.63 cm (0.25 in) in diameter and minimal substrate embeddedness are characteristic of these conditions	sediment, substrate embeddedness, large woody debris, pool frequency and quality
5	A natural hydrograph, including peak, high, low, and base flows within historic ranges or, if regulated, a hydrograph that demonstrates the ability to support bull trout populations	change in peak/base flows, increase in drainage network, disturbance history, disturbance regime
6	Springs, seeps, groundwater sources, and subsurface water connectivity to contribute to water quality and quantity	floodplain connectivity, change in peak/base flows, increase in drainage network, riparian conservation areas, chemical contamination/nutrients
7	Migratory corridors with minimal physical, biological, or chemical barriers between spawning, rearing, overwintering, and foraging habitats, including intermittent or seasonal barriers induced by high water temperatures or low flows	life history diversity and isolation, persistence and genetic integrity, temperature, chemical contamination/nutrients, physical barriers, average wetted width/maximum depth ratio in scour pools in a reach, change in peak/base flows, refugia

PCE #	PCE Description	Associated Habitat Indicators
8	An abundant food base including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish	growth and survival, life history diversity and isolation, riparian conservation areas, floodplain connectivity (importance of aquatic habitat condition indirectly covered by previous seven PCEs)
9	Few or no predatory, interbreeding, or competitive nonnative species present	persistence and genetic integrity, physical barriers

The following rationale supports that the PCEs for proposed bull trout critical habitat are thoroughly addressed in the current matrix analysis and that the environmental baseline conditions and determination for effects to the species consists of a biological and habitat component addressing in total the PCEs listed in the proposed rule for proposed critical habitat (USDI 2002a).

1. **Permanent water having low levels of contaminants such that normal reproduction, growth and survival are not inhibited.**

   Flow conditions, such as perennial or ephemeral would be analyzed through *changes in peak/base flows*, and addressed in consideration of current base flows. Changes in hydrograph amplitude or timing with respect to watershed size, geology, and geography would be considered. The level of contaminants is addressed directly by the analysis of *chemical contamination/nutrients* and *sediment*. Current listing under 303(d) status should be considered, as well as the causes for that listing. *Sediment* is considered a contaminant especially in spawning and rearing habitat and analysis would apply to this PCE.

2. **Water temperatures ranging from 2°to 15°C (36° to 59°F), with adequate thermal refugia available for temperatures at the upper end of this range. Specific temperatures within this range will vary depending on bull trout life history stage and form, geography, elevation, diurnal and seasonal variation, shade, such as that provided by riparian habitat, and local groundwater influence.**

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

3. **Complex stream channels with features such as woody debris, side channels, pools, and undercut banks to provide a variety of depths, velocities, and instream structures.**

   The analysis of *large woody debris*, such as current values and sources available for recruitment, directly addresses this PCE. Large woody debris increases channel complexity and creates pools and undercut banks. *Pool frequency and quality* would also directly address this PCE, showing the number of pools per mile as well as the amount of cover and temperature of water in the pools. *Average wetted width/maximum depth ratio in scour pools in a reach* is an indicator of channel shape and pool quality. Low ratios suggest deeper, higher quality pools. *Large pools,* consisting of a wide range of water depths, velocities, substrates and cover, are typical of high quality habitat and are a key component of channel complexity (USDI 1998e). An analysis of *off-channel habitat* would describe side-channels and other off-channel areas. *Streambank condition* would analyze the stability of the banks, including such features as undercut banks. The analysis of both *riparian conservation areas* and *floodplain connectivity* would directly address this PCE. Floodplain and riparian functions include the maintenance of habitat and channel complexity, the recruitment of large woody debris and the connectivity to off-channel habitats or side channels (USDI 1998e). Complex habitats provide refugia for bull trout and in turn, *refugia* analysis would assess complex stream channels. All of these habitat indicators consider the numerous characteristics of instream bull trout habitat and quantify critical components that are fundamental to creating and maintaining complex instream habitat over time.

4. **Substrates of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival. A minimal amount of fine substrate less than 0.63 cm (0.25 in) in diameter and minimal substrate embeddedness are characteristic of these conditions.**

   This PCE is addressed directly by analysis of *sediment* in areas of spawning and incubation and considers directly the size class composition of instream sediments, particularly fine sediments $\leq$63 mm. This PCE also is addressed directly by analysis of *substrate embeddedness* in rearing areas, which is a function of sediment size class and bedload transport. Both of these indicators would assess substrate composition and stability in relation to the various life stages of the bull trout as well as the sediment transportation and deposition. *Large woody debris* and *pool frequency and quality* affect sediment transport and redistribution within a stream and would indirectly assess substrate composition and amounts.

5. **A natural hydrograph, including peak, high, low, and base flows within historic ranges or, if regulated, a hydrograph that demonstrates the ability to support bull trout populations.**

   This PCE is addressed by analysis of *change in peak/base flows*, which considers changes in hydrograph amplitude or timing with respect to watershed size, geology, and geography. Considering *increase in drainage network* and *disturbance history* provides further information. Roads and vegetation management both have effects strongly linked to a stream's hydrograph. *Disturbance regime* ties this information together to consider how a watershed reacts to disturbance and the time required to recover back to pre-disturbance conditions.

6. **Springs, seeps, groundwater sources, and subsurface water connectivity to contribute to water quality and quantity.**

This PCE is addressed by analysis of *floodplain connectivity* and *riparian conservation areas*. *Floodplain connectivity* considers hydrologic linkage of off-channel areas with the main channel and overbank flow maintenance of wetland function and riparian vegetation and succession. Floodplain and riparian areas provide hydrologic connectivity for springs, seeps, groundwater upwelling and wetlands and contribute to the maintenance of the water table (USDI 1998e). The analysis of *changes in peak/base flows* would address subsurface water connectivity. *Increase in drainage network* would address potential changes to groundwater sources and subsurface water connectivity. C*hemical contamination/nutrients* would address concerns regarding groundwater water quality.

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

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

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

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

9. Few or no predatory, interbreeding, or competitive nonnative species present.

This PCE is addressed specifically by analysis of the biological *indicator persistence and genetic integrity*. This indicator analyzes the probability of hybridization or displacement by competitive species. An analysis of *physical barriers* may indirectly address non-native species in those areas where a barrier may prevent the invasion of non-native species.