United States Department of the Interior

U.S. Fish and Wildlife Service

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APR 2 0 2012

Subject: Mill Creek Council Mountain Project—Adams County, Idaho—Biological Opinion
In Reply Refer to: 01EIFW00-2012-F-0153 Internal Use: CONS-100b

Dear Mr. Lannom:

Enclosed are the U.S. Fish and Wildlife Service's (Service) Biological Opinion (Opinion) and concurrence with the Payette National Forest's (Forest) determinations of effect on species listed under the Endangered Species Act (Act) of 1973, as amended, for the proposed Mill Creek Council Mountain Project (Project) in Adams County, Idaho. In a letter dated February 15, 2012, and received by the Service on February 16, the Forest requested formal consultation on the determination under section 7 of the Act that the proposed project is likely to adversely affect bull trout (*Salvelinus confluentus*) and bull trout critical habitat. The Forest determined that the proposed project is not likely to adversely affect Canada lynx (*Lynx canadensis*) and northern Idaho ground squirrel (*Urocitellus brunneus brunneus*), and requested our concurrence with these determinations. The Forest also determined that the proposed project is not likely to adversely affect the wolverine (*Gulo gulo*), a candidate species under the Act; we acknowledge this determination.

The enclosed Opinion and concurrences are based primarily on our review of the proposed action, as described in your February 14, 2012 Biological Assessment (Assessment), and the anticipated effects of the action on listed species, and were prepared in accordance with section 7 of the Act. Our Opinion concludes that the proposed project will not jeopardize the survival and recovery of bull trout, or result in the destruction or adverse modification of bull trout designated critical habitat. A complete record of this consultation is on file at this office.

Clean Water Act Requirement Language:

This Opinion is also intended to address section 7 consultation requirements for the issuance of any project-related permits required under section 404 of the Clean Water Act. Use of this letter and associated Biological Opinion to document that the Army Corps of Engineers (Corps) has

fulfilled its responsibilities under section 7 of the Act is contingent upon the following conditions:

1. The action considered by the Corps in their 404 permitting process must be consistent with the proposed project as described in the Assessment such that no detectable difference in the effects of the action on listed species will occur.
2. Any terms applied to the 404 permit must also be consistent with conservation measures and terms and conditions as described in the Assessment and addressed in this letter and Opinion.

Thank you for your continued interest in the conservation of threatened and endangered species. Please contact Pam Druliner at (208) 378-5348 if you have questions concerning this Opinion.

Sincerely,

for Brian T. Kelly
State Supervisor

Enclosure

cc: NOAA, Boise (Sandow)
COE, Boise (Phillips)
PNF, McCall (Nelson, Egnew, Giambra)

BIOLOGICAL OPINION
FOR THE
MILL CREEK COUNCIL MOUNTAIN PROJECT

01EIFW00-2012-F-0153

April 2012

U.S. FISH AND WILDLIFE SERVICE
IDAHO FISH AND WILDLIFE OFFICE
BOISE, IDAHO

Supervisor Russell R. Holden for Brian T. Kelly
APR 20 2012

Date _____

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1. BACKGROUND AND INFORMAL CONSULTATION

1.1 Introduction

The U.S. Fish and Wildlife Service (Service) has prepared this Biological Opinion (Opinion) of the effects of the Mill Creek Council Mountain Landscape Restoration Project (Project) on bull trout (*Salvelinus confluentus*) and its critical habitat. In a letter dated February 15, 2012, and received on February 16, 2012, the Payette National Forest (Forest) requested formal consultation with the Service under section 7 of the Endangered Species Act (Act) of 1973, as amended, for its proposal to carry out the action. The Forest determined that the proposed action is likely to adversely affect bull trout and its critical habitat. As described in this Opinion, and based on the Biological Assessment (USFS 2012, entire) developed by the Forest and other information, the Service has concluded that the action as proposed is not likely to jeopardize the continued existence of the bull trout nor result in adverse modification of its critical habitat.

The Forest has also determined that the action is not likely to adversely affect Canada lynx (*Lynx canadensis*) or northern Idaho ground squirrel (*Urocitellus brunneus brunneus*). The Service provides concurrence with those determinations in this Opinion.

The project is expected to last 10 years from the first timber sale expected in 2012 (i.e., 2012 to 2021). The Forest has indicated that some prescribed fire actions might be extended beyond 10 years; in that case, this consultation would be re-initiated as a continuing action or the Forest may consider burning under its programmatic fire consultation "Fire Management Activities" (USFWS 2009, reference 14420-2009-F-0060).

1.2 Consultation History

The following correspondence and meetings have taken place between the Forest and the Service prior to issuance of this Opinion.

January 27, 2011	The Forest presented the Project to the Level 1 team.
October 13, 2011	The Project and preliminary effects determinations were discussed at a Level 1 team meeting.
November 18, 2011	The Service received a draft Biological Assessment (Assessment) for the Project.
November 30, 2011	The Assessment was discussed at the Level 1 team meeting.
December 7, 2011	The Service provided the Forest comments regarding the draft Assessment.
December 22, 2011	The Service received an updated Assessment from the Forest.
January 26, 2012	The Service provided the Forest comments on the second draft Assessment.

February 8, 2012	The Service received an updated Assessment from the Forest.
February 9, 2012	The Service provided the Forest comments on the third draft Assessment.
February 13, 2012	The Project, Assessment and Service comments were discussed during a telephone conference. The Service agreed that, if comments were adequately addressed, the Forest could submit the Assessment and initiate formal consultation.
February 16, 2012	The Service received a final consultation package from the Forest including a letter requesting consultation.
March 28, 2012	The Forest was given a draft of this Opinion for review and provided comments on the draft.
April 3, 2012	The Service provided another draft Opinion to the Forest.
April 3, 2012	The Forest informed the Service that they had no further comments on the draft Opinion.

1.3 Informal Consultations

1.3.1 Canada Lynx

The Forest is proposing a large, watershed scale restoration project in the Weiser River watershed with many different activities planned, including road decommissioning, timber harvest and prescribed fire, culvert replacement, and recreation and transportation management. The Project will improve forest stands throughout the watershed and improve conditions for bull trout in the East Fork Weiser River. It includes re-routing portions of Dewey Creek Road (Forest Service Road 50487) and Joker Creek Road (Forest Service Road 50486), with additional decommissioning of unauthorized roads and long-term closure of Forest Service System roads. Vegetation treatments would occur on approximately 25,000 acres and will include restoration and reserve stand treatment, prescribed fire, pre-commercial thinning, and biomass treatments. For a complete description of the Project, see the Assessment pp. 18-42. To minimize potential effects to Canada lynx, the Project will conform to Forest Plan standards concerning lynx. The primary applicable standards for this project are:

- Within lynx habitat, pre-commercial thinning will be allowed only when stands no longer provide snowshoe hare habitat (e.g., self-pruning processes have eliminated snowshoe hare cover and forage availability during winter conditions with average snow pack);
- If more than 30 percent of lynx habitat within a Lynx Analysis Unit (LAU) is currently in unsuitable condition, no additional habitat may be changed to unsuitable habitat as a result of vegetative management projects. This standard does not apply under the following scenarios: within 200 feet of Forest Service administrative sites, dwellings, and /or associated outbuildings, as needed to reduce risk of loss from wildfire; research studies and genetics tests necessary to evaluate genetically improved reforestation stock; within the wildland urban interface, in order to develop or maintain fuel profiles that are necessary to reduce the risk of wildfire; and where outweighed by demonstrable short- or long-term benefits to lynx and prey habitat conditions.

Effects to Canada lynx are analyzed based on LAUs, delineated across the Forest using fifth-level hydrologic unit (HU) boundaries. Thirty-eight LAUs have been delineated on the Forest, some of which also use sixth-level HU boundaries. This project occurs within the boundaries of the Northwest Council LAU. This LAU covers 36,406 acres of which 91 percent of the potential lynx habitat (3,728 acres) has been determined to be suitable habitat for lynx.

Lynx have not been documented in the Project area for over 30 years. The Idaho Conservation Data Center data for the Project area includes one lynx observation that was confirmed as a 22 pound female by a Conservation Officer and a Wildlife Biologist from Idaho Department of Fish and Game in 1957. Winter track transects have been conducted in the project area from 2006 through 2010 and no lynx were found.

Service concurrence that the proposed action is not likely to adversely affect Canada lynx is based on the information provided in the Assessment and the following rationales:

1. No lynx sightings have been documented in the area for over 30 years; therefore, the likelihood of lynx occurring in or near the action area is discountable.
2. If lynx are found in the Project area, the requirement to meet Forest Plan standards for lynx habitat protection would ensure that potential effects would be insignificant.
3. Modeled potential and suitable lynx habitat has been identified in the LAU. All project activities are planned to occur largely at elevations below primary lynx habitat. Only isolated and small areas of modeled lynx source habitat will be treated and not to an extent that will affect lynx habitat as directed in the Forest Plan standards.

1.3.2 Northern Idaho Ground Squirrel

No occupied northern Idaho ground squirrel (NIDGS) sites occur within the project area, but 10,021 acres of potential habitat does occur in the Weiser River analysis area. Most of this habitat has been surveyed in recent years (2009-2011). Additional surveys are required prior to ground disturbing activities and if sites are found to be occupied additional protective measures will be required. The following measures will ensure that any effects will be negligible:

- Prior to any ground-disturbing activity, including, but not limited to, the construction of log landings, vehicle turnouts or parking areas, skid trails, or road construction and maintenance, road decommissioning and obliteration, and prescribed burning, the wildlife biologist or designated wildlife staff, must conduct onsite surveys at least 3 times during a 7-day period in potential NIDGS habitat to determine the presence of NIDGS.
- NIDGS surveys would be conducted to identify the presence of NIDGS in, or within harvest units and prescribed fire areas. The wildlife biologist would determine potential habitat areas to be surveyed based on GIS maps, aerial photos, and professional expertise.

If occupied NIDGS sites are discovered, additional measures described below will be implemented to minimize potential effects:

- Mechanical thinning operations, skidding, decking, slash piling, and prescribed burning is prohibited in occupied NIDGS sites without approval by the Wildlife Biologist. If necessary, project activities may be shifted to a time period outside the NIDGS above-ground activity period (April 1 to August 15) and additional protective measures would apply as described in the Assessment on pages 30 to 32.

- If occupied sites are found adjacent to haul routes on NFS lands, a speed limit of 15 mph would be recommended where determined necessary by the Wildlife Biologist. Monitoring would also be required. If speed limits, or other protections, are needed on County or State roads, the Forest Service would work with the appropriate agencies to resolve the issue.
- In harvest units where NIDGS are found, ground-disturbing activities, including all logging and prescribed burning activities, should occur in the time period from September 1 through March 15.
- In harvest units with known NIDGS sites, slash piles created from harvest activities must be removed from landings not later than March 15 of the year immediately following the harvest year in each of these units.

Service concurrence that the proposed action is not likely to adversely affect NIDGS is based on the information provided in the Assessment and the following rationales:

1. No NIDGS are known to occur in the Project area or on the east side of the Council Ranger District.
2. Project design features and mitigative measures as described above will ensure that any potential effects will be insignificant.
3. Prescribed fire in meadows and adjacent areas will likely improve habitat for the squirrel.

Additionally, the Service recommends if occupied NIDGS sites are located within ½ mile of Project activities the Level 1 team will be notified and the effects will be reviewed to ensure they are consistent with the determination provided in the Assessment (USFS 2012b).

2. BIOLOGICAL OPINION

2.1 Description of the Proposed Action

This section describes the proposed Federal action, including any measures that may avoid, minimize, or mitigate adverse effects to listed species or critical habitat, and the extent of the geographic area affected by the action (i.e., the action area). The term "action" is defined in the implementing regulations for section 7 as "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas." The term "action area" is defined in the regulations as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action."

2.1.1 Action Area

The Project area is approximately 51,975 acres within the Weiser River Watershed, approximately two miles east of Council, Idaho, in Adams County. The project area can be reached from Council, Idaho, by taking Highway 95 north 2.3 miles to Mill Creek Road and proceeding east for two miles. The project area consists of National Forest System lands located in T16N, R1E, Sections 1 through 29 and 32 through 35; T16N, R2E, Sections 6, 7, 18, and 19; T17N, R1E, Sections 1 through 36; T17N, R2E, Sections 5 through 8, 17 through 21, and 28 through 31; T18N, R1E, Sections 8, 9, 17, 20 through 23, 25 through 28, and 31 through 36, Boise Meridian, as displayed on the Payette National Forest Travel Map.

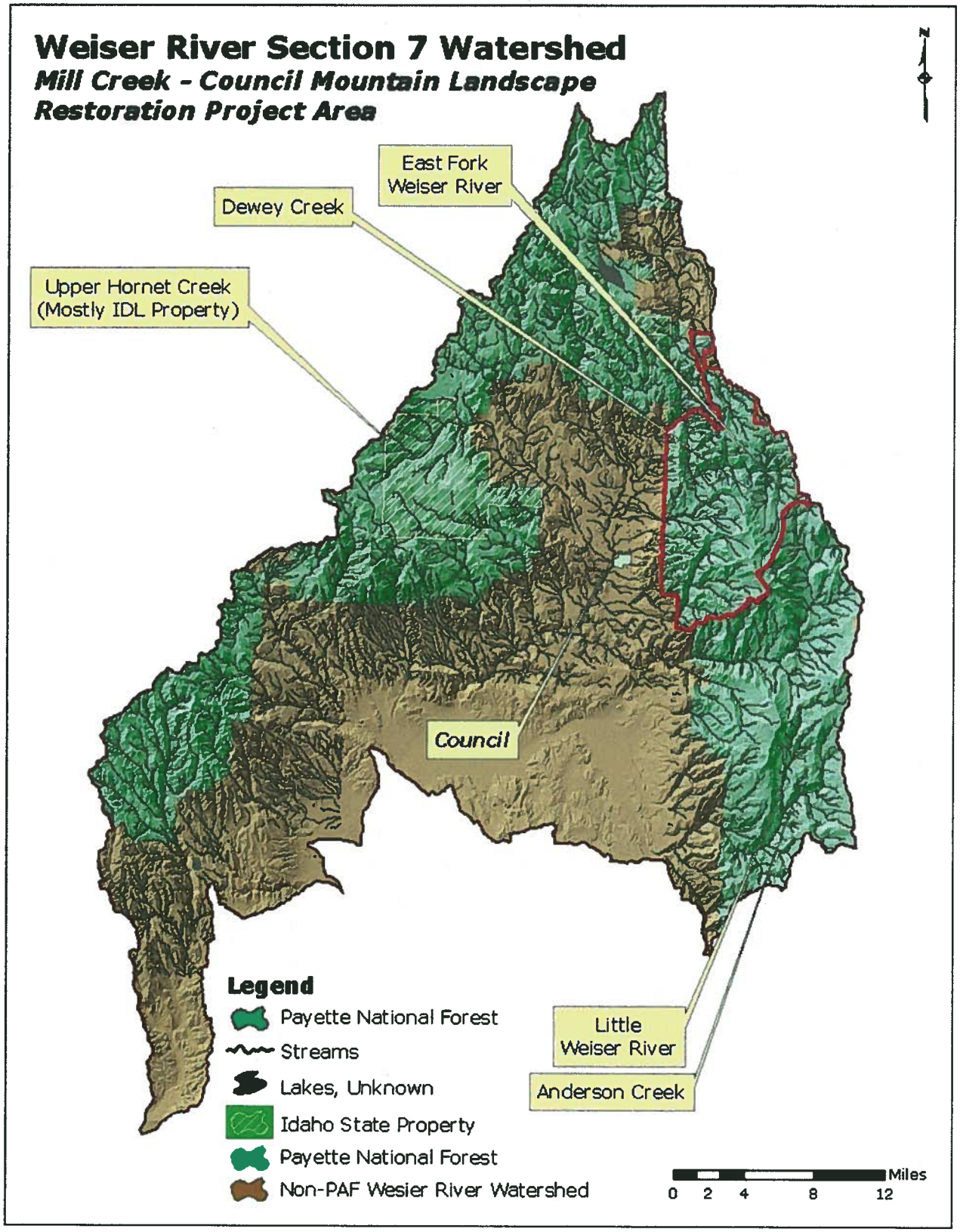

Figure 1. Action Area within the Weiser River Watershed

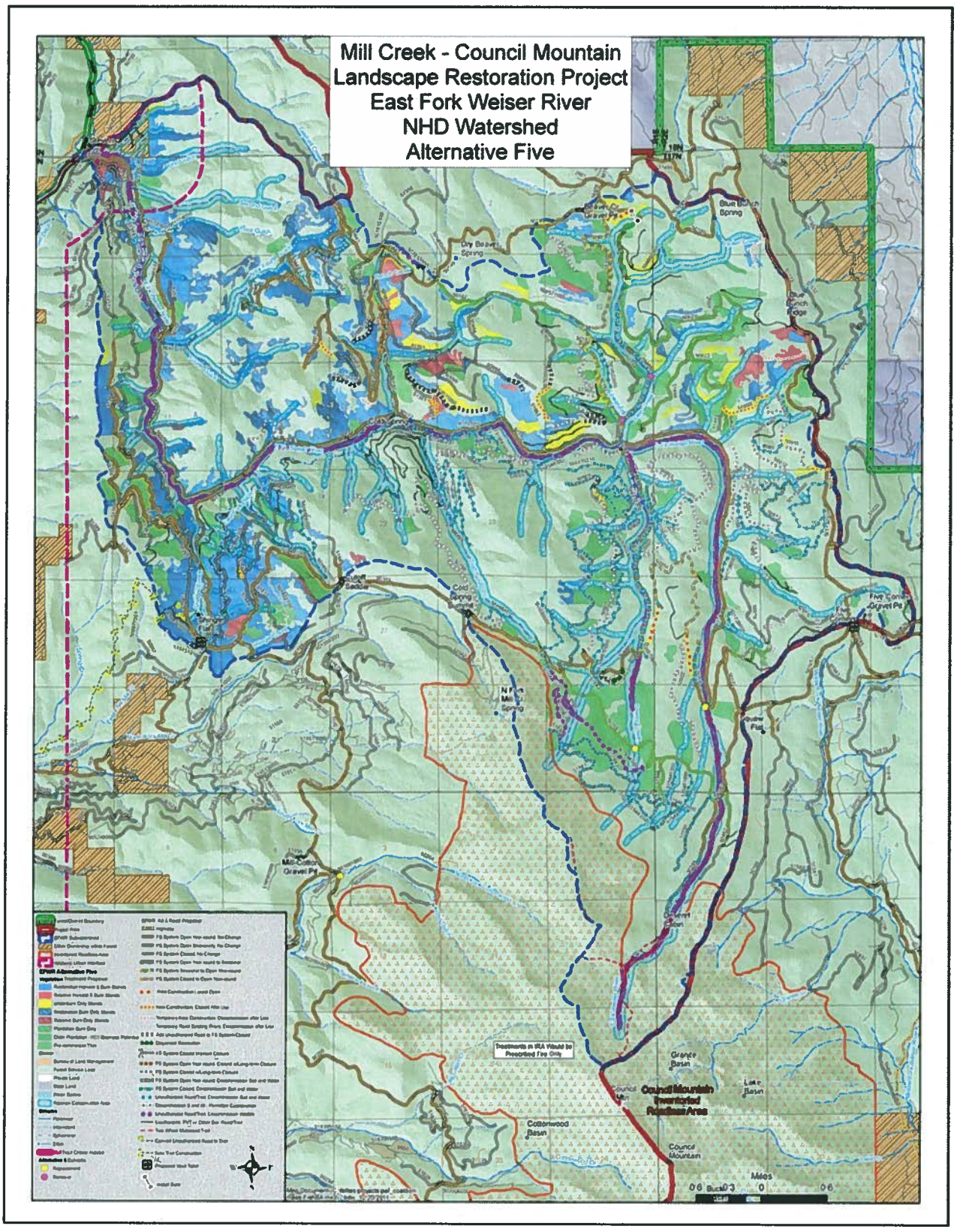

Figure 2. Proposed activities in the East Fork Weiser River subwatershed

2.1.2 Proposed Action

The Project is expected to last 10 years and is expected to begin in 2012. Project components include vegetation treatments for timber harvest, and to improve forest conditions and wildlife habitat; road construction, re-routes, decommissioning and closures; culvert removals and replacements; and recreation management. For complete descriptions of project components and definitions see the Assessment pages 18 to 42 and the wildlife biological assessment (USFS 2012b, pp. 20-25).

2.1.2.1 Vegetation Treatments

Vegetation management in the project includes restoration and reserve stand treatment, prescribed fire, precommercial thinning, and biomass treatments (see Assessment pp. 139-144 for full descriptions of these terms).

Restoration stands are generally stands where most of the trees are vigorous, mature ponderosa pine and Douglas-fir, growing at densities higher than desired conditions. Where trees occur in natural clumps, harvest prescriptions would favor that spatial pattern. In areas that have the potential to support desirable natural regeneration, small openings (0.1 to 2.0 acres) would be created where grand fir or low vigor or diseased trees occur. Stands would be thinned through commercial logging.

Reserve stands are composed primarily of climax tree species (generally grand fir) and/or trees with low vigor or insect or disease infections. These stands generally have scattered areas that are composed of vigorous, healthy seral species (ponderosa pine, western larch, and Douglas-fir). Prescriptions for Reserve stands would be developed on an individual stand basis. Stand conditions would determine the size and shape of the openings created. The objective for creating these openings is to re-establish vigorous seral tree species on these sites. In general, vigorous serals and older ponderosa pine and western larch would be retained. Openings would vary in size from 0.1 to 2.0 acres, depending on individual stand conditions.

Prescribed burning would follow after the restoration and reserve stands are harvested; other treatment areas are designated for fire prescription only. Up to 5,000 acres in the Weiser River watershed could be burned each year. The prescription is to introduce low to moderate intensity fires to promote the development of large tree forest structures mixed with a mosaic of size classes to improve forest health and resiliency.

Precommercial thinning includes stands approximately 20-50 years in age. In stands 20-30 years old, the objective is to reduce tree densities to favor more vigorous trees. The cut trees would be lopped and scattered with the expectation that fuel loads would be high for only a few years until the lopped material deteriorated. Irregular spacing and the creation of clumps would be favored to enhance wildlife habitat where practical. Overstory trees infected with dwarf mistletoe would be girdled to prevent spreading the infection. The stands 30-50 years old, are composed of trees that have an average diameter-at-breast-height DBH of 8-10 inches. Where these stands occur on gentle slopes suitable for feller bunchers and grapple skidders, the cut trees would be removed from the stands and utilized for biomass where practical.

A shaded fuelbreak would be created in the Wildland-Urban Interface (WUI) (a 0.5-mile strip where the project area is adjacent to private land) on approximately 71 acres to facilitate prescribed burning of the adjacent stands and reduce wildfire risk to private lands located in or

adjacent to the WUI. This treatment would involve piling and burning ladder fuels (excavator or hand piles) or using a masticator to reduce fuel loading. The width of the fuelbreak would range from no fuelbreak needed to up to 500 feet wide, depending on fuel type, site slope, and the risk level associated with protecting improvements.

Table 1. Treatment Type and Acreage in the East Fork Weiser River (EFWR) Portion of the Project Area[1].

TREATMENT	Acres
Restoration Stand Treatments Harvest and Burn (including 18 acres in Dewey Creek)	1965
Reserve Stand Treatments Harvest and Burn (including 0 acres in Dewey Creek)	215
Total Harvest and Burn Acres	**2180**
Open Seral Burn Only Treatments	349
Restoration Stand Burn Only Treatments	636
Reserve Stand Burn Only Treatments	47
Older Plantation Precommercial Thinning Treatments That Would Be Prescribed Burned	56
Prescribed Burning in Grass, Brush, Aspen Stands, and Scattered Timber	3671
Total Prescribed Burn (including 2180 acres of Harvest and Burn identified above; 0 acres in Dewey Creek)	**7120**
Traditional Precommercial Thinning Treatments (including 390 acres in Dewey Creek)	1241
Older Plantation Precommercial Thinning Treatments with Potential Biomass Removal (including 210 acres in Dewey Creek)	865
Total Precommercial Thinning Treatments	**2106**
Shaded Fuelbreak (WUI Area Treated)	71

[1] This portion of the Action Area includes the occupied bull trout streams and critical habitat (Assessment pp. 19-20) but not all acreages reported here are adjacent to bull trout occupied streams or within drainages containing bull trout critical habitat.

Harvest systems associated with restoration and reserve harvest and burn areas are: Tractor and off-road jammer (1770 acres); cable (62 acres); and skyline (348 acres). Harvest systems associated with precommercial thinning areas are: Tractor and off-road jammer (865 acres); lop and scatter (1241 acres).

2.1.2.2 Roads

Road Re-Routes and Changes in Status: A total of 4.8 miles of seasonally closed or closed roads will be converted to year round use. In association with the Joker Creek Road obliteration, Forest Service System Road (FSSR) 50486, the Forest will convert the status of 1.3 miles of the currently seasonally open road (FSSR 50182) to open year-round and the upper 1 mile of FSSR 50486 not being obliterated will be changed from open year-round to open seasonally because it accesses the seasonally open Porcupine Road (FSSR 50623).

In association with the Dewey Creek Road FSSR 50487 obliteration, the Forest will open 3.5 miles of FSSR 50904 (east of Dewey Creek) which is currently closed. In addition, 1.2 miles of new road construction would occur to connect both of ends of FSSR 50904 with existing roads (the top of FSSR 50487 not planned for obliteration and FSSR 50172). This road construction is also described below under "New Road Construction".

New Road Construction: Within the East Fork Weiser River watershed, a total of 5.8 miles of new permanent roads will be constructed and an additional 3.1 miles of temporary roads will be constructed, for a total of 8.9 miles of new road construction related to the Project. Of this total, 1.7 miles would occur on undeveloped ground and would be closed after the project use in the area is complete; 1.2 miles of road construction would occur on undeveloped ground associated with the road re-routing in Dewey Creek and Joker Creek; approximately 2.9 miles of construction would occur on unauthorized roads and would be added to the Forest road system; approximately 1. 0 mile of temporary road would be built to access harvest units and then obliterated after use; and 2.1 miles of road construction on unauthorized roads will occur and then be decommissioned after use.

New road construction that has potential to affect bull trout or bull trout critical habitat is the road construction that would occur east of Dewey Creek and is associated with the road re-routing work. From the maps, the Service estimates that approximately 0.5 miles of new road would be constructed approaching Dewey Creek from the east and another 0.5 miles of new road would be constructing approaching an unnamed tributary to the upper East Fork Weiser River. These road segments will be discussed in the Effects of the Proposed Action section.

In addition to the above, there may be up to one mile of unplanned and unidentified temporary roads constructed. All temporary roads will be decommissioned with obliteration following harvest.

Road Decommissioning: Within the East Fork Weiser River portion of the Project 27.2 miles of unauthorized roads and 15.0 miles of Forest system roads will be decommissioned for a total of 42.2 miles of road decommissioning. Most of this work will be road obliteration – approximately 3.0 miles would be left to passively vegetate.

- Within the Dewey Creek 7th Field Hydrologic Unit (HU) a total of 17.2 miles of roads would be decommissioned. This includes 9.1 miles of unauthorized roads and 8.1 miles of system roads.
- Within the Upper East Fork Weiser River (HU) approximately 8.9 miles of roads would be decommissioned including approximately 4.9 miles of unauthorized roads and 4.0 miles of Forest Service system roads.

The balance, 16.1 miles, of road decommissioning for watershed and soil mitigation purposes occur outside the Dewey Creek and Upper East Fork Weiser River HUs.

Long-term Closure of Roads for Soil and Watershed Mitigation and Improvement: A total of 21.1 miles of Forest Service System road would be put into long-term closure.

- Approximately 4.6 miles are in the Dewey Creek 7th field HU.
- Approximately 7.6 miles are in the upper East Fork Weiser River 7th field HU.

Road Surfacing: Road resurfacing of approximately 10.8 miles would be completed using crushed rock or pit run sources to improve the road surface and reduce watershed and fisheries impacts from sediment transport.

- Old Cascade Road 50165 in the Upper East Fork Weiser and Dewey Creek drainages—approximately 3.3 miles.
- Pothole Basin Road 50177 (Fourth Gulch)—approximately 1.5 miles.
- Resurfacing to accommodate re-routes—approximately 6.0 miles.

In addition to the areas identified above, spot gravelling of roads will occur at crossings, dips, and soft spots.

Temporary Crossings: A portable bridge across First Gulch (bull trout are not known from this stream and it is not designated critical habitat) would be temporarily installed on an existing roadbed (unauthorized road 501720310) approximately 700 feet north of the junction with FSSR 50172 to access units located north of First Gulch. The portable bridge would be removed, the crossing restored, and the proposed temporary road would be decommissioned (obliterated) upon completion of mechanized activities.

Temporary culverts would be installed where access crosses intermittent or perennial streams in planned temporary roads or closed system roads where culverts have been removed. Temporary crossings are not expected to affect bull trout, because no temporary roads or closed roads to be opened will cross occupied bull trout streams or drain to bull trout occupied streams.

Road Reconstruction: Approximately 21.2 miles of road reconstruction in the project area would occur. This would include opening closed roads for Project use. Work would consist of clearing road beds of vegetation, removing barriers, blading and reshaping of road surfaces, installing drainage features and spot surfacing where needed. The reconstructed roads in the project area would be closed after use and would be managed as system roads, except for 4.8 miles of road reconstruction that would remain open for use as part of rerouting open roads.

Road Maintenance: Approximately 51.2 miles of project-related road maintenance would occur and may include blading, culvert and ditch cleaning, removal of brush, installation of drivable dips, culvert installation and replacement and graveling.

Table 2. Summary of Proposed Road Treatments (Assessment pp. 25-26).

Road Activity		Miles	Final Disposition
Road Construction	Add to System	2.9	Unauthorized roads added to system
	Permanent	1.2	Associated with re-routes
	Permanent	1.7	Closed after use (Level 1)
	Temporary	1.0	Obliterated after use
	Temporary	2.1	Unauthorized roads decommissioned (obliterated) after use
Net Road Miles Permanently Added		**5.8**	
Road Decommissioning	Road decommissioning on unauthorized Roads	27.2	25.1 miles obliteration; 2.1 miles blocked and left to passive revegetate
	Road decommissioning on existing Forest roads	15.0	Decommissioned (obliterated)
Total Road Decommissioning		**42.2**	
Net Road Removal		**36.4**	
Long-term Closure		21.1	4.6 miles in Dewey 7th field HU 7.6 miles in upper EFWR 7th field HU
Seasonal Road and Closed System Roads Converted to Open Year-Round (associated with the re-routes)		4.8	
Seasonal Road Closures		11.6	
Road Surfacing		10.8	
Road Reconstruction		21.2	
Road Maintenance		51.2	

2.1.2.3. Culvert Replacements/Removals

Several culverts that restrict proper hydrologic function and aquatic organism passage would be replaced in order of priority:

1. Forest Service Road 50906 at upper East Fork Weiser River—replace one culvert.
2. Forest Service Road 50165 in upper Dewey Creek—replace one culvert.
3. Forest Service Road 50486 at lower Joker Creek—remove one culvert approximately 0.7 miles upstream of the confluence with the EFWR.
4. Forest Service Road 50486 at upper Joker Creek—replace one culvert approximately 1.8 miles upstream of the confluence with the EFWR.

Another culvert on a tributary on Joker Creek that is approximately 0.2 miles upstream of the EFWR that is not a fish passage barrier but is a known erosion problem will be removed as a part of the road re-route. In addition, a large number of crossings (approximately 66, most of which are not live water crossings, but include intermittent, ephemeral and ditch relief) on roads slated to be decommissioned will be rehabilitated with culverts removed, if present. Fifteen of these crossings are located within 600 feet of bull trout designated critical habitat. However, many of these crossing removals, associated with road decommissioning, fall under the Forest's programmatic consultation for "Watershed and Fish Habitat and Improvements Federal Action" (USFS 2007), completed in 2007, and again in 2009 for bull trout critical habitat (USFWS 2007; USFWS 2011 reference 14420-2009-F-0060-R001).

Mitigations for the large culvert replacements listed above include:

- Instream work will be timed to avoid spawning activity, and eggs or alevins in the substrate (it will therefore occur prior to August 15 of the year in which the work is performed);
- Erosion control measures, including water control devices, mulch, matting, vegetation and grass seed, and fertilizers, will be used to reduce erosion.

Culvert or bridge designs and protective measures are not available for all crossings proposed for upgrade at this time but they will conform to the descriptions in the Biological Assessment for Restoration Activities at Stream Crossings (USFS 2011, entire), including:

- Pre-work surveys will be conducted by the Forest Service district fisheries biologist and/or a qualified designee;
- Passive movement of fish will be achieved by slow dewatering of the site. If this method is insufficient, then block nets will be installed, and fish observed within the project area will be cleared from the area using dipping, seining or electrofishing methods;
- Fish would be transported to an unaffected portion of Dewey Creek above the in-stream work and released unharmed;
- Block nets would be removed after fish removal;
- A fish biologist will oversee all fish handling operations. Direct effects to bull trout from electrofishing would be minimized by following NMFS electrofishing criteria and Idaho Department of Fish and Game Collection Permit Requirements

A more detailed summary of associated actions is provided in Appendix H of the Assessment (pp. 128-130). Final crossing designs and implementation schedule will be reviewed with the Level 1 Team prior to implementation. Although these stream crossings would fit well under the soon to be complete stream crossing programmatic, the Forest is seeking consultation for these crossings as part of this consultation because the programmatic is not yet complete.

2.1.2.4 Recreation Management

Many short (less than 300 feet) sections of unauthorized road in the project area may currently be used by the public for camping or other types of recreation adjacent to open or seasonally open roads. These sites may be improved by surfacing or other hardening in order to reduce impacts to streams. One road identified for dispersed recreation that is longer than 300 feet (it is 0.15 miles long) would be added to the Forest Service system and designated open for dispersed recreation. One Forest Service system road (# 51856), which is currently closed, would be opened to disperse recreation. This road is approximately 0.16 miles long.

In addition, a non-motorized trail approximately 2.7 miles in length is proposed from the Mill Creek snowmobile parking area to Shingle Flat. It would begin outside of the East Fork Weiser River subwatershed but once gaining the ridge above the headwaters of the East Fork of Mill Creek, the proposed trail descends through forest and brush to meet an existing unauthorized road connecting with Forest Road 51845 to Shingle Flat. Approximately 0.5 miles of the trail would be constructed in the East Fork Weiser River subwatershed. This portion of the trail is downstream from occupied bull trout habitat and outside of critical habitat riparian conservation areas.

Improvements at Deseret Cabin Trailhead in the upper East Fork Weiser River include installing a kiosk, a vault toilet and improving parking near the intersection of road #50249 and road #50165 on the west side of road #50249. These activities are located within the footprint of existing disturbance within the RCA. A new trail bridge will be installed on a small tributary to the East Fork Weiser River located in Section 6 (see Figure 3). Currently, the crossing is a ford and the new bridge would be designed to accommodate foot, horse and motorcycle traffic and 100-year flood events.

Two additional vault toilets would be installed: one at Five Corners at the south end of the Blue Bunch Ridge Road (road # 50173) and one at Shingle Flat. The toilet at Shingle Flat would be within the RCA.

2.2 Analytical Framework for the Jeopardy and Adverse Modification Determinations

2.2.1 Jeopardy Determination

In accordance with policy and regulation, the jeopardy analysis in this Opinion relies on four components:

1. The *Status of the Species*, which evaluates the bull trout rangewide condition, the factors responsible for that condition, and its survival and recovery needs.
2. The *Environmental Baseline*, which evaluates the condition of the bull trout in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the bull trout.
3. The *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the bull trout.
4. *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the bull trout.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the bull trout current status, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the bull trout in the wild.

The jeopardy analysis in this Opinion places an emphasis on consideration of the rangewide survival and recovery needs of the bull trout and the role of the action area in the survival and recovery of the bull trout as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

In the case of bull trout, interim recovery units have been designated for the bull trout for purposes of recovery planning and application of the jeopardy standard (see *Status of the Species* section). Per Service national policy (USFWS 2006, entire), it is important to recognize that the establishment of recovery units does not create a new listed entity. Jeopardy analyses must

always consider the impacts of a proposed action on the survival and recovery of the species that is listed. While a proposed Federal action may have significant adverse consequences to one or more recovery units, this would only result in a jeopardy determination if these adverse consequences reduce appreciably the likelihood of both the survival and recovery of the listed entity; in this case, the coterminous U.S. population of the bull trout.

The joint Service and National Marine Fisheries Service (NMFS) *Endangered Species Consultation Handbook* (USFWS and NMFS 1998, p. 4-38),which represents national policy of both agencies, further clarifies the use of recovery units in the jeopardy analysis:

> When an action appreciably impairs or precludes the capacity of a recovery unit from providing both the survival and recovery function assigned to it, that action may represent jeopardy to the species. When using this type of analysis, include in the biological opinion a description of how the action affects not only the recovery unit's capability, but the relationship of the recovery unit to both the survival and recovery of the listed species as a whole.

The jeopardy analysis in this Opinion conforms to the above analytical framework.

2.2.2 Adverse Modification Determination

This Opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statutory provisions of the Act to complete the following analysis with respect to critical habitat.

In accordance with policy and regulation, the adverse modification analysis in this Opinion relies on four components:

1. The *Status of Critical Habitat*, which evaluates the rangewide condition of designated critical habitat for the bull trout in terms of primary constituent elements (PCEs), the factors responsible for that condition, and the intended recovery function of the critical habitat overall.
2. The *Environmental Baseline*, which evaluates the condition of the critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area.
3. The *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the PCEs and how that will influence the recovery role of affected critical habitat units.
4. *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the PCEs and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed Federal action on bull trout critical habitat are evaluated in the context of the rangewide condition of the critical habitat, taking into account any cumulative effects, to determine if the critical habitat rangewide would remain functional (or would retain the current ability for the PCEs to be functionally established in areas of currently unsuitable but capable habitat) to serve its intended recovery role for the bull trout.

The analysis in this Opinion places an emphasis on using the intended rangewide recovery function of bull trout critical habitat and the role of the action area relative to that intended function as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the adverse modification determination.

2.3 Status of the Species and Critical Habitat

This section presents information about the regulatory, biological and ecological status of the bull trout and its critical habitat that provides context for evaluating the significance of probable effects caused by the proposed action.

2.3.1 Bull Trout

2.3.1.1 Listing Status

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, the Jarbidge River in Nevada, north to various coastal rivers of Washington to the Puget Sound, east throughout major rivers within the Columbia River Basin to the St. Mary-Belly River, and east of the Continental Divide in northwestern Montana (Cavender 1978, pp. 165-166; Bond 1992, p. 4; Brewin and Brewin 1997, pp. 209-216; Leary and Allendorf 1997, pp. 715-720). The Service completed a 5-year Review in 2008 and concluded that the bull trout should remain listed as threatened (USFWS 2008, p. 53).

The bull trout was initially listed as three separate Distinct Population Segments (DPSs) (63 FR 31647, 64 FR 17110). The preamble to the final listing rule for the U.S. 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 Act 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.

Thus, as discussed above under the *Analytical Framework for the Jeopardy and Adverse Modification Determinations*, the Service's jeopardy analysis for the proposed Project will involve consideration of how the Project is likely to affect the Columbia River interim recovery unit for the bull trout based on its uniqueness and significance as described in the DPS final listing rule cited above, which is herein incorporated by reference. However, in accordance with Service national policy, the jeopardy determination is made at the scale of the listed species: in this case, the coterminous U.S. population of the bull trout.

2.3.1.1.1 Reasons for Listing

Though wide ranging in parts of Oregon, Washington, Idaho, and Montana, bull trout in the interior Columbia River basin presently occur in only about 45 percent of the historical range (Quigley and Arbelbide 1997, p. 1177; Rieman et al. 1997, p. 1119). Declining trends due to the combined effects of habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, angler harvest and poaching, entrainment into diversion channels and dams, and introduced nonnative species (e.g., brook trout, *Salvelinus fontinalis*) have resulted in declines in range-wide bull trout distribution and abundance (Bond 1992, p. 4; Schill 1992, p. 40; Thomas 1992, pp. 9-12; Ziller 1992, p. 28; Rieman and McIntyre 1993, pp. 1-18; Newton and Pribyl 1994, pp. 2, 4, 8-9; Idaho Department of Fish and Game *in litt.* 1995, pp. 1-3). Several local extirpations have been reported, beginning in the 1950s (Rode 1990, p. 1; Ratliff and Howell 1992, pp. 12-14; Donald and Alger 1993, p. 245; Goetz 1994, p. 1; Newton and Pribyl 1994, p. 2; Berg and Priest 1995, pp. 1-45; Light et al. 1996, pp. 20-38; Buchanan and Gregory 1997, p. 120).

Land and water management activities such as dams and other diversion structures, forest management practices, livestock grazing, agriculture, road construction and maintenance, mining, and urban and rural development continue to degrade bull trout habitat and depress bull trout populations (USFWS 2002a, p. 13).

2.3.1.2 Species Description

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, p. 19). 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, p. 165-169; Bond 1992, p. 2-3). To the west, the bull trout's current range includes Puget Sound, coastal rivers of British Columbia, Canada, and southeast Alaska (Bond 1992, p. 2-3). 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, p. 165-169; Brewin and Brewin 1997, pp. 209-216). Bull trout are wide spread throughout the Columbia River basin, including its headwaters in Montana and Canada.

2.3.1.3 Life History

Bull trout exhibit resident and migratory life history strategies throughout much of the current range (Rieman and McIntyre 1993, p. 2). 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 1 to 4 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, p. 1; Goetz 1989, pp. 15-16). 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, p. 2).

Bull trout have more specific habitat requirements than other salmonids (Rieman and McIntyre 1993, p. 4). Watson and Hillman (1997, p. 248) 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, thus 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, pp. 135-137; Rieman and McIntyre 1993, p. 2 and 1995, p. 288; Buchanan and Gregory 1997, pp. 121-122; Rieman et al. 1997, p. 1114). 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, p. 133; Rieman and McIntyre 1995, pp. 255-296). Spawning areas are often associated with cold water springs, groundwater infiltration, and the coldest streams in a given watershed (Pratt 1992, p. 6; Rieman and McIntyre 1993, p. 7; Rieman et al. 1997, p. 1117). Goetz (1989, pp. 22, 24) suggested optimum water temperatures for rearing of less than 10°C (50°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 (Goetz 1989, pp. 22-25; Pratt 1992, p. 6; Thomas 1992, pp. 4-5; Rich 1996, pp. 35-38; Sexauer and James 1997, pp. 367-369; Watson and Hillman 1997, pp. 247-249). Jakober (1995, p. 42) 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, p. 6). Juvenile and adult bull trout frequently inhabit side channels, stream margins, and pools with suitable cover (Sexauer and James 1997, pp. 368-369).

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 (Goetz 1989, p. 15). 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, p. 95; Fraley and Shepard 1989, p. 135; Pratt 1992, p. 8; Rieman and McIntyre 1996, p. 133).

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, p. 135). Depending on water temperature, incubation is normally 100 to 145 days (Pratt 1992, p.1) 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, p. 1).

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, p. 58; Goetz 1989, pp. 33-34; Donald and Alger 1993, pp. 239-243). Adult migratory bull trout are primarily piscivores, known to feed on various fish species (Fraley and Shepard 1989, p. 135; Donald and Alger 1993, p. 242).

2.3.1.3.1 Population Dynamics

The draft bull trout Recovery Plan (USFWS 2002a, pp. 47-48) defined core areas as groups of partially isolated local populations of bull trout with some degree of gene flow occurring between them. Based on this definition, core areas can be considered metapopulations. A metapopulation is an interacting network of local populations with varying frequencies of migration and gene flow among them (Meefe and Carroll 1994, p. 188). In theory, bull trout metapopulations (core areas) can be composed of two or more local populations, but Rieman and Allendorf (2001, p. 763) suggest that for a bull trout metapopulation to function effectively, a minimum of 10 local populations are required. Bull trout core areas with fewer than 5 local populations are at increased risk of local extirpation, core areas with between 5 and 10 local populations are at intermediate risk, and core areas with more than 10 interconnected local populations are at diminished risk (USFWS 2002a, pp. 50-51).

The presence of a sufficient number of adult spawners is necessary to ensure persistence of bull trout populations. In order to avoid inbreeding depression, it is estimated that a minimum of 100 spawners are required. Inbreeding can result in increased homozygosity of deleterious recessive alleles which can in turn reduce individual fitness and population viability (Whitesel et al. 2004, p. 36). For persistence in the longer term, adult spawning fish are required in sufficient numbers to reduce the deleterious effects of genetic drift and maintain genetic variation. For bull trout, Rieman and Allendorf (2001, p. 762) estimate that approximately 1,000 spawning adults within any bull trout population are necessary for maintaining genetic variation indefinitely. Many local bull trout populations individually do not support 1,000 spawners, but this threshold may be met by the presence of smaller interconnected local populations within a core area.

For bull trout populations to remain viable (and recover), natural productivity should be sufficient for the populations to replace themselves from generation to generation. A population that consistently fails to replace itself is at an increased risk of extinction. Since estimates of population size are rarely available, the productivity or population growth rate is usually estimated from temporal trends in indices of abundance at a particular life stage. For example, redd counts are often used as an indicator of a spawning adult population. The direction and magnitude of a trend in an index can be used as a surrogate for growth rate.

Survival of bull trout populations is also dependent upon connectivity among local populations. Although bull trout are widely distributed over a large geographic area, they exhibit a patchy distribution even in pristine habitats (Rieman and McIntyre 1993, p. 7). Increased habitat fragmentation reduces the amount of available habitat and increases isolation from other populations of the same species (Saunders et al. 1991, p. 22). Burkey (1989, p. 76) concluded that when species are isolated by fragmented habitats, low rates of population growth are typical in local populations and their probability of extinction is directly related to the degree of

isolation and fragmentation. Without sufficient immigration, growth of local populations may be low and probability of extinction high. Migrations also facilitate gene flow among local populations because individuals from different local populations interbreed when some stray and return to nonnatal streams. Local populations that are extirpated by catastrophic events may also become reestablished in this manner.

In summary, based on the works of Rieman and McIntyre (1993, pp. 9-15) and Rieman and Allendorf (2001, pp 756-763), the draft bull trout Recovery Plan identified four elements to consider when assessing long-term viability (extinction risk) of bull trout populations: (1) number of local populations, (2) adult abundance (defined as the number of spawning fish present in a core area in a given year), (3) productivity, or the reproductive rate of the population, and (4) connectivity (as represented by the migratory life history form).

2.3.1.4 Status and Distribution

As noted above, in recognition of available scientific information relating to their uniqueness and significance, five population segments of the coterminous United States population of the bull trout are considered essential to the survival and recovery of this species and are identified as: (1) Jarbidge River, (2) Klamath River, (3) Coastal-Puget Sound, (4) St. Mary-Belly River, and (5) Columbia River. Each of these segments is necessary to maintain the bull trout's distribution, as well as its genetic and phenotypic diversity, all of which are important to ensure the species' resilience to changing environmental conditions.

A summary of the current status and conservation needs of the bull trout within these units is provided below. A comprehensive discussion of these topics is found in the draft bull trout Recovery Plan (USFWS 2002a, entire; 2004a, b; entire).

Central to the survival and recovery of the bull trout is the maintenance of viable core areas (USFWS 2002a, p. 54). A core area is defined as a geographic area occupied by one or more local bull trout populations that overlap in their use of rearing, foraging, migratory, and overwintering habitat, and, in some cases, their use of spawning habitat. Each of the population segments listed below consists of one or more core areas. One hundred and twenty one core areas are recognized across the United States range of the bull trout (USFWS 2005, p. 9).

A core area assessment conducted by the Service for the 5 year bull trout status review determined that of the 121 core areas comprising the coterminous listing, 43 are at high risk of extirpation, 44 are at risk, 28 are at potential risk, 4 are at low risk and 2 are of unknown status (USFWS 2008, p. 29).

2.3.1.4.1 Jarbidge River

This population segment currently contains a single core area with six local populations. Less than 500 resident and migratory adult bull trout, representing about 50 to 125 spawners, are estimated to occur within the core area. The current condition of the bull trout in this segment is attributed to the effects of livestock grazing, roads, angler harvest, timber harvest, and the introduction of nonnative fishes (USFWS 2004a, p. iii). The draft bull trout Recovery Plan identifies the following conservation needs for this segment: (1) maintain the current distribution of the bull trout within the core area, (2) maintain stable or increasing trends in abundance of both resident and migratory bull trout in the core area, (3) restore and maintain suitable habitat conditions for all life history stages and forms, and (4) conserve genetic diversity

and increase natural opportunities for genetic exchange between resident and migratory forms of the bull trout. An estimated 270 to 1,000 spawning fish per year are needed to provide for the persistence and viability of the core area and to support both resident and migratory adult bull trout (USFWS 2004a, p. 62-63). Currently this core area is at high risk of extirpation (USFWS 2005, p. 9).

2.3.1.4.2 Klamath River

This population segment currently contains three core areas and 12 local populations. The current abundance, distribution, and range of the bull trout in the Klamath River Basin are greatly reduced from historical levels due to habitat loss and degradation caused by reduced water quality, timber harvest, livestock grazing, water diversions, roads, and the introduction of nonnative fishes. Bull trout populations in this unit face a high risk of extirpation (USFWS 2002b, p. iv). The draft bull trout Recovery Plan (USFWS 2002b, p. v) identifies the following conservation needs for this unit: (1) maintain the current distribution of the bull trout and restore distribution in previously occupied areas, (2) maintain stable or increasing trends in bull trout abundance, (3) restore and maintain suitable habitat conditions for all life history stages and strategies, and (4) conserve genetic diversity and provide the opportunity for genetic exchange among appropriate core area populations. Eight to 15 new local populations and an increase in population size from about 3,250 adults currently to 8,250 adults are needed to provide for the persistence and viability of the three core areas (USFWS 2002b, p. vi).

2.3.1.4.3 Coastal-Puget Sound

Bull trout in the Coastal-Puget Sound population segment exhibit anadromous, adfluvial, fluvial and resident life history patterns. The anadromous life history form is unique to this unit. This population segment currently contains 14 core areas and 67 local populations (USFWS 2004b, p. iv; 2004c, pp. iii-iv). Bull trout are distributed throughout most of the large rivers and associated tributary systems within this unit. With limited exceptions, bull trout continue to be present in nearly all major watersheds where they likely occurred historically within this unit. Generally, bull trout distribution has contracted and abundance has declined, especially in the southeastern part of the unit. The current condition of the bull trout in this population segment is attributed to the adverse effects of dams, forest management practices (e.g., timber harvest and associated road building activities), agricultural practices (e.g., diking, water control structures, draining of wetlands, channelization, and the removal of riparian vegetation), livestock grazing, roads, mining, urbanization, angler harvest, and the introduction of nonnative species. The draft bull trout Recovery Plan (USFWS 2004b, pp. ix-x) identifies the following conservation needs for this unit: (1) maintain or expand the current distribution of bull trout within existing core areas, (2) increase bull trout abundance to about 16,500 adults across all core areas, and (3) maintain or increase connectivity between local populations within each core area.

2.3.1.4.4 St. Mary-Belly River

This population segment currently contains six core areas and nine local populations (USFWS 2002c, p. v). Currently, bull trout are widely distributed in the St. Mary River drainage and occur in nearly all of the waters that were inhabited historically. Bull trout are found only in a 1.2-mile reach of the North Fork Belly River within the United States. Redd count surveys of the North Fork Belly River documented an increase from 27 redds in 1995 to 119 redds in 1999. This increase was attributed primarily to protection from angler harvest (USFWS 2002c, p. 37).

The current condition of the bull trout in this population segment is primarily attributed to the effects of dams, water diversions, roads, mining, and the introduction of nonnative fishes (USFWS 2002c, p. vi). The draft bull trout Recovery Plan (USFWS 2002c, pp. v-ix) identifies the following conservation needs for this unit: (1) maintain the current distribution of the bull trout and restore distribution in previously occupied areas, (2) maintain stable or increasing trends in bull trout abundance, (3) maintain and restore suitable habitat conditions for all life history stages and forms, (4) conserve genetic diversity and provide the opportunity for genetic exchange, and (5) establish good working relations with Canadian interests because local bull trout populations in this unit are comprised mostly of migratory fish whose habitat is mainly in Canada.

2.3.1.4.5 Columbia River

The Columbia River population segment includes bull trout residing in portions of Oregon, Washington, Idaho, and Montana. Bull trout are estimated to have occupied about 60 percent of the Columbia River Basin, and presently occur in 45 percent of the estimated historical range (Quigley and Arbelbide 1997, p. 1177). This population segment currently contains 97 core areas and 527 local populations. About 65 percent of these core areas and local populations occur in Idaho and northwestern Montana.

The condition of the bull trout populations within these core areas varies from poor to good, but generally all have been subject to the combined effects of habitat degradation, fragmentation and alterations associated with one or more of the following activities: dewatering, road construction and maintenance, mining and grazing, blockage of migratory corridors by dams or other diversion structures, poor water quality, incidental angler harvest, entrainment into diversion channels, and introduced nonnative species.

The Service has determined that of the total 97 core areas in this population segment, 38 are at high risk of extirpation, 35 are at risk, 20 are at potential risk, 2 are at low risk, and 2 are at unknown risk (USFWS 2005, pp. 1-94).

The draft bull trout Recovery Plan (USFWS 2002a, p. v) identifies the following conservation needs for this population segment: (1) maintain or expand the current distribution of the bull trout within core areas, (2) maintain stable or increasing trends in bull trout abundance, (3) maintain and restore suitable habitat conditions for all bull trout life history stages and strategies, and (4) conserve genetic diversity and provide opportunities for genetic exchange.

2.3.1.4.5.1 Columbia River Recovery/Management Units

Achieving recovery goals within each management unit is critical to recovering the Columbia River population segment. Recovering bull trout in each management unit would maintain the overall distribution of bull trout in their native range. Individual core areas are the foundation of management units and conserving core areas and their habitats within management units preserves the genotypic and phenotypic diversity that will allow bull trout access to diverse habitats and reduce the risk of extinction from stochastic events. The continued survival and recovery of each individual core area is critical to the persistence of management units and their role in the recovery of a population segment (USFWS 2002a, p. 54).

The draft bull trout Recovery Plan (USFWS 2002a, p. 2) identified 22 recovery units within the Columbia River population segment. These units are now referred to as management units.

Management units are groupings of bull trout with historical or current gene flow within them and were designated to place the scope of bull trout recovery on smaller spatial scales than the larger population segments. The action area is encompassed by the Southwest Idaho management unit.

2.3.1.4.5.2 Southwest Idaho Management Unit

The Southwest Idaho Management Unit includes the Boise River, Payette River, and Weiser River basins. Although there were likely no barriers to bull trout moving among the three basins via the Snake River, today bull trout occupy areas in the basins upstream of unsuitable habitat and dams. In the draft bull trout Recovery Plan, the basins were included on a single recovery unit because they likely functioned as a unit historically, and they collectively encompass nine key watersheds (USFWS 2002d, p. iv).

The Boise, Payette, and the Weiser rivers are tributaries to the Snake River, and are entirely within the State of Idaho. The river basins encompass about 5,742,174 acres in southwestern Idaho. The Boise River basin contains the largest area (2,567,147 acres), followed by the Payette River basin (2,113,676 acres) and the Weiser River basin (1,061,351 acres). The three basins flow south to southwest from mountains in central Idaho. Elevations range from over 10,000 feet in the Sawtooth Mountains to 2,631 feet near the confluence of the Weiser River with the Snake River. About half of the Weiser River basin is under private ownership and 43.4 percent is managed by the Forest Service and the Bureau of Land Management.

Federal and State resource agencies have documented the occurrence of bull trout throughout the Southwest Idaho Management Unit. Distribution of bull trout in the management unit comes primarily from presence-absence surveys and basin-wide surveys using electrofishing and snorkeling techniques. Comprehensive data on bull trout abundance through time in the management unit does not exist.

2.3.1.4.5.2.1 Weiser River Management/ Recovery Subunit

The Weiser River subunit consists of a single core area, the Weiser River, which includes watersheds upstream of and including the Little Weiser River. Bull trout in the Weiser River Core Area are thought to consist only of resident fish. A total of five local populations currently exist in the Weiser River Recovery Subunit: Upper Hornet Creek, East Fork Weiser River, Upper Little Weiser River, Anderson Creek, and Sheep Creek (USFWS 2002d, p. 34). Bull trout have been found in Dewey Creek and the Upper East Fork Weiser River from Bench Creek to the headwaters upstream of Dewey Creek.

Brook trout were widely stocked in the early 1900's in the Weiser River subunit and they are established in several areas throughout the basin. Although a comprehensive survey for brook trout has not been conducted in the basin, brook trout are known to co-occur with bull trout in the upper Little Weiser River, Dewey Creek, and East Fork Weiser River. Hybrids between bull trout and brook trout have been observed in the Little Weiser River and Dewey Creek (Adams 1994, p. 14).

In the Weiser River subunit, several types of barriers to migrating adult and juvenile bull trout exist, such as dams, culverts, water diversions, severely degraded habitat and natural waterfalls. Bull trout movement in the mainstem Weiser River is inhibited or prevented by excessively warm water temperatures. Construction and operation of reservoirs and water diversions have

degraded habitats, which further contributes to bull trout isolation and habitat fragmentation in the Weiser River basin. Poor water quality associated with habitat degradation has likely contributed to isolation and habitat fragmentation (USFWS 2002d, p. 28).

2.3.1.5 Conservation Needs

The recovery planning process for the bull trout (USFWS 2002a, p. 49) has identified the following conservation needs (goals) for bull trout recovery: (1) maintain the current distribution of bull trout within core areas as described in recovery unit chapters, (2) maintain stable or increasing trends in abundance of bull trout as defined for individual recovery units, (3) restore and maintain suitable habitat conditions for all bull trout life history stages and strategies, and (4) conserve genetic diversity and provide opportunity for genetic exchange.

The draft bull trout Recovery Plan (USFWS 2002a, p. 62) identifies the following tasks needed for achieving recovery: (1) protect, restore, and maintain suitable habitat conditions for bull trout, (2) prevent and reduce negative effects of nonnative fishes, such as brook trout, and other nonnative taxa on bull trout, (3) establish fisheries management goals and objectives compatible with bull trout recovery, (4) characterize, conserve, and monitor genetic diversity and gene flow among local populations of bull trout, (5) conduct research and monitoring to implement and evaluate bull trout recovery activities, consistent with an adaptive management approach using feedback from implemented, site-specific recovery tasks, (6) use all available conservation programs and regulations to protect and conserve bull trout and bull trout habitats, (7) assess the implementation of bull trout recovery by management units, and (8) revise management unit plans based on evaluations.

Another threat now facing bull trout is warming temperature regimes associated with global climate change. Our analyses under the Endangered Species Act include consideration of ongoing and projected changes in climate. The terms "climate" and "climate change" are defined by the Intergovernmental Panel on Climate Change (IPCC). "Climate" refers to the mean and variability of different types of weather conditions over time, with 30 years being a typical period for such measurements, although shorter or longer periods also may be used (IPCC 2007, p. 78). The term "climate change" thus refers to a change in the mean or variability of one or more measures of climate (e.g., temperature or precipitation) that persists for an extended period, typically decades or longer, whether the change is due to natural variability, human activity, or both (IPCC 2007, p. 78). Various types of changes in climate can have direct or indirect effects on species. These effects may be positive, neutral, or negative and they may change over time, depending on the species and other relevant considerations, such as the effects of interactions of climate with other variables (e.g., habitat fragmentation) (IPCC 2007, pp. 8–14, 18–19). In our analyses, we use our expert judgment to weigh relevant information, including uncertainty, in our consideration of various aspects of climate change.

Because air temperature affects water temperature, species at the southern margin of their range that are associated with cold water patches, such as bull trout, may become restricted to smaller, more disjunct patches or become extirpated as the climate warms (Rieman et al. 2007, p. 1560). Rieman et al. (2007, pp. 1558, 1562) concluded that climate is a primary determining factor in bull trout distribution. Some populations already at high risk, such as the Jarbidge, may require "aggressive measures in habitat conservation or restoration" to persist (Rieman et al. 2007, p. 1560). Conservation and restoration measures that would benefit bull trout include protecting high quality habitat, reconnecting watersheds, restoring flood plains, and increasing site-specific

habitat features important for bull trout, such as deep pools or large woody debris (Kinsella 2005, entire).

2.3.2. Bull Trout Critical Habitat

2.3.2.1 Legal Status

Ongoing litigation resulted in the U.S. District Court for the District of Oregon granting the Service a voluntary remand of the 2005 critical habitat designation. Subsequently the Service published a proposed critical habitat rule on January 14, 2010 (75 FR 2260) and a final rule on October 18, 2010 (75 FR 63898). The rule became effective on November 17, 2010. A justification document was also developed to support the rule and is available on our website (http://www.fws.gov/pacific/bulltrout). The scope of the designation involved the species' coterminous range, which includes the Jarbidge River, Klamath River, Coastal-Puget Sound, St. Mary-Belly River, and Columbia River population segments (also considered as interim recovery units)[1].

Rangewide, the Service designated reservoirs/lakes and stream/shoreline miles in 32 critical habitat units (CHU) as bull trout critical habitat (see Table 1). Designated bull trout critical habitat is of two primary use types: (1) spawning and rearing; and (2) foraging, migrating, and overwintering (FMO).

Table 3. Stream/shoreline distance and reservoir/lake area designated as bull trout critical habitat by state.

State	Stream/Shoreline Miles	Stream/Shoreline Kilometers	Reservoir/ Lake Acres	Reservoir/ Lake Hectares
Idaho	8,771.6	14,116.5	170,217.5	68,884.9
Montana	3,056.5	4,918.9	221,470.7	89,626.4
Nevada	71.8	115.6	-	-
Oregon	2,835.9	4,563.9	30,255.5	12,244.0
Oregon/Idaho	107.7	173.3	-	-
Washington	3,793.3	6,104.8	66,308.1	26,834.0
Washington (marine)	753.8	1,213.2	-	-
Washington/Idaho	37.2	59.9	-	-
Washington/Oregon	301.3	484.8	-	-
Total	**19,729.0**	**31,750.8**	**488,251.7**	**197,589.2**

Compared to the 2005 designation, the final rule increases the amount of designated bull trout critical habitat by approximately 76 percent for miles of stream/shoreline and by approximately 71 percent for acres of lakes and reservoirs.

[1] The Service's 5 year review (USFWS 2008, p. 9) identifies six draft recovery units. Until the bull trout draft recovery plan is finalized, the current five interim recovery units are in affect for purposes of section 7 jeopardy analysis and recovery. The adverse modification analysis does not rely on recovery units.

This rule also identifies and designates as critical habitat approximately 1,323.7 km (822.5 miles) of streams/shorelines and 6,758.8 ha (16,701.3 acres) of lakes/reservoirs of unoccupied habitat to address bull trout conservation needs in specific geographic areas in several areas not occupied at the time of listing. No unoccupied habitat was included in the 2005 designation. These unoccupied areas were determined by the Service to be essential for restoring functioning migratory bull trout populations based on currently available scientific information. These unoccupied areas often include lower mainstem river environments that can provide seasonally important migration habitat for bull trout. This type of habitat is essential in areas where bull trout habitat and population loss over time necessitates reestablishing bull trout in currently unoccupied habitat areas to achieve recovery.

The final rule continues to exclude some critical habitat segments based on a careful balancing of the benefits of inclusion versus the benefits of exclusion. Critical habitat does not include: (1) waters adjacent to non-Federal lands covered by legally operative incidental take permits for habitat conservation plans (HCPs) issued under section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended, in which bull trout is a covered species on or before the publication of this final rule; (2) waters within or adjacent to Tribal lands subject to certain commitments to conserve bull trout or a conservation program that provides aquatic resource protection and restoration through collaborative efforts, and where the Tribes indicated that inclusion would impair their relationship with the Service; or (3) waters where impacts to national security have been identified (75 FR 63898). Excluded areas are approximately 10 percent of the stream/shoreline miles and 4 percent of the lakes and reservoir acreage of designated critical habitat. Each excluded area is identified in the relevant CHU text, as identified in paragraphs (e)(8) through (e)(41) of the final rule. It is important to note that the exclusion of water bodies from designated critical habitat does not negate or diminish their importance for bull trout conservation. Because exclusions reflect the often complex pattern of land ownership, designated critical habitat is often fragmented and interspersed with excluded stream segments.

2.3.2.2 Conservation Role and Description of Critical Habitat

The conservation role of bull trout critical habitat is to support viable core area populations (75 FR 63943). The core areas reflect the metapopulation structure of bull trout and are the closest approximation of a biologically functioning unit for the purposes of recovery planning and risk analyses. CHUs generally encompass one or more core areas and may include FMO areas, outside of core areas, that are important to the survival and recovery of bull trout.

As previously noted, 32 CHUs within the geographical area occupied by the species at the time of listing are designated under the final rule. Twenty-nine of the CHUs contain all of the physical or biological features identified in this final rule and support multiple life-history requirements. Three of the mainstem river units in the Columbia and Snake River basins contain most of the physical or biological features necessary to support the bull trout's particular use of that habitat, other than those physical and biological features associated with Primary Constituent Elements (PCEs) 5 and 6, which relate to breeding habitat (see list below).

The primary function of individual CHUs is to maintain and support core areas, which (1) contain bull trout populations with the demographic characteristics needed to ensure their persistence and contain the habitat needed to sustain those characteristics (Rieman and McIntyre 1993, p. 19); (2) provide for persistence of strong local populations, in part, by providing habitat conditions that encourage movement of migratory fish (MBTSG 1998, pp. 48-49; Rieman and

McIntyre 1993, pp. 22-23); (3) are large enough to incorporate genetic and phenotypic diversity, but small enough to ensure connectivity between populations (MBTSG 1998, pp. 48-49; Rieman and McIntyre 1993, pp. 22-23); and (4) are distributed throughout the historic range of the species to preserve both genetic and phenotypic adaptations (MBTSG 1998, pp. 13-16; Rieman and Allendorf 2001, p. 763; Rieman and McIntyre 1993, p. 23).

The Olympic Peninsula and Puget Sound CHUs are essential to the conservation of amphidromous bull trout, which are unique to the Coastal-Puget Sound population segment. These CHUs contain marine nearshore and freshwater habitats, outside of core areas, that are used by bull trout from one or more core areas. These habitats, outside of core areas, contain PCEs that are critical to adult and subadult foraging, migrating, and overwintering.

In determining which areas to propose as critical habitat, the Service considered the physical and biological features that are essential to the conservation of bull trout and that may require special management considerations or protection. These features are the PCEs laid out in the appropriate quantity and spatial arrangement for conservation of the species. The PCEs of designated critical habitat are:

1. Springs, seeps, groundwater sources, and subsurface water connectivity (hyporheic flows) to contribute to water quality and quantity and provide thermal refugia.

2. Migration habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including, but not limited to, permanent, partial, intermittent, or seasonal barriers.

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

4. Complex river, stream, lake, reservoir, and marine shoreline aquatic environments and processes that establish and maintain these aquatic environments, with features such as large wood, side channels, pools, undercut banks and unembedded substrates, to provide a variety of depths, gradients, velocities, and structure.

5. Water temperatures ranging from 2 to 15 °C (36 to 59 °F), with adequate thermal refugia available for temperatures that exceed the upper end of this range. Specific temperatures within this range will depend on bull trout life-history stage and form; geography; elevation; diurnal and seasonal variation; shading, such as that provided by riparian habitat; streamflow; and local groundwater influence.

6. In spawning and rearing areas, substrate 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 sediment, generally ranging in size from silt to coarse sand, embedded in larger substrates, is characteristic of these conditions. The size and amounts of fine sediment suitable to bull trout will likely vary from system to system.

7. A natural hydrograph, including peak, high, low, and base flows within historic and seasonal ranges or, if flows are controlled, minimal flow departures from a natural hydrograph.

8. Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.

9. Sufficiently low levels of occurrence of nonnative predatory (e.g., lake trout, walleye, northern pike, smallmouth bass); interbreeding (e.g., brook trout); or competing (e.g., brown trout) species that, if present, are adequately temporally and spatially isolated from bull trout.

2.3.2.3 Current Rangewide Condition of Bull Trout Critical Habitat

The condition of bull trout critical habitat varies across its range from poor to good. Although still relatively widely distributed across its historic range, the bull trout occurs in low numbers in many areas, and populations are considered depressed or declining across much of its range (67 FR 71240). This condition reflects the condition of bull trout habitat.

The primary land and water management activities impacting the physical and biological features essential to the conservation of bull trout include timber harvest and road building, agriculture and agricultural diversions, livestock grazing, dams, mining, urbanization and residential development, and nonnative species presence or introduction (75 FR 2282).

There is widespread agreement in the scientific literature that many factors related to human activities have impacted bull trout and their habitat, and continue to do so. Among the many factors that contribute to degraded PCEs, those which appear to be particularly significant and have resulted in a legacy of degraded habitat conditions are as follows:

1. Fragmentation and isolation of local populations due to the proliferation of dams and water diversions that have eliminated habitat, altered water flow and temperature regimes, and impeded migratory movements (Dunham and Rieman 1999, p. 652; Rieman and McIntyre 1993, p. 7).

2. Degradation of spawning and rearing habitat and upper watershed areas, particularly alterations in sedimentation rates and water temperature, resulting from forest and rangeland practices and intensive development of roads (Fraley and Shepard 1989, p. 141; MBTSG 1998, pp. ii - v, 20-45).

3. The introduction and spread of nonnative fish species, particularly brook trout and lake trout, as a result of fish stocking and degraded habitat conditions, which compete with bull trout for limited resources and, in the case of brook trout, hybridize with bull trout (Leary et al. 1993, p. 857; Rieman et al. 2006, pp. 73-76).

4. In the Coastal-Puget Sound region where amphidromous bull trout occur, degradation of mainstem river FMO habitat, and the degradation and loss of marine nearshore foraging and migration habitat due to urban and residential development.

5. Degradation of FMO habitat resulting from reduced prey base, roads, agriculture, development, and dams.

The bull trout critical habitat final rule also aimed to identify and protect those habitats that provide resiliency for bull trout use in the face of climate change. Over a period of decades, climate change may directly threaten the integrity of the essential physical or biological features described in PCEs 1, 2, 3, 5, 7, 8, and 9. Protecting bull trout strongholds and cold water refugia from disturbance and ensuring connectivity among populations were important considerations in addressing this potential impact. Additionally, climate change may exacerbate habitat degradation impacts both physically (e.g., decreased base flows, increased water temperatures) and biologically (e.g., increased competition with nonnative fishes).

2.4 Environmental Baseline of the Action Area

This section assesses the effects of past and ongoing human and natural factors that have led to the current status of the species, its habitat and ecosystem in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the action area that have already undergone section 7 consultations, and the impacts of state and private actions which are contemporaneous with this consultation.

2.4.1 Bull Trout

2.4.1.1 Status of the Bull Trout in the Action Area

Bull trout are currently known to use spawning habitat in at least eight streams or stream complexes (local populations) in the Weiser River core area. Local populations include: Sheep Creek, Anderson Creek and the Upper Little Weiser River in the Little Weiser drainage; Upper Hornet Creek, Placer-North Creek, and Olive Creek in the Hornet Creek drainage; and the Upper East Fork Weiser River and Dewey Creek in the Upper East Fork Weiser River drainage (USFWS 2002d, p. 14).

In the Upper East Fork Weiser River, the portion of the Action Area of concern for this Opinion, bull trout have been found in Dewey Creek and the Upper East Fork Weiser River from Bench Creek to the headwaters upstream of the confluence of Dewey Creek. In 2001, Idaho Department of Fish and Game performed electrofishing surveys in Dewey Creek and East Fork Weiser River and they estimated bull trout densities in Dewey Creek to be 0.06 fish per m^2 and 0.008 fish per m^2 in the upper East Fork Weiser River (Assessment p. 110). A bull trout (225 mm) that was collected 100 meters downstream of the East Fork Ditch diversion (Assessment p. 110) was the furthest downstream bull trout observation in the East Fork Weiser River. The Forest collected two bull trout in the upper East Fork Weiser River and 31 in Dewey Creek in 2010; populations may be increasing in Dewey Creek (Assessment p. 110). Two suspected hybrids were also collected at the same location.

2.4.1.2 Factors Affecting the Bull Trout in the Action Area

As previously described in the Status of the Species section of this Opinion, bull trout distributions, abundance, and habitat quality have declined rangewide primarily from the combined effects of habitat degradation and fragmentation, blockage of migratory corridors,

poor water quality, angler harvest, entrainment, and introduced non-native fish species such as brook trout.

Baseline conditions that were analyzed by the Forest in the Weiser drainage revealed high road densities, valley bottom roads, a lack of large woody debris, and excess sediment loads that were creating unsuitable habitat conditions in bull trout watersheds. The mainstem Weiser River has unacceptable habitat conditions the majority of the year (McGee and Burns 2001, pp. 122-167). The Assessment (pp. 110-120) also describes unacceptable habitat conditions in the Upper East Fork Weiser River. Most watershed condition indicators are functioning at risk or functioning at unacceptable risk. The presence of culvert barriers, dams, water diversions, and high water temperatures in the Weiser River subbasin suggest there is little connectivity for refounding subpopulations.

Bull trout are known to hybridize with introduced brook trout and hybridization is a potential factor in population declines. Although a comprehensive survey for brook trout has not been conducted for the basin, brook trout are known to co-occur with bull trout in the upper Little Weiser River, Dewey Creek, East Fork Weiser River, and only brook trout occur in Mill Creek, Beaver Creek, North Fork Weiser River, and East Fork Weiser River.

Wildfire is a common occurrence on the Forest generally, and fire suppression is believed to have resulted in forest vegetation conditions outside what would be expected without such management. In 2003, there was an escaped wildfire in the East Fork Weiser River subwatershed that reached 1,300 acres. Debris from the Hall Fire was responsible for the loss of the East Fork Weiser River bridge and may have led to some of the road damage as well.

The East Fork Weiser River subwatershed experienced extensive flooding in 1997 and again in 2010. Because of timber harvest (Equivalent Clearcut Area [ECA] = 17%) and road construction, the watershed is severely compromised from a hydrologic perspective. Roads were initially constructed adjacent to stream channels and they generally restrict the floodplain throughout the subwatershed. In both 1997 and 2010, heavy spring rains led to extensive flooding and damaged roads in several places. Most significantly, the floodwaters, carrying debris from the decade-old Hall Fire destroyed the East Fork Weiser River bridge on Forest Service System Road (FSSR) 172 near Idaho Highway 95 and damaged the road in several places. Road density in the East Fork Weiser River analysis area is 5.7 mi/mi^2. Even after this Project is implemented, there will still be a large number of both FSSRs and unauthorized routes that could be obliterated or otherwise decommissioned. At 4.3mi/mi^2, the anticipated result of the Project, the subwatershed will continue to be functioning at unacceptable risk (FUR).

Timber harvest has been important in the East Fork Weiser River subwatershed for at least 50 years. As a result, and in combination with fire suppression, the forest vegetation has been altered considerably and most floodplain areas contain roads that restrict the abilities of streams to meander and accommodate flood flows and replace properly functioning riparian ecosystems. Many of these roads cross streams, some with bridges, some with barrier culverts, and some with fords. Fords can be problems if they occur in spawning habitat, but their most serious effect is probably increased sediment delivery and, to a lesser extent, exposing more surface to solar input.

Grazing is an activity that has taken place in this area since the late 1800s and has contributed to the existing condition. The Forest began monitoring effects of grazing in watersheds to

determine effects of changes in grazing management that were expected to reduce potential adverse effects to native fish and riparian habitat. Bull trout spawning and rearing areas are located in the upper East Fork Weiser River, Dewey Creek, and Louie Creek (a tributary to Dewey Creek). In 2003, riparian exclosures were installed on approximately 6 miles of bull trout spawning habitat to mitigate the effects of cattle grazing. Monitoring results indicate that the fencing is generally effective at keeping cattle out of the stream during the bull trout spawning period, but not entirely effective (Assessment pp. 12-13). According to the Assessment (p. 13) livestock grazing has undoubtedly altered vegetal and streambank conditions, with likely accelerated erosion from loss of bank cover.

Changes in hydrology and temperature caused by changing climate have the potential to negatively impact aquatic ecosystems in Idaho, with salmonid fishes being especially sensitive. Average annual temperature increases due to increased carbon dioxide are affecting snowpack, peak runoff, and base flows of streams and rivers (Mote et al. 2003, p. 45). Increases in water temperature may cause a shift in the thermal suitability of aquatic habitats (Poff et al. 2002, p. iii). For species that require colder water temperatures to survive and reproduce, warmer temperatures could lead to significant decreases in available suitable habitat. Increased frequency and severity of flood flows during winter can affect incubating eggs and alevins in the streambed and over-wintering juvenile fish. Eggs of fall spawning fish, such as bull trout, may suffer high levels of mortality when exposed to increased flood flows (Independent Scientific Advisory Board 2007, p. iv).

The environmental baselines for the watershed condition indicators (WCIs) are summarized below in Table 4. For more detailed information regarding the current baseline conditions, see the Assessment, Appendix D (pp. 110-120).

Table 4. Matrix of Pathways and Indicators (MPI) for the Upper East Fork Weiser River

Pathways and Indictors	Environmental Baseline Condition		
	Upper East Fork Weiser River		
	Functioning Appropriately	Functioning at Risk	Functioning at Unacceptable Risk
Local Population Character			
Local Population Size		X	
Growth and Survival		X	
Life History Diversity and Isolation			X
Persistence and Genetic Integrity			X
Water Quality			
Temperature		X	
Intragravel Quality			X
Chemical Contaminants/Nutrients	X		
Habitat Access			
Physical Barriers			X
Habitat Elements			
Substrate Embeddedness			X
Large Woody Debris	X		
Pool Frequency		X	
Pool Quality		X	
Off-channel Habitat		X	
Habitat Refugia			X
Width/Depth Ratio		X	
Streambank Condition			X
Floodplain Connectivity			X
Flow/Hydrology			
Change in Peak/Base Flow			X
Drainage Network Increase		X	
Watershed Conditions			
Road Density and Location			X
Disturbance History			X
Riparian Conservation Areas			X
Disturbance Regime			X
Integration of Species and Habitat Conditions			X

2.4.2 Bull Trout Critical Habitat

2.4.2.1 Status of Bull Trout Critical Habitat in the Action Area

The Service published a final rule designating critical habitat for bull trout rangewide on October 18, 2010 (effective November 17, 2010). The East Fork Weiser River is located within the Weiser River Critical Habitat Subunit (CHSU) of the Southwest Idaho River Basins Critical Habitat Unit (critical habitat unit 26), one of 32 designated critical habitat units (CHUs). Within the CHU there are 8 subunits, including the Weiser River CHSU. The East Fork Weiser River from its confluence with the Weiser River upstream 15.2 miles, and including Dewey Creek, to its headwaters provides spawning and rearing habitat (Figure 3).

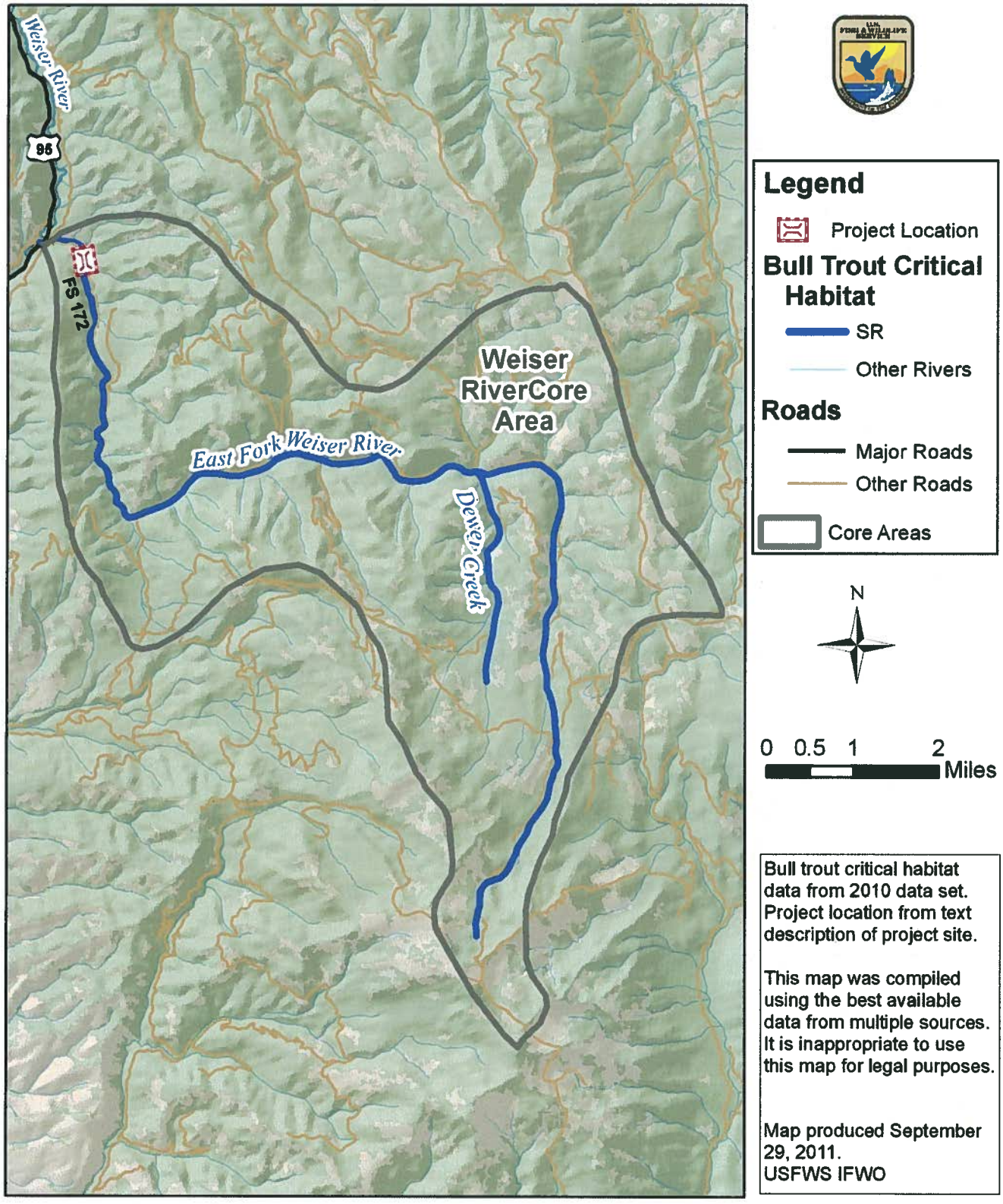

Figure 3. Weiser River Core Area critical habitat and project location.

2.4.2.2 Factors Affecting Bull Trout Critical Habitat in the Action Area

Primary constituent elements (PCEs) (see Section 2.3.2.2) are used to describe biological and physical habitat features that are essential to the conservation of bull trout. The Matrix of Pathways and Indicators (MPI), as summarized in Table 4, provides a means to assess the baseline condition of the PCEs in the action area and the effects of the action on the PCEs. Table 5, below, illustrates the link between PCEs and the associated pathways and indicators evaluated in the environmental baseline.

Table 5. The Primary Constituent Elements of bull trout critical habitat and the corresponding Pathways and Indicators used to describe existing conditions and functionality in the watershed.

PCE	PCE Description	Associated Pathways and Indicators
1	Springs, seeps, groundwater sources, and subsurface water connectivity (hyporehic flows) to contribute to water quality and quantity and provide thermal refugia.	Sediment, Channel Conditions and Dynamics (wetted width/maximum depth ratio, streambank condition, floodplain connectivity), riparian conservation areas.
2	Migration habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including, but not limited to permanent, partial, intermittent or seasonal barriers.	Temperature, sediment/turbidity, chemical contamination/nutrients, physical barriers, change in peak/base flow, width/depth ratio, refugia
3	An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.	Water quality (temperature, sediment, chemical and nutrient contaminants), Channel Conditions and Dynamics (wetted width/maximum depth ratio, streambank condition, floodplain connectivity), changes in peak/base flows, riparian conservation areas
4	Complex river, stream, lake, reservoir, and marine shoreline aquatic environments and processes with features such as large wood, side channels, pools, undercut banks and substrates, to provide a variety of depths, gradients, velocities, and structure.	Habitat elements (substrate embeddedness, LWD, pools frequency and quality, large pools, off-channel habitat, and refugia)
5	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.	Temperature
6	In spawning and rearing areas, substrate 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 sediment, generally ranging in size from silt to coarse sand, embedded in larger substrates, is characteristic of these conditions. The size and amounts of fine sediment suitable to bull trout will likely vary from system to system.	Sediment, substrate embeddedness
7	A natural hydrograph, including peak, high,	Flow/ Hydrology (Changes in Peak /Base flows and

PCE	PCE Description	Associated Pathways and Indicators
	low, and base flows within historic and seasonal ranges or, if flows are controlled, they minimize departures from a natural hydrograph.	Drainage Network Increase)
8	Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.	Floodplain connectivity, peak/base flow, water quality (Temperature, sediment/turbidity, Chemical Contaminants and Nutrients)
9	Sufficiently low levels of occurrence of nonnative predatory (e.g. lake trout, walleye, northern pike, smallmouth bass); interbreeding (e.g., brook trout); or competing (e.g., brown trout) species that, if present, are adequately temporally and spatially isolated from bull trout.	Persistence and Genetic Integrity

Factors affecting critical habitat are similar to those described above under the species. The Assessment provides detailed information regarding the condition of the habitat in the action area and the factors that influence the habitat condition (Assessment pp. 11-14; pp. 110-120). In summary, the baseline, as presented in Table 4, indicates that most of the pathways and indicators and therefore corresponding PCEs are functioning at unacceptable risk.

Habitat conditions have been altered by roads, impassable culverts, wildland fires, and livestock grazing. Most of the surface fines within the subwatershed are likely due to road density. Culverts at the mouth of the East Fork Weiser River (Highway 95 crossing) and near the headwaters (Forest road #50906) restrict or block upstream fish movement. On Bench Creek, there is a barrier culvert near the mouth (Forest road #50172). There is one barrier culvert on upper Dewey Creek (Forest road #50487), and two on Joker Creek (Forest road #50486). Two barrier culverts also occur on Cold Springs Creek, a perennial tributary to the East Fork Weiser River upstream of Bench Creek that could serve as an area for expansion of the headwater bull trout population.

The presence of barrier culverts, dams, water diversions, and high water temperatures in the Weiser River subbasin suggest there is little connectivity for re-founding subpopulations; thus, the discontinuity in critical habitat. There is no recent evidence of fluvial bull trout in the Weiser River subbasin. Overwintering habitat for migratory fish appears to be limited or nonexistent in the Weiser River. Given these conditions, PCE 2 is degraded in the analysis area.

The Hall Fire occurred in 2003 and burned approximately 1,800 acres in the Weiser River watershed including 1,300 acres in the East Fork Weiser River subwatershed. The fire burned both the east and west sides of the East Fork downstream of Fourth Gulch, which is downstream of known bull trout distribution. Trees killed by the fire have since been recruited to the stream channel and large woody debris recruitment is expected to continue in the portion of the East Fork burned in the Hall Fire. Much of the debris that caused the East Fork Weiser River bridge failure was a result of large woody debris recruitment from the Hall Fire. Fine sediment within tributary streams has likely increased since the wildfire. High road density, and in particular roads located in the riparian conservation areas, is a factor affecting critical habitat. Elevated sediment/turbidity in the action area is likely affecting PCEs (such as 1, 3, 4, 6, 7 and 8).

Roads within the riparian conservation areas also reduce floodplain connectivity, which influences primarily PCEs 1 and 8. The overall road density is 5.7 miles per square miles in the

subwatershed and road density within the riparian conservation areas is 9.2 miles per square mile, which is high. The high road density has led to loss of shade, large woody debris recruitment, and lowered sediment buffering ability.

Stream temperature is an important component of nearly all the bull trout critical habitat PCEs. In the action area, summer stream temperatures may exceed ranges described in PCE 5 and at times may pose a partial thermal barrier for bull trout, thereby affecting PCE 2.

Grazing is an activity that has taken place in this area since the late 1800s and has contributed to the existing condition. The Forest began monitoring effects of grazing in watersheds to determine effects of changes in grazing management that were expected to reduce potential adverse effects to native fish and riparian habitat. Riparian exclosures were installed in 2003 on approximately 6 miles of bull trout spawning habitat in the upper watershed (including Dewey Creek and Louie Creek tributary to Dewey Creek) to reduce the impacts livestock have on spawning habitat. Livestock grazing has altered the riparian vegetation in some locations in the subwatershed (Assessment p. 13).

2.5 Effects of the Proposed Action

Effects of the action consider the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action. These effects are considered along with the environmental baseline and the predicted cumulative effects to determine the overall effects to the species. Direct effects are defined as those that result from the proposed action and directly or immediately impact the species or its habitat. Indirect effects are those that are caused by, or will result from, the proposed action and are later in time, but still reasonably certain to occur. An interrelated activity is an activity that is part of the proposed action and depends on the proposed action for its justification. An interdependent activity is an activity that has no independent utility apart from the action under consultation.

This Project involves a large number of various activities (Assessment p. 18-42). While many of the long-term effects of the Project (restore forest stands and improve function of soil, water, riparian, and aquatic resources) will be beneficial to bull trout, there is potential for temporary (less than one year) and short-term (one to three years) negative impacts during project implementation. Long-term adverse effects to bull trout and critical habitat are generally not expected to occur, and the long-term effects of this Project are expected to be beneficial. Modifying use of Project area roads and trails, decommissioning roads, and rerouting roads are expected to improve habitat conditions by reducing sediment and improving vegetation along streams in the long-term. Replacing fish barriers may also provide additional habitat for bull trout.

Project implementation is expected to create adverse effects to water quality (suspended sediment), potential effects to habitat (temporary passage blockage, sediment deposition, and streambank alteration), and direct effects to fish related to disturbance, handling and relocation, in the short term. The magnitude of these effects will vary as a result of the nature, extent, and duration of the activities in the water or riparian area and whether bull trout are present at the time of implementation. The Forest determined that implementation of the proposed action was "Likely to Adversely Affect" bull trout within the action area.

Project design features (PDFs) (Assessment p. 30-42) were developed to mitigate and minimize any potential effects on bull trout and habitat. The PDFs will serve to reduce the impacts of the construction on the environment and, by extension, bull trout. This Opinion will analyze the likelihood and magnitude of these potential effects, taking into consideration the Project design features.

2.5.1 Direct and Indirect Effects of the Proposed Action

After examining the effects discussion in the Assessment (pp. 43-55) and considering the Project design features, the main effects to bull trout from Project implementation are sediment related effects, potential for chemical contamination from petroleum products, and adverse effects, including injury and possible mortality, during fish handling. Other impacts will result from blocked passage during stream dewatering, potential stranding, and general disturbance from in-stream work or construction activities occurring near occupied bull trout habitat. These are addressed below.

As described in Section 2.1.2 of this Opinion, the project includes three main categories of activities with potential direct and indirect effects on bull trout and bull trout critical habitat: road work, culvert replacements/removals and vegetation treatments (harvest and burn, precommercial thinning, prescribed fire and shaded fuel breaks).

2.5.1.1 General Sediment Related Effects

Sediment is a very important stressor to salmonids and can affect them in both direct and indirect ways. Bull trout are highly susceptible to sediment inputs and require the lowest turbidity and suspended sediment levels of all salmonids for spawning, incubation, and juvenile rearing. The Service knows of no positive effects to salmonids from increased sediment; while the potential negative impacts of increased suspended sediment on bull trout and other salmonids have been well documented (e.g., Bakke et al. 2002, p.1; Newcombe and MacDonald 1991, pp. 72-73; Newcombe and Jensen 1996, pp. 700-715, Bash et al. 2001, p. 24).

Increased sediment and suspended solids have the potential to affect primary production and benthic invertebrate abundance, due to reductions in photosynthesis within murky waters. Thus, food availability for fish may be reduced as sediment levels increase (Cordone and Kelley 1961, pp. 189-190; Lloyd et al. 1987, p. 18; Henley et al. 2000, pp. 129-133). Sediment can also reduce health of in-stream plants, reducing cover for fish making them more vulnerable to predation (Waters 1995, pp. 111-116). Pools, which are an essential habitat type, can be filled by sediment and degraded or lost (Megahan 1982, p. 114).

Increases in suspended sediment have been shown to affect salmonid behavior in several ways. Social (Berg and Northcote 1985, p. 1410) and feeding behavior can be disrupted by increased levels of suspended sediment. Fish may avoid high concentrations of suspended sediments altogether (Hicks et al. 1991, p. 483-485). Even small elevations in suspended sediment may reduce feeding efficiency and growth rates of some salmonids (Sigler et al. 1984, p. 142). Based on their experiments with juvenile rainbow trout (*Oncorhynchus mykiss)*, Suttle et al. (2004, p. 973) concluded that "fine sediment deposition, even at low concentrations, can decrease growth and survival of juvenile salmonids." They found "no threshold below which fine-sediment addition is harmless."

Sediment introduced into streams does not just adversely affect fish at an individual physical level but can adversely affect fish populations. Deposition of silt on spawning beds can fill interstitial spaces in spawning areas with sediment (Phillips et al. 1975, p. 461; Myers and Swanson 1996, p. 245; Wood and Armitage 1997, p. 203) impeding water flow, reducing dissolved oxygen levels, and restricting waste removal which reduces the survival of fish embryos (Chapman 1988, pp. 1-5; Bjornn and Reiser 1991, p. 98).

Newcombe and Jensen (1996, pp. 720-727) and Bash et al. (2001, p. 24) provide syntheses of research that has been conducted on the effects of suspended sediment on the physical condition of salmonids. Newcombe and Jensen used their syntheses of field and laboratory data on effects from sediment to develop a dose response model and described 14 severity levels of effects, ranging from "no behavioral effects" (0) to greater than 80 to 100 percent mortality (14). This range is divided into four major categories, including "nil effect," "behavioral effects," "sublethal effects," and "lethal and Para lethal effects." Bash et al. (2001, p. 2) further refine the categories by describing whether the effect is behavioral, physiological, or habitat-based. For example, Newcombe and Jensen (1996, pp. 694-698) report that suspended sediment concentrations of 500 mg/l for 3 hours caused signs of sublethal stress in adult steelhead, which we would also expect for bull trout. If suspended sediment concentrations reach 3,000 mg/l for up to an hour it may cause moderate physiological stress (Newcombe and Jensen 1996, pp. 698-702), and could result in gill trauma and/or temporary adverse changes in blood physiology such as elevated blood sugars, plasma glucose, or plasma cortisol (Servizi and Martens 1987 in Bash et al. 2001, p. 16; Servizi and Martens 1992, pp. 1389-1390; Bash et al. 2001, p. 17). Lethal effects can occur if suspended sediment concentrations reach 22,026 mg/l at any one time, or remain at concentrations of 3,000 mg/l for 3 hours (Newcombe and Jensen 1996, pp. 698-702).

There are several difficulties in using this information to try and anticipate what amount of sediment in the water column is likely to be produced by a project and what impacts they might cause to fish. First, field turbidity monitoring uses turbidimeters that record data in nephelometric turbidity units (NTUs) while Newcombe and Jensen's data is in milligrams/liter (mg/l). And second, turbidity as a result of projects is not consistent and can be present in short intense bursts or a lower level over long periods of time.

While there is a relationship between suspended solids measured in mg/l and NTUs, it is highly variable because of differences in many factors including water temperature and particle size. While developing Total Maximum Daily Load (TMDL) criteria for the Umatilla River Basin, Oregon used regression analysis to express the suspended solids (in mg/l) that represented 30 NTU for 14 watersheds (Oregon Department of Environmental Quality, p. A6-3). Values ranged from 60 to 110 mg/l for the target value of 30 NTUs. If a similar relationship existed with Newcombe and Jensen's data, their 3 hour lethal range of 3,000 mg/l could equate to an NTU reading of between 833 and 1,764 which is a very wide potential range of values.

Because culvert replacement and removal is one of the most common construction activities in fish bearing streams, there is more specific information on the amount of sediment released, degree of turbidity, turbidity plume length and plume duration generated by culvert projects. Culvert removal has a high potential for releasing sediment because the soil is disturbed when removing large culverts, soil is disturbed when the channel is reconfigured and then water is reintroduced into that disturbed site.

Bakke et al. (2002, p.1) reported maximum suspended sediment levels of 514 to 2,060 mg/l associated with culvert removals near Olympia, Washington. These concentrations did not last for more than one hour. Both Jakober (2002, p. 6) and Casselli et al. (2000, pp. 8-9) reported that turbidity decreased to pre-project levels within about 24 hours after flow reintroduction. Casselli et al. (2000, pp. 8-9) noted that sediment levels remained at pre-project levels about 1.5 miles downstream of the project site. Idaho's Department of Environmental Quality adopted turbidity criteria of 50 NTU for protection of cold water biota (Bash et al. 2001, p. 67). That NTU level was based on data from Lloyd et al. 1987 (*in* Bash et al. 2001, p. 67) suggesting that salmonids reacted negatively by beginning to move away from areas when the turbidity reaches 50 NTU.

Increasing suspended sediment in rivers and streams during low-flow periods, when background levels of sediment in the stream system are generally very low or absent, has greater potential to affect fish. Bash et al. (2001, p. 16) reported that background mucus levels of fish are lower during this time period, which may result in amplified effects to fish, associated with the increased sediment inputs. This is in contrast to sediments that may be mobilized during the first high flow events following a construction activity, when background sediment levels are higher. Additional suspended sediment associated with a project is expected to move through the water column, becoming deposited on the substrate in areas of lower velocity, including pools or slackwaters. Higher flows within the year following project implementation are expected to remobilize sediments, carrying them further downstream to be deposited. Eventually most sediments mobilized during project implementation will be carried downstream to larger streams, rivers, or water bodies within the watershed. Because high flows that re-mobilize project related sediments are expected to occur when background sediment levels are naturally elevated, they are expected to have less potential for effects to bull trout. High flow events during the spring following project implementation are expected to flush any deposited sediment from the project area.

2.5.1.2 Road Activities

A short-term increase in suspended and deposited sediment is the main adverse effect expected from Project implementation, resulting primarily from activities associated with road decommissioning and unauthorized route decommissioning and stream crossing improvements (replacement of culverts). Other activities, including road maintenance and construction (including reconstruction) and vegetation treatments will likely not result in adverse effects to bull trout. In the short- (one to three years) and long-terms (over three years), road activities would significantly reduce sediment in the action area by improving currently non-maintained roads, reducing the overall miles of road and associated runoff, and improving or removing stream crossings.

Roads are constructed, reconstructed, and maintained in the watershed for general traffic use and in conjunction with timber harvest and other activities. Roads can affect streams directly by accelerating erosion and sediment loading, altering channel morphology, and by changing the runoff characteristics of watersheds. These processes interact to cause secondary changes in channel morphology (Furniss et al. 1991, p. 297). The bare, compacted soils on roads exposed to rainfall and runoff are a potential source of surface erosion. Roads and ditches form pathways for sediment transport to stream channels. Roads may exist adjacent to streams, effectively replacing natural floodplains and riparian ecosystems. Such roads are susceptible to flood

damage, which can generate large amounts of sediment immediately to the stream; they also represent a chronic source of fine sediment from cutslopes, fill, and the roadbed itself. Regular road maintenance, including dust abatement, blading without sidecasting or creating outside berms, clearing debris from culverts, etc., can mitigate some of these effects if performed properly, and maintained roads can produce fewer chronic impacts than poorly maintained or abandoned roads that continue to be used (Furniss et al. 1991, p. 312).

2.5.1.2.1 Road Decommissioning

In the entire East Fork Weiser River, 42.2 miles of roads will be decommissioned with a net road removal of 36.4 miles. Within that area, road decommissioning in Dewey Creek and the Upper East Fork Weiser River are the areas of primary concern for bull trout. Approximately 17.2 miles of roads would be decommissioned in the Dewey Creek 7th field hydrologic unit, including the road (FSSR 50487) that follows the stream within the floodplain of Dewey Creek, and 8.9 miles of roads would be decommissioned in the Upper East Fork Weiser River 7th field hydrologic unit, including the road along Spring Creek (FSSR 501980800) and the unauthorized FSSR 501980200.

The Forest has completed programmatic consultation with the Service on road obliteration (for purposes of the Opinion, a term which is synonymous with road decommissioning and which includes the associated culvert removals) as part of the Watershed and Fish Habitat Improvements and Maintenance component of the Managing the Payette National Forest in the Weiser River Watershed project (reference 14420-2009-F-0060 and 14420-2009-F0060-R001, USFWS 2009 and USFWS 2011). The Service concurred with the Forest's determination these actions will not adversely affect bull trout or bull trout critical habitat, given the conservation measures associated that will reduce any effects of sediment to negligible levels. This project will conform to the conservation measures as described in the Managing the Payette National Forest in the Weiser River Watershed (USFS 2007). Most of the road decommissioning, including those in Spring Creek and the along the East Fork Weiser River (501980200), included in the Project will have negligible effects to bull trout and bull trout critical habitat because: (1) the roads are far enough from occupied stream reaches that it is unlikely any erosion stemming from the road activity will reach the stream; and (2) project design features will be incorporated to capture sediment and to prevent erosion. For most of the road decommissioning it is appropriate to adhere to the programmatic consultation and the Service agrees that effects to bull trout from the majority of the Project described herein would not be outside of what was considered in the programmatic.

However, road decommissioning of approximately 1.8 miles along Dewey Creek (Forest Service Road #50487) is likely to result in some sediment delivery to Dewey Creek due primarily to the proximity of the road to the stream (within 90 feet, Assessment p. 50) and the proximity of tributary culverts to Dewey Creek. Road decommissioning has the potential to increase sediment in Dewey Creek during implementation and before vegetation is fully established, but will decrease sediment delivery to streams in the short- and long-term time frames. Potential temporary increases in sediment that are realized may adversely affect bull trout along the 1.8 miles of road decommissioning on Dewey Creek.

Roads proposed for decommissioning will require culverts and drainage features to be removed. According to the Assessment, p. 51, the exact number of culvert removals associated with road decommissioning and long-term closures is unknown at this time, but the Forest estimates that

66 road-stream crossings in tributaries to bull trout habitat would be removed. Of those, 15 are adjacent to or within 600 feet of Dewey Creek (600 feet being the estimated extent of potential downstream sediment effects of road work). According to the map provided in the Assessment (p. 84), it appears most of the crossings near Dewey Creek are located on intermittent or ephemeral drainages and will not result in any sediment delivery to a perennial stream or to Dewey Creek. Some of the tributaries, however, do appear to be perennial. Without understanding the conditions on the ground, actual locations and site specific conditions of these crossings, and how many of the tributaries are perennial with potential to influence Dewey Creek, the Service assumes that there will be adverse effects to bull trout associated with the removal and rehabilitation of crossings on perennial tributaries within 600 feet of Dewey Creek. Adverse effects will also likely occur during unauthorized route decommissioning on routes in the headwaters of Dewey Creek (routes #51483, #501654000 and others). Adverse effects are expected from altered water quality associated from elevated suspended sediment (turbidity).

As a result of increased turbidity in Dewey Creek, adult and juvenile bull trout downstream from the activities may avoid or reduce their exposure to turbidity by swimming to adjacent, less turbid habitat. Although the affects likely will not result in injury or mortality, these effects may be adverse because bull trout normal behavior may be disrupted. Non-lethal adverse effects to juveniles may also occur as a result of increased turbidity, physiological stress and increased exposure to predators.

As described above in Section 2.5.1.1, bull trout eggs, if redds are present in Dewey Creek, particularly areas within 600 feet downstream of side-drainage culvert removals, may also be harmed if sediment settles on redds or reduces oxygen flow through the redd after August 15th (if road decommissioning work is done after August 15th).

Overall, decommissioning and re-contouring these roads will restore hillslope hydrology and reduce sediment delivery caused by concentrating water at road drainage points. The potential for sediment delivery from soil disturbance adjacent to stream channels or by work in the stream channel would be reduced by design features that would require sediment control devices, such as seeding and mulching disturbed surfaces, slash filter windrows, straw bales, straw wattles or other similar devices. In the short-term to long-term time frames, risk of erosion and sediment delivery would be reduced compared to the existing condition, and baseline conditions will improve.

2.5.1.2.2. Culvert Replacements

Four significant culverts on main roads that restrict proper hydrologic function and aquatic organism passage would be replaced, two of which are within bull trout critical habitat, one in upper Dewey Creek and one in upper East Fork Weiser River. The culverts will be replaced with structures that restore riparian and stream functions and provide aquatic organism passage. Although structure types and dimensions are not known at this time, the structures will either be culverts or bridges that are adequate in size to allow 100-year flows and at a minimum will accommodate bank-full dimensions. The Forest intends to incorporate project descriptions and design features from the Biological Assessment for Restoration Activities at Stream Crossings, otherwise known as the Idaho Stream Crossing Programmatic (USFS 2011). Construction for the culvert replacements would occur after spring peak flows and in-stream work would be completed prior to August 15 to avoid potential bull trout spawning. Final crossing designs and implementation schedule will be reviewed with the Level 1 Team prior to implementation to

ensure project elements are consistent with analysis. Although these projects would fit well under the stream crossing programmatic effort, that consultation is not yet complete and the Forest has included these crossings within this Project and they are included within this consultation effort.

Replacing the culverts would result in a temporary increase to sediment delivery. This increase would be limited primarily to the time of construction, during diversion construction and removal, removal of the existing structures and the construction of the culvert replacements. Water from the streams at each crossing would be diverted from the work site reducing the amount of sediment that would be released at the site. There may also be increased sediment immediately following a storm or when higher energy spring-flows move through the construction site. Ground and bank disturbance related to construction of the stream crossings will also create short-term pulses of turbidity. These pulses may generate a plume, which may extend for approximately 600 feet downstream of the crossing and should dissipate within 3-4 hours (Casselli et al. 2000, pp. 8-9; Jakober 2002, p. 6; USFWS 2004, p. 30). Plumes will likely not last more than four hours, at which point the plumes should have reached full recovery to background levels.

In response to elevated levels of suspended sediment, a reasonable expectation would be that, in order to avoid adverse effects, bull trout juveniles and adults may move away from turbid areas, if possible. Bisson and Bilby (1982, pp. 371-374) found that juvenile coho salmon (*Oncorhynchus kisutch*) avoided increasingly turbid waters in a laboratory setting. But, relocating to avoid sediment may have indirect adverse effects on bull trout. Salmonids exhibit a dominance hierarchy where the dominant fish (usually the largest) maintain the most desirable territories (i.e., defended area) in terms of available cover and food sources (Gilmour et al. 2005, p. 263). Subordinate fish may be excluded from food and cover resources and show reduced fitness and mortality (Gilmour et al. 2005, p. 263). Berg and Northcote (1985, pp. 1415-1416) found that dominance hierarchies broke down and territories were not defended when juvenile coho salmon were exposed to short-term sediment pulses. We assume that bull trout behave similarly to other studied salmonids. Based on this assumption, we expect bull trout that abandon territories to avoid turbidity associated with culvert replacement and road decommissioning may suffer increased competition, predation (through loss of cover), stress, and reduced feeding efficiency.

In-stream culvert replacement work (as described on page 22 of the Assessment) will be completed prior to spawning activity (August 15th), so the risk to spawning bull trout, eggs, and alevins from sediment deposition is discountable. For the road decommissioning and the stream crossing replacements, the Service expects that juvenile and adult bull trout present in the action area within 600 feet of in-channel work may be adversely affected by exposure to elevated suspended sediment concentrations. Most of the elevated suspended sediment concentrations will occur during diversion, construction and when stream flows are reintroduced into the newly constructed stream channel. This will affect bull trout in the temporary time frame. Elevated sediment concentrations are not expected to last longer than four hours. Re-watering the stream slowly is expected to reduce, but not eliminate, the risk to bull trout from elevated suspended sediment concentrations. Fish exposure may be further minimized as fish are likely to seek less turbid conditions downstream of the generated plume.

2.5.1.2.3 Road Maintenance and Surfacing

Road maintenance including surface blading, graveling, and improving drainage is proposed on approximately 51 miles of roads. Regular road maintenance is needed to keep roads in good condition and to quickly identify and correct issues. Improperly maintained roads can transport fine sediment to streams. Road maintenance is expected to reduce the potential effects of any existing roads on fish and their habitat. Carrying out road maintenance will reduce the amount of fine sediment reaching streams, although the maintenance itself may have some minor adverse effects on bull trout and bull trout critical habitat.

Road maintenance activities and their effects on bull trout were included in the programmatic consultation for the Weiser River Watershed, "Managing the Payette National Forest in the Weiser River Watershed" (reference 14420-2009-F-0060 and 14420-2009-F0060-R001, USFWS 2009 and USFWS 2011). Effects of activities included in the Mill Creek Council Mountain Project are expected to be consistent with the programmatic and will not be considered here further.

2.5.1.2.4 Road Construction and Reconstruction

In addition to road decommissioning and maintenance, the Forest proposes to construct 5.8 miles of new permanent roads and 3.1 miles of temporary roads. New road construction that has potential to affect bull trout or bull trout critical habitat is the road construction that would occur east of Dewey Creek and is associated with the road re-routing work. From the maps, the Service estimates that approximately 0.5 miles of new road would be constructed approaching Dewey Creek and another 0.5 miles of new road would be constructing approaching an unnamed tributary to the upper East Fork Weiser River. These road segments will be discussed in the Effects of the Proposed Action section. The remaining road construction, permanent and temporary, does not have potential to affect bull trout or bull trout critical habitat because the new roads are not located near streams or drainages that flow to bull trout critical habitat.

The only area of concern with this project component, in terms of potential effects to bull trout, is the new road construction that is associated with the decommissioning and rerouting of the Dewey Creek road. As part of the rerouting, there will be some road construction within the riparian conservation area (RCA) of Dewey Creek to connect the new western end of FSSR 50904 to the existing FSSR 50487. On the eastern end, FSSR 50904 will need to be connected to FSSR 50906 which will also result in a limited amount of road construction within the RCA of an unnamed tributary to the upper East Fork Weiser River. In total, according to the Assessment (p. 50), less than 0.2 mile of new road construction will occur within the RCAs associated with the road re-routing in Dewey Creek. At both ends, the new roads will connect onto existing roads at the outer limits of the RCA (Dewey Creek and an unnamed tributary to East Fork Weiser River). Project design features and best management practices will capture most of the sediment associated with road construction, but there may still be some erosion that may occur with potential to reach Dewey Creek. The Service expects, however, that potential effects will be insignificant given the short length of road to be constructed, the existing tie-in roads, project design features, and the distance to Dewey Creek. Overall there will be a net reduction of roads within RCAs in the Dewey Creek and upper East Fork Weiser River.

The Forest plans to reconstruct 21.2 miles of existing roads within the East Fork Weiser River watershed (see Section 2.1.2 for Project description) for use during project implementation and then closed, except for 4.8 miles of road that would remain open for use as part of the re-routing of the Dewey Creek road and the Joker Creek road. The roads will be made usable for log trucks

and logging equipment for commercial timber harvest, thinning, and biomass utilization. Road reconstruction includes clearing road bed of vegetation, removing barriers, blading and reshaping the road surface, and installing drivable dips and culverts (as needed). Approximately 3 miles of road reconstruction would occur within RCAs on currently closed system roads. Project design features and mitigation measures are expected to sediment delivery to stream channels.

Nearly all the road miles, included the 3 miles within RCAs, slated for reconstruction occur well outside of areas that have potential to affect bull trout, hence most of the roads (Nelson 2012, *in litt.*) will not affect bull trout or bull trout critical habitat because they are on tributaries lower in the watershed or not in the immediate vicinity of bull trout occupied streams. Reconstructing approximately 2.0 miles of road #50901 west of Dewey Creek is the only road where work could have potential to affect bull trout, due to potential for increased sediment to Dewey Creek, but given the distance from the stream, project design features, and limited extent of disturbance expected from reconstruction (the road already exists) effects are expected to be insignificant and would occur only when the road is open for use. Most of the road is well over ½ mile distance to Dewey Creek, it may get to within 1/3 of mile for a short reach, depending on topography, and given that distance and project design features, erosion is not expected to reach the stream. In addition, the miles of road being decommissioned in the drainage reduce the overall road density even with this road being opened.

In addition to the above, there may be up to 1 mile of unplanned and unidentified temporary roads constructed. These temporary roads will be decommissioned with obliteration following harvest. Although not identified in the Assessment, because most Project activities related to vegetation treatments occur outside the Dewey Creek and upper East Fork Weiser River and because there is limited harvest allowed with RCAs, it is unlikely these roads would be constructed within the RCA. However, because this in not specified in the Assessment, the Service assumes some construction of additional roads (up to 1 mile) could occur within RCAs. Effects would be similar to those described above for the 3 miles of road construction within RCAs.

2.5.1.2.5 Summary of Road Related Effects

Project design features presented as part of the Project are intended to prevent the majority of sediment from being delivered to stream habitat but may not be able to prevent all sediment due to the nature of the in-channel and near channel work. Bull trout downstream of road decommissioning work in Dewey Creek may experience short-term adverse effects as a result. Adult and juvenile bull trout are expected to have only acute sub-lethal behavior and physiological effects due to the short period of elevated suspended solids. Elevated sediment concentrations from Project activities may trigger effects ranging from minor to moderate physiological stress, including increased rates of coughing and respiration, particle build-up on gills, temporary injury associated with avoidance or moving to less turbid areas, and habitat degradation. Effects to adult and juvenile bull trout are not expected to rise to the level of mortality and are expected to be temporary and would occur in association with project implementation in the immediate vicinity. If work decommissioning work along Dewey Creek and its perennial tributaries within 600 feet of Dewey Creek occurs after bull trout have spawned downstream of activities, bull trout eggs may be injured or suffocated if sediment settles on redds.

While there is a great deal of road work associated with this Project, is it not expected to be completed in one year or even in one area in one year. This Project is expected to take up to ten years to complete, and road decommissioning and culvert removal and replacement are activities that are conducted carefully and slowly, particularly road decommissioning. Because these activities will not all occur at once and will be treated with sensitivity to resources, effects to streams, bull trout, and bull trout critical habitat are expected to be ameliorated as much as possible. Road decommissioning, which includes full obliteration and re-contouring to passive decommissioning, would result in a net reduction in road miles in the analysis area of approximately 36 miles.

2.5.1.3 Vegetation Treatments

Vegetation treatments in the East Fork Weiser River watershed are planned on approximately 9,226 acres. This includes: 2,180 acres of restoration and reserve stand harvest and burn treatments; 4,759 acres of prescribed burn only; and 2,160 acres of pre-commercial thinning and shaded fuel break treatment.

2.5.1.3.1 Harvest and Burn, Thinning, and Shaded Fuel Break Treatments

Removal of vegetation, mechanical disturbance, and topographic alteration increase the erodibility of forest soils and, consequently, both the amount of soil available for transport and the likelihood of transport downslope and into streams. Once in streams, fine sediments may be transported further downstream or deposited in slow water areas and behind obstructions, locally altering fish habitat conditions. In particular, fine sediment can fill in interstitial spaces, eliminating the living space of various microorganisms, aquatic macroinvertebrates, and juvenile fish.

Timber harvest and slash treatments using prescribed fire may affect bull trout through a variety of impacts or alterations to watershed structural conditions and functional capacity (Chamberlin et al. 1991, p. 200; Spence et al. 1996, pp. 105-113; Brosofske et al. 1997, pp. 1192-1198). The primary pathways for negative impacts are through altering hydrologic and sediment regimes, elevating stream temperatures, and reducing channel complexity and large woody debris inputs. These effects can be exacerbated by harvest on landslide prone areas and harvest in RCAs. Other potential adverse effects also include introduction of pollutants, such as petroleum fuels, into watercourses while conducting harvest, site preparation, and stand maintenance activities. Measures to reduce potential impacts to water quality include preparation of a spill prevention plan, inspection of equipment for fuel leaks, and no fueling or storage of fuel within RCAs.

In order to reduce potential effects to bull trout and bull trout critical habitat, no harvest, biomass removal, or precommercial thinning would occur within RCAs of Dewey Creek or the East Fork Weiser River above Bench Creek, where bull trout are likely to occur. On the East Fork Weiser River below Bench Creek, where bull trout are not likely to occur, 95 acres within the RCA will be treated (under the Restoration Harvest and Burn prescription and Reserve Harvest and Burn prescription). Project design features (PDFs) expected to reduce the risks of negative impacts on bull trout from vegetation treatments include:

- No harvest or equipment operations (unless on existing road prism or existing skid trails) within 120' of intermittent stream channels, and 240' of perennial stream channels in the Upper East Fork Weiser River above Bench Creek (including Dewey Creek). Buffers

would also be applied to any previously unmapped RCA discovered during implementation.

- Below Bench Creek, no equipment operations (unless on existing road prism or skid trail) within 120' of intermittent stream channels, and 240' of perennial stream channels. No mechanized equipment, new skid trails, temporary roads or landings within RCAs unless evaluated and approved by a fisheries biologist or hydrologist. The hydrologist or fisheries biologist would provide required mitigations to maintain watershed condition indicators.
- Only restoration type treatments allowed in RCAs. Limited equipment use and harvest would be allowed in the outer 120' of perennial RCAs and the outer 90' of intermittent RCAs in restoration stands identified and approved for RCA for thinning as described in the Assessment (pp. 126-127). RCAs in occupied bull trout habitat in the Upper East Fork Weiser River (upstream of Bench Creek), including Dewey Creek will not be treated. The maximum number of RCA acres that could be thinned is potentially 268 acres, including 95 acres along critical habitat below Bench Creek.
- Reclaim all detrimentally disturbed (defined as "alteration of natural soil characteristics that results in immediate or prolonged loss of soil productivity and soil-hydrologic conditions', Nelson 2012b *in litt.*) and totally committed skid trails (defined as logging skid trails that result in the "conversion of a productive site to an essentially non-productive site", Nelson 2012b *in litt.*), temporary roads and landing areas immediately following harvest activities.
    - Reclamation would include decompaction to a depth of 16" (or depth of compaction), re-contouring to the natural slope profile (if needed and as possible), scattering of organic matter (as available) to provide a minimum of 50 percent to maximum of 80 percent effective ground cover and seeding with native seed (where need is identified) and mulching to facilitate vegetation recovery where slash is not available.

The following guidelines will be used for RCA layout (including the 95 acres of RCA along the East Fork Weiser River below Bench Creek):

- Only the outer portion of the RCA will be treated; there will be no mechanical treatment in actual riparian vegetation. There will be a no-cut zone along the stream and limited equipment use in the remainder of the RCA.
- For an intermittent stream, thinning may occur in the outer 90 feet of the RCA (furthest from the stream); the no-cut zone is a minimum 30 feet from the stream.
- For a perennial stream, thinning may occur in the outer 120 feet of the RCA (furthest from the stream); the no-cut zone is a minimum 120 feet from the stream. The limited equipment zone is within 240 feet of the stream.

Vegetation treatment (harvest) in the RCA of the East Fork Weiser River is not expected to affect bull trout or critical habitat, primarily because most of the activity will occur on the north side of the river with the East Fork Weiser River road between the river and the treatment areas. Trees on the north side greater than 120 feet distance are not likely shading the river, nor would they be expected to provide current or future sources of large woody debris because of the main

road located between the prescription area and the river. Treating the outer portion of the RCA may improve site conditions by allowing remaining trees to grow larger and taller due to the reduction in competition from thinned vegetation. Harvesting will cause soil disturbance as described above, but it is not expected to cause soil disturbance at a level that would result in surface runoff or increase sediment in streams or the East Fork Weiser River. Existing skid trails would be used, followed by reclamation, and any surface runoff would be ameliorated before it reached the river.

The no-activity buffer widths, project design features, and best management practices are expected to minimize or prevent sediment delivery to streams from vegetation management. Minor sediment delivery to project area stream channels would likely occur from overland flow and possibly from new or reconstructed skid trails. This effect will occur in the temporary and short-term time frames but would most likely not be measurable. Use of existing landings and existing skid trails as much as possible, followed by complete obliteration of these features, will minimize effects. Sediment and substrate embeddedness are functioning at unacceptable risk. However, because sediment delivery to streams would not be measurable and modeling information provided in the Assessment (pp. 48-49) predicts a decrease in sediment in the long-term (due to road decommissioning), sediment would be maintained and project-related sediment delivery would not degrade or retard the attainment of properly functioning watershed condition indicators. Soil disturbance from thinning treatments, lop and scatter, in the upper Dewey Creek area is not expected.

No short or long-term significant adverse effects are expected to bull trout or critical habitat from vegetation treatments. As stated in the Assessment (p. 49), compliance with the RCA thinning guidelines (Assessment pp. 126-127) will ensure that bull trout will not be measurably affected with respect to temperature, large wood recruitment or sediment delivery and deposition from vegetation treatments.

The shaded fuel break would occur on approximately 71 acres along the WUI outside of RCAs downstream from occupied bull trout habitat. There would be no fuel break in Dewey Creek or the upper EFWR. Therefore, effects to bull trout and bull trout critical habitat from the shaded fuel break are expected to be negligible.

2.5.1.3.2 Prescribed Burns

This Project includes prescribed burning on approximately 7,120 acres in the East Fork Weiser River subwatershed. Most of the acres of prescribed burning are well away from bull trout critical habitat and outside of riparian areas and so have negligible potential to influence stream conditions or affect bull trout. The prescription areas with potential for prescribed fire to affect bull trout critical habitat are those areas (95 acres) along the East Fork Weiser River below Bench Creek.

Data collected on the Forest show no fine sediment deposition increase from prescribed burns (Assessment, p. 45) and prescribed fire research shows that riparian effects are often not observed (Arkle and Pilliod 2010, pp. 899-901). Impacts to riparian areas from prescribed burning are not expected to be so severe that stream temperatures would be affected. The majority of the acreage (about 80-90%) to be burned would be a low intensity under-burn. Over-story mortality of 2% and up to 15% is expected in burned areas. Observations of other prescribed burns indicate the percentages of over-story mortality would be even less in riparian

areas. These low levels of canopy removal are not expected to cause increases in stream temperatures. Beche et al. (2005, p. 47) found that there was no effect on sediment in watershed streams one year after a low-to-moderate intensity prescribed fire with active ignition within RCAs. Arkle and Pilliod (2010, p. 898) also did not observe effects from prescribed fire on stream sediment on the Payette National Forest in a ponderosa pine forest with no ignition within the RCAs, but with allowances for the fire to back into the RCAs.

Revegetation after treatment with prescribed fire is expected to occur quickly and would further reduce the potential for soil erosion. No active ignition of prescribed fire would occur within 240 feet of perennial streams or 120 feet of intermittent streams, unless approved by a hydrologist or fisheries biologist. Fire would be allowed to back down into RCAs and fire activity within RCAs is expected to result in a mosaic burn. Any sediment delivery to stream channels from surface runoff and erosion after the prescribed fire is expected to be temporary and not measurable (i.e., discountable) in any given stream. Only a small percentage of tree mortality within RCAs is expected because fuel moisture levels in riparian areas are expected to be high at the time of implementation (in either spring or fall, depending on appropriate burning conditions).

Project design features (PDFs) expected to reduce the risks of negative impacts on bull trout from prescribed burning include:

- Direct ignition for prescribed burning would not occur in RCAs without the site-specific approval of the district hydrologist or fisheries biologist and would avoid true riparian vegetation; however, fire would be allowed to back into the RCAs.
- Avoid road and skid trail construction on landslide prone areas, and avoid concentrating water onto landslide prone areas from road drainage.
- No new roads will be built to access prescribed burns, no roads will be re-opened that are presently closed and vegetated.
- Reclaim all fireline following all burn activities. Reclamation activities would include, but are not limited to, placing waterbars as necessary, pulling material removed (including mineral soil as available) for fireline construction back onto fireline, and pulling slash as available onto the surface. Goal is to achieve minimum of 50 percent to maximum of 80 percent ground cover of the disturbed soil.

Fish species present are not expected to be adversely affected by any disturbances to the habitat resulting from prescribed burns. Similar prescribed fires completed on the Forest resulted in no adverse changes to fish habitat (Assessment p. 49). Observations on the Forest of spring prescribed burns have shown natural effects in riparian areas, and no observable evidence that fire had burned into riparian areas more than *de minimus* amounts (Assessment p. 44). Stream temperature is not expected to be affected. The majority of the acreage (80-90 percent) would be a low intensity under-burn. Over-story mortality of 2 percent to 15 percent is expected in burned areas (Assessment p. 45), and would likely be even lower in riparian areas. The expected low levels of canopy removal are not expected to cause increases in stream temperatures.

One intended effect of prescribed burning is to reduce the likelihood of large stand replacing wildfire. Previous prescribed burns reduced the amount and continuity of fuel available for large stand-replacing fires (Assessment p. 45). In addition, controlled burning that creeps into riparian

areas may stimulate regeneration of some riparian species that have become decadent due to fire exclusion, contributing to stream shading.

2.5.1.4 Chemical Contamination Effects

Heavy machinery use adjacent to stream channels raises concern for the potential of an accidental spill of fuel, lubricants, hydraulic fluid and similar contaminants into the riparian zone, or directly into the water where they could adversely affect habitat, injure or kill aquatic food organisms, or directly impact bull trout.

Petroleum-based contaminants such as fuel, oil, and some hydraulic fluids, contain poly-cyclic aromatic hydrocarbons, which can cause chronic sublethal effects to aquatic organisms (Neff 1985, p. 420). Fuels and petroleum products are moderately-to-highly toxic to salmonids, depending on concentrations and exposure time. Free oil and emulsions can adhere to gills and interfere with respiration, and heavy concentrations of oil can suffocate fish. Evaporation, sedimentation, microbial degradation, and hydrology act to determine the fate of fuels entering fresh water (Saha and Konar 1986, p. 506). Ethylene glycol (the primary ingredient in antifreeze) has been shown to result in sublethal effects to rainbow trout at concentrations of 20,400 mg/L (Staples 2001, p.377). Brake fluid is also a mixture of glycols and glycol ethers, and has about the same toxicity as antifreeze.

Project activities that occur in a stream, such as culvert replacement, or adjacent to/crossing a stream, such as road/route decommissioning, raise the potential of an accidental spill of fuel, lubricants, hydraulic fluid or similar contaminant into the riparian zone, or directly into the water where they could adversely affect habitat, injure or kill aquatic food organisms, or directly impact bull trout.

To prevent toxic materials from entering live water, the Forest has developed specific prevention measures that were presented as part of the Project. Upon discovery of a fuel spill by Forest personnel, a spill-response protocol will be adhered to. Adherence to this protocol will reduce fuel-related effects to very low levels because of these factors.

Due to the project's design features, the possibility of petroleum-based products reaching occupied waters is very unlikely. The implementation of the project design features will reduce the potential for chemical contamination and would likely contain any spill or leak before chemical contaminants reach flowing water. In addition, it is unlikely that any machinery or equipment fluids will be spilled in volumes or concentrations large enough to harm bull trout in or downstream of the Project area. In light of these features effects to bull trout associated with chemical contamination are expected to be insignificant.

2.5.1.5 Recreation Management

Most of the recreation management activities, including the new trails, trail bridge and two of the toilet installations (Five Corners and Shingle Flat), will occur away from critical habitat and will not result in effects to bull trout.

Improvements at Deseret Cabin Trailhead in the upper East Fork Weiser River include installing a kiosk, a vault toilet and improving parking near the intersection of road #50249 and road #50165 on the west side of road #50249. These activities are located within the footprint of existing disturbance within the riparian conservation area of East Fork Weiser River.

Disturbance from the installation of the toilet, improved trailhead parking and kiosk installation is expected to be minimal because mitigation measures, project design features, and flat topography would eliminate sediment delivery to streams. A hitch rail and loading ramp are currently located at the Deseret Cabin site. Trailhead improvements at this site (near the junction of road #50249 and 50165) would have minimal effects to the RCA because there is already some disturbance at the site, the topography is flat, it is located on the outer edge of the RCA, and road #50249 is located between the site and the East Fork Weiser River. Providing facilities may also improve water quality by reducing human waste within RCAs.

2.5.1.6 Capture and Handling Related Effects

Two large stream crossings that currently block upstream bull trout movement will be replaced as part of this Project. As described in the Assessment (pp. 35-36), during implementation of the stream crossing replacements (see Figure 2) each stream channel will be diverted around the work site to minimize effects to bull trout from in-stream work activities, sediment and construction equipment. Prior to dewatering the stream, fish salvage will occur to minimize impacts to individual bull trout. This will be accomplished by placing block nets upstream and downstream of the diversion inlet and outlet, electroshocking and relocating all fish upstream of the site. Normally, capturing and relocating fish, dewatering the construction site, rerouting the stream, reintroducing flow into the new channel, and effects from these activities would not last more than one day, but may take up to several days (USFS 2011, p. 30).

As a result of being moved upstream, bull trout will have to search out new areas for feeding, cover, and favorable water quality. In the time it takes them to do that they can be subjected to a greater risk of predation, competition with other fish, stress and lowered physical condition. This can be considered a disruption to the normal feeding and movement patterns. It should be noted that the culverts are currently barriers to fish movement and this Project will not result in any additional adverse impacts associated with restricting upstream movement. Resident bull trout occur above the culvert on the East Fork Weiser River and it is unknown if bull trout occur above the Dewey Creek culvert. Translocating bull trout from the construction site may disrupt normal feeding and sheltering behavior of resident bull trout, but it is expected that fish will adjust quickly and disruptions will be minor and insignificant. It is assumed that adequate habitat exists upstream for translocated bull trout and resident fish.

Individual fish captured by nets or electroshocking and then handled are subject to many different types of potential injury. These injuries include stress, tissue damage from electrical current, broken vertebrae, bruising, exposure to chemicals, and infection from wounds. The detrimental impacts to individuals from electroshocking are difficult to predict due to complexity and variables associated with the effort such as: type of current; field intensity; exposure duration; fish size and species; stream size; water conductivity; type of electrical current and pulse, frequency, length, waveform; voltage spikes; and repeated exposures. Degree of impacts also depends on the skill of the sampling crew, stream complexity and visibility. The possible effects include cardiac or respiratory failure, injury, stress, and fatigue. These effects can be immediate or delayed and long-term.

Any time electroshocking or wading in the stream occurs there is the potential for fish to be crushed or injured by being stepped on. Fish in the Project area that do not react quickly to avoid people could be harmed. The potential for crushing, however, is low because fish will have opportunity to move to avoid crushing. Given the low water level, the short stream reaches that

will be affected, and low fish density at each site, the number of bull trout exposed to risk of crushing or impact is expected to be minimal and not quantifiable.

All handling of fish will be conducted by or under the direction of a fisheries biologist, using methods directed by the Idaho Department of Fish and Game (Department) Scientific Collecting Permit. Injury or mortality that may occur as a result of the electroshocking, handling through capture and/or relocation with seines or nets, or any other direct fish handling that may occur, are regulated by the Department's collection permit requirements. The Forest must adhere to all conservation measures in the permit to avoid and minimize adverse effects to bull trout. The Service has already analyzed the effect of work conducted under the Department's permits in a February 2000 intra-Service Biological Opinion (USFWS 2000); adverse effects caused by these actions will not be discussed further in this Opinion.

2.5.1.7 Passage Obstruction, Stranding and Disturbance Effects

Project implementation will temporarily block fish passage on Dewey Creek and the upper East Fork Weiser River during the stream crossing replacements. Resident adult and juveniles that may be rearing or feeding locally will be temporarily restricted from movement through the project sites when flows are diverted. During fish salvage, block nets will be installed upstream and downstream of each site to prevent fish from moving back into the work area. The block nets will be in place while the diversion channel is constructed and then will be removed (potentially less than one day). The Service assumes that the quality and quantity of bull trout habitat is similar above each culvert allowing the fish to have access to adequate habitat and enabling them to adjust quickly to their new environs.

In addition, this short-term blockage is not expected to interfere with major life history processes such as spawning because work on the crossings would be completed prior to August 15, before spawning commences. Bull trout may be migrating and holding downstream of the crossings during Project implementation, but as four of the five culverts are current barriers, the effect of having block nets in place for one day is minor. Overall, the injurious effects of displacement and blocked downstream movement are expected to be temporary (less than a day), sublethal, and bull trout are expected to recover quickly once the construction is complete and block nets are removed. The effects associated with passage obstruction are not expected to rise to the level of take and will not adversely affect bull trout.

The stream crossing replacements will result in the streams being de-watered during the construction phase. Fish that become trapped in areas of water that are disconnected from larger bodies of water can die. Mortality is caused because small pools of water warm faster, lose adequate dissolved oxygen, expose fish to predators and evaporate or drain away. There is the potential that any fish not salvaged could become stranded during dewatering.

The presence of large machinery in dewatered areas and adjacent to streams (including during road and route decommissioning) where bull trout are present may result in increased noise levels, vibration, and other disturbances associated with increased human presence. The general increase in human activity associated with construction activities, decommissioning and rehabilitation are likely to disturb bull trout if present within the area. However, these effects are expected to result in only minor disturbances to fish overall, with potential avoidance behaviors initially. Bull trout are typically most active at night (Homel and Budy 2008, p. 876), so daytime activities could result in bull trout moving from cover to avoid perceived threats associated with

human and equipment presence. The response will be minimal, with fish moving to other available cover in the immediate area. These effects are not considered a significant disruption to normal feeding, holding or sheltering behavior and will not result in harm or mortality.

2.5.1.8 Beneficial Effects

The Project will restore fish passage at two locations providing migratory access to 3.5 miles of spawning and rearing habitat for bull trout, while improving aquatic function within the action area. Reconnecting upstream and downstream habitat will strengthen the resilience of the local population to disturbances and environmental change. Rieman and Dunham (2000, entire) recognized that small isolated populations face greater threats to changing environments than larger, well-connected populations. This project will remove the last remaining barrier culverts in occupied habitat and will open some of Cold Springs Creek that is currently inaccessible. Road density is exceptionally high and on its own has been related to bull trout viability. This project removes approximately 36.4 net miles of legacy roads (19%) and moves one well away from Dewey Creek so that potential angler impacts may also be reduced. While implementation of the project would improve overall road density from approximately 5.7 mi/mi^2 to 4.3 mi/mi^2 and RCA road density from 8.8 mi/mi^2 to 6.3 mi/mi^2 in the East Fork Weiser River subwatershed, road density would continue to be functioning at unacceptable risk.

Strictly speaking, vegetation treatments and fuels reduction are not likely to provide benefits to bull trout or critical habitat. It is possible, however, that reducing the potential for uncharacteristic wildfire will indirectly reduce the potentially adverse effects of fire suppression activities. In addition, reclamation of existing skid trails and landings following treatment will remove additional sediment sources and areas of dysfunctional hydrologic characteristics. Although it is difficult to quantify the benefits, Project activities will result in overall improvement of watershed conditions, particularly erosion and sedimentation.

2.5.2 Effects to Bull Trout Critical Habitat

In the action area, the Service has designated the East Fork Weiser River and Dewey Creek critical habitat for bull trout (see Figure 3 of this Opinion). The Forest uses the matrix of pathways and indicators for bull trout to evaluate and document baseline conditions and to aid in determining whether a project is likely to adversely affect bull trout. Analysis of the affected indicators can provide a thorough evaluation of the existing baseline condition and potential project impacts to the Primary Constituent Elements (PCEs) of bull trout critical habitat (Table 6).

Table 6. Bull Trout Primary Constituent Elements (PCEs) and Anticipated Effects from the Project

PCE #	PCE Description	Associated Watershed Condition Indicator	Indicators Degraded by Proposed Action	Anticipated Effect to PCE
1	Springs, seeps, groundwater sources, and subsurface water connectivity (hyporheic flows) to contribute to water quality and quantity and provide thermal refugia.	Sediment/turbidity, Channel Conditions and Dynamics (wetted width/maximum depth ratio, streambank condition, floodplain connectivity), riparian conservation areas.	Channel dynamics and conditions will be impacted during culvert removals. There will be a temporary increase in turbidity during project implementation (stream crossings, road work).	Dewatering and diverting streams will temporarily adversely affect water quantity. The increase in turbidity and streambank disturbance will not have significant effects to this PCE.
2	Migration habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including, but not limited to permanent, partial, intermittent or seasonal barriers.	Temperature, sediment/turbidity, chemical contamination/nutrients, physical barriers, change in peak/base flow, width/depth ratio, refugia	There will be a temporary increase in sediment/turbidity, temporary barriers at stream crossings, a short- and term- positive effect on physical barriers and refugia.	Habitat will be temporarily (one day each) blocked on Dewey Creek and East Fork Weiser River, but these stream crossings are already barriers to bull trout movement. Potential sediment plumes from Project activities will not significantly affect this PCE.
3	An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.	Water quality (temperature, sediment/turbidity, chemical and nutrient contaminants), substrate embeddedness, Channel Conditions and Dynamics (wetted width/maximum depth ratio, streambank condition, floodplain connectivity), changes in peak/base flows, riparian conservation areas	There will be a temporary increase in Sediment/turbidity which will not be significant enough to impair this PCE. In the short and long terms, substrate embeddedness should be improved in the action area, although improvements may not be measurable. There will be minor, localized effects to Streambank condition and riparian vegetation.	The aquatic food base may be adversely affected by dewatering and depositing sediment downstream of crossings and in Dewey Creek due to road decommissioning. In the long term, due to restored channel dynamics, this PCE should be improved at the stream crossing replacements and on Dewey Creek.
4	Complex river, stream, lake, reservoir, and marine shoreline aquatic environments, and processes that establish and maintain these aquatic environments, with features such as large wood, side channels, pools, undercut banks and unembedded substrates to provide a variety of depths, gradients, velocities, and structure.	Habitat elements (substrate embeddedness, LWD, pools frequency and quality, large pools, off-channel habitat, and refugia)	Habitat elements will be temporarily impaired.	This PCE will be adversely affected by dewatering, which will effectively eliminate habitat temporarily.

PCE #	PCE Description	Associated Watershed Condition Indicator	Indicators Degraded by Proposed Action	Anticipated Effect to PCE
5	Water temperatures ranging from 2 to 15 °C (36 to 59 °F), with adequate thermal refugia available for temperatures that exceed the upper end of this range. Specific temperatures within this range will depend on bull trout life-history stage and form; geography; elevation; diurnal and seasonal variation; shading, such as that provided by riparian habitat; streamflow; and local groundwater influence.	Temperature	Temperature will not be affected by the project.	This PCE will be maintained. Stream temperature will not be affected by the Project.
6	In spawning and rearing areas, substrate 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 sediment, generally ranging in size from silt to coarse sand, embedded in larger substrates, is characteristic of these conditions. The size and amounts of fine sediment suitable to bull trout will likely vary from system to system.	Sediment/turbidity, substrate embeddedness	See discussion above regarding sediment/turbidity and substrate embeddedness.	Spawning areas within 600 feet of each stream crossing improvement or road decommissioning activity may be temporarily adversely affected by fine sediment released during the project. PDFs to capture sediment will be employed, but the potential will not be completely removed. Short and long term improvements are expected to this PCE.
7	A natural hydrograph, including peak, high, low, and base flows within historic and seasonal ranges or, if flows are controlled, minimal flow departure from a natural hydrograph.	Flow/ Hydrology (Changes in Peak /Base flows and Drainage Network Increase)	Project implementation will result in a reduction in drainage networks.	This PCE will be maintained. The natural hydrograph will not be affected by the project.
8	Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.	Floodplain connectivity, peak/base flow, water quality (Temperature, sediment/turbidity, Chemical Contaminants and Nutrients)	Sediment/turbidity may be temporarily increased during project implementation.	Water quantity and quality within the stream crossing areas and downstream of road activities will be temporarily affected, but not to an extent that reproduction, growth or survival of bull trout will be

PCE #	PCE Description	Associated Watershed Condition Indicator	Indicators Degraded by Proposed Action	Anticipated Effect to PCE
				impacted. Effects to this PCE are expected to be insignificant.
9	Sufficiently low levels of occurrence of nonnative predatory (e.g., lake trout, walleye, northern pike, smallmouth bass); interbreeding (e.g., brook trout); or competing (e.g., brown trout) species that, if present, are adequately temporally and spatially isolated from bull trout.	Persistence and Genetic Integrity	No effects to persistence and genetic integrity.	Brook trout occur below and above the stream. Project activities will not facilitate expansion of brook trout nor increase the opportunities for interbreeding.

As discussed above in sections 2.5.1.1 and 2.5.1.2 project activities, including road/route decommissioning, culvert/ford replacement, and vegetation treatments, may have temporary and, possibly, short-term adverse effects to bull trout habitat mainly due to ground disturbing activities that increase sediment in streams and dewatering of habitat.

Sediment/turbidity is the primary indicator that, as altered, will adversely affect PCEs 3 and 6, by reducing water quality downstream of stream crossing replacements. Road decommissioning activities may also increase sediment in streams, particularly from the roads adjacent to critical habitat. The aquatic food base (PCE 3) may be negatively impacted by deposited sediment for 600 feet downstream of the crossings and where road work affects streams, which may cover aquatic invertebrates and compromise their habitat. Increased sediment and suspended solids downstream of activities have the potential to affect primary production and benthic invertebrate abundance, due to reductions in photosynthesis within murky waters, resulting in decreased food availability for fish (Cordone and Kelley 1961, pp. 189-190; Lloyd et al. 1987, p. 18). Dewatering will also result in the loss of macroinvertebrates in that stream reach. Both increased sediment and dewatering will have temporary effects to PCE 3 for a few months following construction.

Spawning areas (PCE 6) within 600 feet of each stream crossing may be temporarily adversely affected by fine sediment released during the project as there is potential for fine sediment to settle on spawning gravels during construction and re-watering of the stream channel. Also, road decommissioning activities, particularly along Dewey Creek, may impact PCE 6. PDFs to capture sediment will be employed, but the potential increase of fine sediments will not be removed completely.

Dewatering the streams during crossing replacements will adversely affect PCEs 1, 3, and 4 for approximately 100 feet at each site for no more than 21 days, and, likely, a much shorter time frame than that. Seeps, springs, groundwater sources and groundwater flows will not be impacted in the action area, but water quantity as it relates to PCE 1 will be eliminated for up to 21 days. Stream complexity, PCE 4, will be adversely affected in the immediate area of the stream crossings, because the habitat will be unavailable while the stream is dewatered during

construction. In the long term, this PCE will be improved as stream function through the culverts, including large woody debris movement, would be restored.

The slight increase in deposited sediment in streams from all activities associated with the Project will not significantly affect PCE 1 or 8. The reduction in the aquatic food base and the temporary alteration of water quality are not expected to have measurable effects to normal reproduction, growth and survival of bull trout (PCE 8). The lack of water flowing in the construction sites will not have significant effects to PCE 8 as bull trout would be removed from the action area: the Service assumes bull trout will be able to resume normal growth and survival upstream of the project after relocation.

Implementation of the stream crossing improvements will cause temporary barriers (PCE 2) to fish in the dewatered area. In-stream work requires block nets and fish salvage to minimize direct impacts to individuals, and streams will be diverted around the work sites in a temporary channel. Upstream migration will not be accessible; however, upstream migration is currently blocked at the culvert sites, resulting in no temporary change to the baseline. Immediately following construction, upstream fish passage will be restored to over 3.5 miles of habitat, improving this PCE.

Brook trout occur in Dewey Creek and the East Fork Weiser River. Stream crossing replacements that provide fish passage and upstream habitat to target species (bull trout in this case), can have the potential to introduce non-native species, such as brook trout, into previously pure native species populations. Because brook trout are already present in the streams upstream and downstream of these stream crossings, restoring fish passage is not expected to affect the baseline of this PCE.

2.5.3 Effects of Interrelated or Interdependent Actions

The implementing regulations for section 7 define interrelated actions as those that are a part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. The Service has not identified any actions that are interrelated or interdependent with the proposed project.

2.6 Cumulative Effects

The implementing regulations for section 7 define cumulative effects to include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this Opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Illegal and inadvertent harvest of bull trout is considered a cumulative effect. Harvest can occur through both misidentification and deliberate catch. Schmetterling and Long (1999, p. 1) found that only 44 percent of the anglers they interviewed in Montana could successfully identify bull trout. Being aggressive piscivores, bull trout readily take lures or bait (Ratliff and Howell 1992, pp. 15-16). Spawning bull trout are particularly vulnerable to harvest because the fish are easily observed during autumn low flow conditions. Spawning bull trout are particularly vulnerable to harvest because the fish are easily observed during autumn low flow conditions. Hooking

mortality rates range from 4 percent for non-anadromous salmonids with the use of artificial lures and flies (Schill and Scarpella 1997, p. 1) to a 60 percent worst-case scenario for bull trout taken with bait (Cochnauer et. al. 2001, p. 21). Thus, even in cases where bull trout are released after being caught, some mortality can be expected.

An additional cumulative effect to bull trout is global climate change. Warming of the global climate seems quite certain. Changes have already been observed in many species' ranges consistent with changes in climate (Independent Scientific Advisory Board 2007, p. iii; Hansen et al. 2001, p. 767). Global climate change threatens bull trout throughout its range in the coterminous United States. Downscaled regional climate models for the Columbia River basin predict a general air temperature warming of 1.0 to 2.5 °C (1.8 to 4.5 °F) or more by 2050 (Rieman et al. 2007, p. 1552). This predicted temperature trend may have important effects on the regional distribution and local extent of habitats available to salmonids (Rieman et al. 2007, p. 1552), although the relationship between changes in air temperature and water temperature are not well understood. Bull trout spawning and early rearing areas are currently largely constrained by low fall and winter water temperatures that define the spatial structuring of local populations or habitat patches across larger river basins; habitat patches represent networks of thermally suitable habitat that may lie in adjacent watersheds and are disconnected (or fragmented) by intervening stream segments of seasonally unsuitable habitat or by actual physical barriers (Rieman et al. 2007, p. 1553).

With a warming climate, thermally suitable bull trout spawning and rearing areas are predicted to shrink during warm seasons, in some cases very dramatically, becoming even more isolated from one another under moderate climate change scenarios (Rieman et al. 2007, pp. 1558–1562; Porter and Nelitz 2009, pp. 5–7). Climate change will likely interact with other stressors, such as habitat loss and fragmentation (Rieman et al. 2007, pp. 1558–1560; Porter and Nelitz 2009, p. 3); invasions of nonnative fish (Rahel et al. 2008, pp. 552–553); diseases and parasites (McCullough et al. 2009, p. 104); predators and competitors (McMahon et al. 2007, pp. 1313–1323; Rahel et al. 2008, pp. 552–553); and flow alteration (McCullough et al. 2009, pp. 106–108), rendering some current spawning, rearing, and migratory habitats marginal or wholly unsuitable. Over a period of decades, climate change may directly threaten the integrity of the essential physical or biological features described in PCEs 1, 2, 3, 5, 7, 8 and 9.

As discussed above, bull trout are known to hybridize with introduced brook trout and hybridization is a potential factor in population declines. Brook trout occur within the action area alongside bull trout, but the local effects to bull trout of hybridization with brook trout in the watershed have not been assessed.

Although cumulative effects can be identified, we cannot quantify the magnitude of their impacts on bull trout populations. Except for climate change, we do not expect cumulative effects to appreciably alter the existing baseline condition in the action area during the ten-year lifetime of the project.

2.7 Conclusion

2.7.1 Conclusion for Bull Trout

The Service has reviewed the current status of the bull trout, the environmental baseline in the action area, effects of the proposed action, and cumulative effects, and it is our conclusion that the proposed action is not likely to jeopardize the species continued existence. The Service concludes that direct effects to adult, subadult, and juvenile bull trout in the action area, and particularly Dewey Creek and the East Fork Weiser River, will be limited to short-term disturbance, feeding rate reduction, increased predation risk, and physiological distress resulting in adverse effects from increased levels of suspended sediment/turbidity and deposited sediment. Anticipated effects should be minimized (but not precluded) by the project design features incorporated into the project. In addition subadult and juvenile bull trout may be harmed by impingement on block-nets. It is not expected that adults would be in the streams during crossing replacements. In-stream activities (stream crossing improvement projects) will be completed prior to the on-set of spawning; therefore, adult bull trout, eggs, or alevins are not expected to be affected by the Project.

The Service expects that the numbers and distribution in the action area, the East Fork Weiser River Core area, the Southwest Idaho management unit, or in the Columbia Basin population segment will not be significantly changed as a result of this project; project impacts will not reduce appreciably the likelihood of both the survival and recovery of bull trout. The proposed action may have some adverse effects to small numbers of bull trout, but these effects are not likely to cause a measurable response to bull trout at the local population, core area, management unit, or coterminous U.S. scales. It is the Service's biological opinion that the proposed action will not jeopardize the coterminous population of bull trout.

2.7.2 Conclusion for Bull Trout Critical Habitat

The Service has reviewed the current status of bull trout critical habitat, the environmental baseline in the action area, effects of the proposed action, and cumulative effects, and it is our conclusion that the proposed action is not likely to destroy or adversely modify designated critical habitat for bull trout.

Although the PCEs of designated bull trout critical habitat may be adversely affected by the project, we expect these effects to be limited in duration and spatial extent. We also expect the project design features to minimize effects. There are approximately 70 miles of critical habitat in the East Fork Weiser River Critical Habitat Subunit, made up of spawning and rearing habitat, and foraging, migratory and overwintering habitat. The Project will have minor insignificant effects to critical habitat for most project activities. Road decommissioning and stream crossing replacements will affect critical habitat where sediment reaches the streams. Stream crossing replacements on Dewey Creek and the upper East Fork Weiser River will affect approximately 600 feet of critical habitat on each site. Given the amount of critical habitat in the Project area and the significance and extent of the impacts, only a small portion will be affected, and in the long-term, habitat conditions will improve. Impacts to critical habitat will not permanently affect the functionality or the conservation value of the Southwest Idaho River Basins Critical Habitat Unit or the East Fork Weiser River Critical Habitat Subunit. Critical habitat rangewide

would remain functional to serve its intended recovery role for the bull trout. Therefore, we conclude that the project will not destroy or adversely modify designated critical habitat.

2.8 Incidental Take Statement

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without specific exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm in the definition of take in the Act means an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering.

Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The Forest has a continuing duty to regulate the activity covered by this incidental take statement. If the Forest fails to assume and implement the terms and conditions, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Forest must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

2.8.1 Form and Amount or Extent of Take Anticipated

Bull trout occupy the action area and will be present when Project activities occur, however, it is difficult for us to anticipate the exact number of individual bull trout that will be taken as a result of project activities. Therefore, to address take associated with sediment and turbidity associated with the various activity components of this Project we will use the amount of habitat affected as a surrogate per activity.

2.8.1.1 Culvert Replacements

For the stream crossing improvement projects on upper Dewey Creek (FSSR 50165) and on the upper East Fork Weiser River (FSSR 50906) we anticipate that all adult, subadult and juvenile bull trout present within 600 feet downstream of the crossing replacement (i.e., the assumed downstream extent of sediment effects) will be subject to take in the form of harassment and harm from direct exposure to the increased levels of suspended sediment, turbidity, and deposited sediment. Elevated suspended sediment may result in direct injury (gill irritation, physiological stress, reduced feeding efficiency), and may also result in harassment and an increased likelihood of injury by causing bull trout to move out of areas of elevated suspended sediment. Moving out of the areas (harassment) may cause loss of territories, increase competition and stress, and reduce feeding efficiency. Incidental take of bull trout associated

with sediment effects from stream crossing improvements is only anticipated to occur during the in-stream work window (after high spring flows and prior to August 15th). Project design features incorporated into the project are expected to reduce the level of anticipated take. Incidental take of bull trout redds, eggs or alevins related to stream crossing improvement projects is not expected.

Although the duration was not specified in the Assessment, the Service assumes block nets will be installed at stream crossing improvement sites for up to one day to prevent fish movement into the dewatered work area during construction activities while the diversion channel is being constructed. There is the possibility of incidental take of individual bull trout that become impinged on the block nets with the potential for them to be injured or killed. Although we do not have bull trout density estimates for each site, using block net impingement mortality estimates (3.5 percent of population density) derived from Forest Service Region 6 culvert and replacement/removal projects (USFWS 2004, pp. 48-50), we estimate that one bull trout at each site could be harmed or killed from impingement on the block net. This makes for a total of two adult, subadult, or juvenile bull trout. Incidental take of bull trout associated with the use of block-nets is only anticipated to occur while the block nets are in place during construction.

The Service assumes that excavation for the culvert replacements on Dewey Creek and the East Fork Weiser River will likely take a day but may take up to 1 week, based on the estimates provided in the 2012 Stream Crossing Programmatic consultation (USFS 2011, p. 31). Any fish not salvaged could become stranded during dewatering associated with excavation work, resulting in injury or mortality. Although we do not have bull trout density estimates for each site, using stranding mortality estimates derived from Forest Service Region 6 culvert replacement/removal projects (USFWS 2004, pp. 48-50), it is estimated that one bull trout at each site could be harmed or killed from stranding. This makes for a total of two adult, subadult, or juvenile bull trout. Incidental take of bull trout associated with dewatering is only anticipated to occur immediately following dewatering of the stream.

2.8.1.2 Road Decommissioning

The road/route decommissioning activities near bull trout occupied reaches of Dewey Creek have the potential to result in take of bull trout due to increased turbidity in Dewey Creek. The proposed action anticipates that approximately 66 road-stream crossings in tributaries to bull trout critical habitat may be removed. Of these, 15 are near or adjacent to Dewey Creek, an occupied bull trout spawning and rearing stream, and would be removed. Some, not all, of the 15 removals may potentially affect water quality in Dewey Creek when the proximity of the culvert to Dewey Creek is less than 600 feet; these may result in adverse effects to bull trout in Dewey Creek. Based on the map provided in the Assessment (p. 84), the Service estimates that there may be three, or more, intermittent or perennial crossings on FSSR 50487 that have the potential to affect Dewey Creek. As described above, elevated suspended sediment may result in direct injury (gill irritation, physiological stress, reduced feeding efficiency), and may also result in harassment and an increased likelihood of injury by causing bull trout to move out of areas of elevated suspended sediment. Moving out of the areas (harassment) may cause loss of territories, increase competition and stress, and reduce feeding efficiency. Effects of road/route decommissioning activities are expected to be minor compared to a stream crossing replacement, and temporary, but adverse effects and resultant take are possible and cannot be discounted.

Therefore, we anticipate that all adult, subadult and juvenile bull trout present downstream of road decommissioning activities on Dewey Creek will be subject to take in the form of harm and harassment from direct exposure to the increased levels of suspended sediment, turbidity, and deposited sediment. Incidental take of adult, subadult and juvenile bull trout associated with sediment effects from road decommissioning is only anticipated to occur immediately following the work along Dewey Creek and in the headwaters of Dewey Creek (FSSR 51843 and unauthorized road 501654000). Project design features incorporated into the project are expected to reduce the level of anticipated take.

If road decommissioning activities in Dewey Creek occur after bull trout spawning (August 15th), incidental take of bull trout eggs, if present, may occur from sediment settling on redds. Harm or mortality of eggs is only expected immediately downstream (less than 600 feet) of the confluences of perennial tributaries and Dewey Creek and is not anticipated elsewhere in the Project area. This incidental take of bull trout eggs is only expected during and immediately following (4 to 5 months) road decommissioning work in Dewey Creek.

2.8.1.3 Summary of Incidental Take

If incidental take anticipated by this document is exceeded, all project activities will cease and the Forest will immediately contact the Service to determine if consultation should be reinitiated. Authorized take associated with the stream crossing replacements on Dewey Creek and the East Fork Weiser River will be exceeded if:

1. More than two bull trout are harmed or killed by impingement on block nets; or
2. More than two bull trout are harmed or killed by stranding during stream dewatering; or
3. Deposited sediment extends further than 600 feet downstream of the stream crossings replacements; or
4. In-stream work for culvert replacements as described on page 22 of the Assessment (including stream diversion, block-net installation, channel reconstruction, reintroduction of stream flow to the newly constructed channel) occurs outside of the proposed work window (after high spring flows and before August 15th) on any individual action.

During fish handling for the crossing replacements, bull trout present in the action area may be injured or killed in the process of collecting and removing fish prior to in-stream work. This take has already been anticipated and analyzed in the Service's Biological Opinion for Idaho Department of Fish and Game's Scientific Collecting Permit (USFWS 2000), and will not be addressed in this Opinion.

In addition to the take associated with the two stream crossing replacements, some take of bull trout adults, subadults and juveniles may occur as a result of road decommissioning activities. It is difficult for us to anticipate the exact number of individual bull trout that will be taken as a result of road decommissioning activities along Dewey Creek. Therefore, to address take associated with sediment and turbidity, we will use the amount of habitat we anticipate will be affected as a surrogate. The Service anticipates that take will occur up to 600 feet downstream of perennial and intermittent tributaries to Dewey Creek, if and where sediment plumes reach Dewey Creek. We anticipate that all adult, subadult and juvenile bull trout within the stream reach affected by road decommissioning activities will be subject to take in the form of harm and harassment from direct exposure to increased levels of suspended sediment, turbidity, and deposited sediment. If road decommissioning activities occur after August 15th, take in the form

of harm or mortality of bull trout eggs may also occur. Incidental take of bull trout and bull trout eggs is only anticipated to occur during and immediately following (4 to 5 months) road decommissioning implementation on Dewey Creek.

2.8.2 Effect of the Take

In the accompanying Opinion, the Service determined that this level of anticipated take is not likely to jeopardize the continued existence of the bull trout across its range. The proposed action is not expected to reduce the reproduction, status and distribution of bull trout in the action area, and will not appreciably reduce the likelihood of survival and recovery of the Columbia River Distinct Population Segment.

The Columbia River population segment comprises 22 management units including the Southwest Idaho management unit. The Southwest Idaho management unit includes the Boise River, Payette River, and Weiser River basins. We do not anticipate appreciable changes in the numbers, distribution, or reproduction of bull trout in any core areas or local populations that occur in the action area. Over the long-term, the Project is expected to contribute to the conservation and recovery of bull trout by reducing the number of roads, improving some roads, potentially reducing the threat of catastrophic wildfire, and providing bull trout migratory access to 3.5 miles of additional spawning and rearing habitat.

Anticipated take may be reduced because the project includes conservation measures to avoid and reduce adverse effects. In addition, adverse effects will be short in duration and limited in scope.

2.8.2.1 Reasonable and Prudent Measures

The Service concludes that the following reasonable and prudent measure is necessary and appropriate to minimize the take of bull trout caused by the proposed action.

- Minimize the potential for harassment of bull trout and disruption of riparian and aquatic habitat from project activities.

2.8.2.2 Terms and Conditions

1. The Forest shall ensure that final stream crossing replacement designs and the implementation schedules are reviewed and agreed upon by the Level 1 Team prior to implementation.

2. All erosion and sediment control measures will be maintained until construction is complete in the area and disturbed areas are stabilized.

2.8.2.3 Reporting and Monitoring Requirement

In order to monitor the impacts of incidental take, the Federal agency or any applicant must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [(50 CFR 402.14 (i)(3)].

1. The Forest shall provide a report detailing project implementation and baseline updates that will include results of applicable implementation and effectiveness monitoring, any

bull trout surveys conducted in the project area, a summary of bull trout observed or handled under the State Collecting Permit, as well as the results of monitoring revegetation efforts. The report can be emailed to Allyson Turner (ally_turner@fws.gov) or presented during Level 1 team meetings.

2. Upon locating dead, injured, or sick bull trout not anticipated by this Opinion, as a result of Project activities, such activities shall be terminated. Please notify the Service within 24 hours. Additional protective measures will be developed through discussions with the Service.
3. During project implementation, promptly notify the Service of any emergency or unanticipated situations arising that may be detrimental for bull trout relative to the proposed activity.

2.9 Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery programs, or to develop new information on listed species.

The Service has the following conservation recommendations:

1. Continue to monitor for the presence of bull trout in the East Fork Weiser River subwatershed in an attempt to broaden the understanding of bull trout use in the subwatershed. Where present, we also recommend you complete surveys to ascertain bull trout densities in various reaches.
2. Continue to identify and implement restoration actions in the subwatershed.
3. Use native plants for revegetating disturbed areas.
4. If straw is used for stabilizing disturbed areas ensure it is certified weed free.

2.10 Reinitiation Notice

This concludes formal consultation on Mill Creek Council Mountain Project. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if:

1. The amount or extent of incidental take is exceeded.
2. New information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion.
3. The agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this Opinion.
4. A new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

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