UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to NMFS No: 2008/04131

September 12, 2008

Suzanne Rainville, Forest Supervisor
Payette National Forest
P.O. Box 1026
102 West Lake Street
McCall, Idaho 83638

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Payette National Forest Road Maintenance/Management Program, Hells Canyon, Little Salmon River, Lower Salmon, South Fork Salmon, Middle Salmon-Chamberlain, Lower Middle Fork Salmon, and Upper Middle Fork Salmon, 4th HUC#s 17060101, 17060210, 17060209, 17060208, 17060207, 17060206, and 17060205, Idaho, Valley, Adams, and Custer Counties, Idaho.

Dear Ms. Rainville:

The enclosed document contains a biological opinion (Opinion) prepared by the National Marine Fisheries Service (NMFS) pursuant to section 7(a)(2) of the Endangered Species Act (ESA) on the effects of the Payette National Forest (PNF) Road Management Program through December 31, 2017. In this Opinion, NMFS concludes that the proposed action is not likely to jeopardize the continued existence of Snake River spring/summer Chinook salmon, Snake River fall Chinook salmon, Snake River Basin steelhead, or result in the destruction or adverse modification of their designated critical habitat.

As required by section 7 of the ESA, an incidental take statement prepared by NMFS is provided with the Opinion. The incidental take statement describes reasonable and prudent measures (RPMs) NMFS considers necessary or appropriate to minimize incidental take associated with this action. It also sets forth non-discretionary terms and conditions, including reporting requirements with which the Federal agency and applicant, if any, must comply with to carry out the RPMs. Incidental take from actions by the action agency and applicant that meets these terms and conditions will be exempt from the ESA take prohibition.

This document also includes the results of NMFS' analysis of the action's likely effects on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and includes one Conservation Recommendation to avoid, minimize, or otherwise offset potential adverse effects on EFH. This Conservation Recommendation is a non-identical set of the ESA Terms and Conditions. Section 305(b)(4)(B) of the MSA requires Federal agencies provide a detailed written response to NMFS within 30 days after receiving this recommendation. If the response is inconsistent with the

recommendation, the PNF must explain why the recommendation will not be followed, including the justification for any disagreements over the effects of the action and the recommendation. In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many Conservation Recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, in your statutory reply to the EFH portion of this consultation, we ask that you clearly identify the number of Conservation Recommendations accepted.

If you have questions regarding this consultation, please contact Bill Lind (208) 378-5697 or Rick Edwards (208) 378-5645 of the South Idaho Branch Office.

Sincerely,

for D. Robert Lohn
Regional Administrator

cc: J. Foss – USFWS
J. Hansen – IDFG
R. Nelson - PNF
S. Penney – Nez Perce Tribe
B. Elmo – Shoshone-Bannock Tribes

Endangered Species Act – Section 7 Consultation
Biological Opinion

and

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Payette National Forest Road Maintenance/Management Program
Hells Canyon, Little Salmon River, Lower Salmon, South Fork Salmon, Middle Salmon-Chamberlain, Lower Middle Fork Salmon, and Upper Middle Fork Salmon, 4th HUC#s 17060101, 17060210, 17060209, 17060208, 17060207, 17060206, and 17060205
Idaho, Valley, Adams, and Custer Counties, Idaho

Lead Action Agency: Payette National Forest

Consultation Conducted By: National Marine Fisheries Service
Northwest Region

Date Issued: September 12, 2008

Issued by: for Michael Tehan

D. Robert Lohn
Regional Administrator

NMFS No.: 2008/04131

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ACRONYMS

BLM	Bureau of Land Management
BRT	Biological Review Team
CHART	Critical Habitat Analytical Review Team
DBH	diameter at breast height
DPS	Distinct Population Segments
DQA	Data Quality Act
EFH	Essential Fish Habitat
EFSFSR	East Fork South Fork Salmon River
ESU	Evolutionarily Significant Units
FPC	Fish Passage Center
FR	Forest Road
FS	Forest Service
FWS	U.S. Fish and Wildlife Service
HUC	Hydrologic Unit Code
ICBTRT	Interior Columbia Basin TRT
IDFG	Idaho Department of Fish and Game
IPC	Idaho Power Company
LRMP	Land and Resource Management Plan
LSRCP	Lower Snake River Compensation Plan
LWD	Large Woody Debris
MFSR	Middle Fork Salmon River
MPGs	Major Population Groups
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSSW	Main Salmon Southwest
NFS	National Forest Systems
NMFS	National Marine Fisheries Service
Opinion	Biological Opinion
PCE	primary constituent elements
PFMC	Pacific Fishery Management Council
PNF	Payette National Forest
ppm	parts per million
RAP	Roads Analysis Process
RCAs	Riparian Conservation Areas
RM	River Mile
RPMs	Reasonable and Prudent Measures

SAR	smolt-to-adult return
SFSR	South Fork Salmon River
TRAP	Trails/Roads Analysis Process
TRT	Technical Recovery Team
VSP	Viable Salmonid Population
WCI	Watershed Conditions Indicators

1. INTRODUCTION

The biological opinion (Opinion) and incidental take statement portions of this consultation were prepared by the National Marine Fisheries Service (NMFS) in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531, *et seq*.), and implementing regulations at 50 CFR 402. With respect to critical habitat, the following analysis relied only on the statutory provisions of the ESA, and not on the regulatory definition of "destruction or adverse modification" at 50 CFR 402.02.

The essential fish habitat (EFH) consultation was prepared in accordance with section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801, *et seq*.) and implementing regulations at 50 CFR 600. The administrative record for this consultation is on file at the NMFS Idaho State Habitat Office in Boise. NMFS is issuing this Opinion for ESA-listed Snake River spring/summer Chinook salmon, Snake River fall Chinook salmon, Snake River Basin steelhead, and their designated critical habitats.

1.1. Background and Consultation History

The lead action agency for this consultation is the Payette National Forest (PNF). The Road Maintenance Management Program was proposed by the PNF as part of the programmatic section 7 Watershed Biological Assessment (BA) consultations for Ongoing and New Actions on the PNF. The PNF submitted programmatic BAs for section 7 Watersheds to NMFS on April 22, 2008. NMFS will issue separate letters of concurrence to cover "Not Likely to Adversely Affect" actions, and separate Opinions for other "Likely to Adversely Affect" actions included in the Watershed BAs.

Copies of the draft Opinion were provided to the Nez Perce and Shoshone-Bannock Tribes (Tribes) on August 20, 2008. No response was received.

1.2. Proposed Action

The proposed action has been designed to conduct management activities on National Forest Systems (NFS) roads, in the Deep Creek, Little Salmon River, South Fork Salmon River (SFSR), Middle Fork Salmon River (MFSR) Tributaries Northwest/Main Salmon River Tributaries Southeast, and Main Salmon Southwest (MSSW) section 7 watersheds until December 31, 2017. The proposed action will occur on PNF administered lands in the following 4th field hydrologic unit code (HUC) subbasins (4th HUCs): Hells Canyon (HUC# 17060101), Little Salmon River (HUC# 17060210), Lower Salmon (HUC# 17060209), SFSR (HUC# 17060208), Middle Salmon-Chamberlain (HUC# 17060207), Lower MFSR (HUC# 17060206), and Upper MFSR (HUC# 17060205).

These activities would occur throughout the Deep Creek, Little Salmon River, SFSR, MFSR, and MSSW section 7 watersheds. These activities are performed by PNF engineering staff, other authorized PNF personnel, contractors, or cooperators who have written agreement with the PNF to perform maintenance.

Road management has several major components, including: (1) road maintenance; (2) administration of easements; (3) rights of way and permits; and, (4) physical closures of various types related to reducing resource impacts. Road maintenance that is part of mining operating plans is the sole road maintenance activity that is not part of this Federal action; operating plans require separate consultation where they may affect listed species and/or critical habitat. Road management and the travel plan Federal action are interdependent actions; although NMFS will address the PNF travel plan in a separate Opinion.

Maintenance can be summarized as: (1) routine road surface blading; (2) culvert repair and cleaning; (3) brushing on roadways (top of the cut to the bottom of the fill); and (4) road ditch cleaning. Road maintenance also includes replacing existing facilities (e.g. road, culvert, bridge, retaining wall, etc.) and resurfacing roads with pre-existing materials, except as identified under "acts of God." Road surfaces may be upgraded to reduce erosion and sedimentation so long as cut and fill-slopes are not enlarged or disturbed; for example, a native surface road may be upgraded to pit-run gravel, crushed aggregate, or asphalt. The Federal action includes replacement of facilities, normally maintained by the PNF, where they are obliterated (severely damaged, or eroded) for up to 500 feet of full prism by flood, fire or other "acts of God" provided a journey-level Fisheries Biologist agrees that the effects are not likely to be adverse. Repairs due to "acts of God" may involve alignment shifting to reduce encroachments of riparian conservation areas (RCAs) and floodplains.

Within funding constraints, the maintenance level assigned to a road dictates the frequency and extent of maintenance work performed on a particular road, or section of road. Roads assigned a higher maintenance level are traveled more often and therefore receive more maintenance more frequently (for further detail refer to *Fall Back Emergency Steps* below). Maintenance levels also provide a way to classify forest roads according to their assigned use, so that the road will perform as planned. A description of the various road maintenance levels can be found in Table 1.

Routine road maintenance activities, snow plowing, and road dust abatement will be conducted to prevent resource damage. Road plowing will follow standards described below in the *Required Mitigation* section. These standards are designed to reduce the potential for damage to the road from snow plowing activities and thereby reduce sediment delivery to streams. Maps representing the most current information available were included with the BAs, but have not been included in this Opinion because of their size.

Table 1. U.S. Forest Service Road Maintenance Levels, FSH 7709.58 – Transportation System Maintenance Handbook WO Amendment 7709.58-92-1.

Parameter	Maintenance Level				
	1	**2**	**3**	**4**	**5**
Service Life	Intermittent Service – Closed Status	Constant Service or Intermittent Service – Open Status (Some uses may be restricted under 36 CFR 261.50)			
Traffic Type	Open for Non-motorized Uses. Closed to Motorized Traffic.	Administrative, Permitted, Dispersed Recreation, Specialized, Commercial Haul	All National Forest Traffic – General Use, Commercial Haul		
Vehicle Type	Closed – N/A	High Clearance, Pick-up, 4x4, Log Trucks, etc.	All Types – Passenger Cars to Large Commercial Vehicles		
Traffic Volume	Closed – N/A	Traffic Volume Increases w/ Maintenance Level			
Typical Surface	All Types	None, Native, or Aggregate (may be dust abated)		Aggregate (usually dust abated; paved)	
Travel Speed	Closed – N/A	Travel Speed Increases w/ Maintenance Level			
User Comfort and Convenience	Closed – N/A	Not a Consideration	Low Priority	Moderate Priority	High Priority
Functional Classification	All Types	Local Collector	Local Collector Arterial	Local Collector Arterial	Local Collector Arterial
Traffic Service Level	Closed – N/A	D	A, B, C - Traffic Service Level Increases w/ Maintenance Level		
Traffic Management Strategy	Prohibit or Eliminate	Discourage or Prohibit Cars. Accept or Discourage High Clearance Vehicles	Encourage, Accept	Encourage	Encourage

1.2.1. Maintenance Levels and Responsibility

A more detailed description of road maintenance is that road maintenance is any activity that takes place on an existing classified or unclassified road for the expressed purpose of maintaining the road or road system in a safe and properly functioning condition for the user and level of use identified by the road use objective and maintenance level. This activity would be further defined by the following sub-categories:

1. ***Rote or Routine Road Maintenance.*** Maintenance is anticipated/planned on a repeated/yearly basis, e.g. surface blading, brushing, culvert & bridge clearing, cleaning and repair, surface clearing, deadfall removal. Slide and slough removal occurs. Ditch clearing and cleaning occurs. Rock raking, and dust abatement applications occur. Hazard trees are felled.

2. ***Normal or Frequent Road Maintenance.*** Road resurfacing, gravel placement (new or resurface), pavement patching and sealing (including new bituminous surface treatments seal coats, and similar measures) occur but not annually. Culvert installations, including replacements, upgrades, extensions and new installations, can occur providing they are completed in accordance with design criteria included in the Forest Service (FS) R1/R4 Regional Programmatic Opinion for stream crossings (NMFS's tracking number 2005/06396). Aggregate crushing and hauling can occur from existing rock pit sources. Minor concrete work (i.e. small headwalls) can occur. Riprap slope protection, prism reconstruction, retaining walls for slope stabilization, seeding and mulching can occur. Riprap placement for culvert inlet and outlet protection and bridge repairs can occur if limited to a cumulative linear distance of 100 feet or less at an individual site and after approval by a Fisheries Biologist, except where there may be potential adverse effects to listed species or designated critical habitat. Snow removal occurs on roadways to facilitate access following inclement weather.

3. ***Extreme or Very Infrequent Road Maintenance.*** Road realignments can occur. Realignment is defined as road maintenance because: (1) the road exists and is part of an existing road system, and (2) the local road network accesses a portion of the National Forest maintaining the systems function. In addition, meeting present Land and Resource Management Plan (LRMP) standards or legal requirements, (i.e. ESA and Clean Water Act, etc.) is a maintenance function. Road realignment could occur if the Ranger, through the input of Fisheries Biologists, Hydrologists, and others, has determined that listed species or designated critical habitat would benefit by road realignment, and a Fisheries Biologist has determined there would be no adverse affects due to sediment delivery, harassment of adults, or other mechanisms of effect. Temporary bridge placement or permanent bridge replacement may occur in locations where a Fisheries Biologist has determined listed fishes are not present, when utilizing existing abutments or supports or with minor movement or improvement of abutments, and when effects to listed fishes or designated critical habitat from sediment delivery are negligible (see erosion control mitigations below). Actions may require stream fording after Fisheries Biologist approval. All design criteria applicable to FS roads would be implemented with extreme or very infrequent road maintenance.

Administration of permits and easements results in conducting similar activities to road maintenance except that the FS jurisdiction is limited to prescribing terms and conditions. Permits contain the most flexibility and can contain all mitigation measures that the FS believes are appropriate. The terms and conditions applied to easements, or rights of way can only contain those measures consistent with the property rights identified in the easement or right of way; the latter may apply to state or county roads, access to private property, and similar circumstances.

Administration of permits and easements also includes grooming of snowmobile routes and connections among them. The routes are mostly on existing roads and these agreements are with the counties and the State of Idaho.

Physical road closures are those identified according to the mitigation measures described below. The PNF has a process for making decisions about what roads to close for resource protection and otherwise how to manage roads; that process is identified below.

1.2.2. Situations Requiring Separate Consultation

Separate consultation will be required for PNF road maintenance activities if:

- A specific road maintenance action on roads for which the PNF has maintenance responsibility (including maintenance by County personnel or road use permittees) does not adhere to PNF road maintenance standards, does not adhere to all applicable mitigations listed below, and/or may adversely affect a listed species (which could include stranding or harassing fish) or designated critical habitat; and/or,

- A maintenance activity or assigned maintenance level results in adverse effects to a listed species (which could include stranding or harassing fish) or designated critical habitat regardless of whether maintenance standards are followed.

Road maintenance crews, contractors and cooperators will be provided training by the PNF, prior to operation, regarding the potential for effects to listed fishes and designated critical habitat, and what maintenance practices are mandatory and appropriate.

1.2.3. Required Mitigation

Mitigation, in this case, consists of practices aimed at minimizing sediment production and delivery to streams, maintaining or improving the designed drainage of the road, and avoiding the introduction of dust abatement chemicals that could be delivered to streams. Regular maintenance keeps roads in good functioning condition and allows for identifying and correcting problems promptly. Recommended maintenance (mitigation) for road maintenance activities is found in Furniss et al. (1991) and are listed below. These practices will help reduce the adverse effects of road deterioration on habitat.

1.2.3.1. General Practices

- Do not leave berms along the outside edge of roads, unless an outside berm was specifically designed to be a part of the road and low-energy drainage is provided for. The creation of outside berms during road grading is a common mistake, and frequently turns low-impact roads into high-impact, chronic sediment producers.

- Grade and shape roads to conserve existing surface material. Road grading and shaping should maintain, not destroy, the designed drainage of the road, unless modification is necessary to improve drainage problems that were not anticipated during the design phase.

- Inspect ditches and culverts frequently, as appropriate to the maintenance level, and clean them out when necessary. Do not over-clean them, however, because excessive cleaning of ditches causes unnecessary sedimentation. Use care to not undercut the ditch back slope, or the cut-slope.

- When blading and shaping roads, do not side cast excess material onto the fill. End haul all excess fine material that cannot be bladed into the surface as periodic side casting can prevent fill stabilization and promote erosion. End haul and prohibition of side casting is not required for organic material like trees, needles, branches, and clean sod; however, fine organics like sod and grass should be cast somewhere other than into water. Slides and rock failures including fine material of more than approximately one-half yard at one site should be hauled to disposal sites. Fine materials from slides, ditch maintenance, or blading can be worked into the road. Scattered clean rocks could be raked or bladed off the road except within 300 feet of perennial or 100 feet of intermittent streams. Fine material is 1-inch minus; rocks are 1-inch plus.

- When treating weeds or brush, follow all measures identified in the Federal action titled "Noxious Weed Control" (addressed in a separate Opinion issued by NMFS [2008/03332]).

- Apply dust-abatement additives and stabilization chemicals (typically $MgCl_2$ or $CaCl_2$ salts) so as to avoid runoff of applied dust abatement solutions to streams. Spill containment equipment will be available during chemical dust abatement application.

- Promptly remove debris that obstructs drainage systems.

- Identify and close those unsurfaced roads that during the wet season can directly contribute sediment to streams.

- Identify, close, and reclaim unneeded classified and unclassified roads. These roads should be put into shape to be stable and drain properly without maintenance. This usually requires earthwork for removing culverts or "dishing out" crossings that have high potential for diversion, shaping the road for long-term stability. Where high-value fisheries are at risk from abandoned roads, more extensive obliteration and reclamation of roads should be considered. Road obliteration and reclamation actions are covered under the *Watershed and Fish Habitat Improvements and Maintenance* action (will be covered in a separate informal consultation with NMFS).

- Locate fuel storage areas outside of RCAs and provide facilities to contain the largest possible spill. Leaks of motor oil and hydraulic fluids from heavy equipment should be monitored and controlled to prevent water contamination.

In addition, the following practices will be followed during road maintenance activities:

- Avoid road maintenance activities during times in which ESA-listed fish eggs or alevins are in gravels near enough downstream to the disturbance to possibly be affected by the action. A Fisheries Biologist will determine this time period and whether the action is near enough to the fish to warrant this protection.

- Preventive maintenance should be practiced on all roads, not just actively used ones, as prioritized based on resource impacts and funding.

- Do not side cast road grading material (<1 inch diameter fine inorganic material) along all roads within one-fourth mile of perennial streams and from roads onto fill slopes having a slope greater than 45%.

- Do not "undercut" cutslopes when cleaning inside ditches so as to avoid destabilizing the slope and thereby accelerating erosion.

- End-haul all large rocks, slides, and other material that ends up on the road to a designated disposal area as agreed by a journey-level Hydrologist/Soils Scientist or a journey-level Fisheries Biologist.

- Earth disturbing projects, where listed fishes are present, shall have the agreement of the Level 1 Team that the effects are not likely to be adverse and agreement of a journey-level Hydrologist/Soils Scientist, one of whom should be on hand to monitor the project.

- Stream crossing projects will be conducted according to design criteria in the FS R1/R4 Regional Programmatic BA and corresponding NMFS Opinion (2005/06396).

- Road maintenance will not be attempted when surface material is saturated with water and erosion problems could result.

- Do not excessively "brush" (cutting vegetation) along roads where the vegetation is stabilizing slopes, or providing shade to a stream or river channel.

- Road maintenance may interrupt the delivery of large woody debris (LWD) to streams thereby inhibiting the maintenance or attainment of good habitat conditions. Therefore, LWD (> 30 feet in length and >20 inches in diameter) present on roads within this watershed's RCAs shall be moved intact to down slope of the road, subject to site-specific considerations. Movement downslope

will be subject to the guidance of a journey-level Fisheries Biologist; that guidance will be provided at annual training sessions for road crews and on a site-by-site basis as necessary.

In order to avoid and mitigate effects identified in the environmental baseline, the PNF will conduct additional activities. In addition to previous requirements developed for consultation, the PNF will:

- In February 2000, the PNF began to examine priorities for road management's actions to incorporate the Chief's agenda and incorporate ESA-listed fishes and designated critical habitat into the priority setting process.

- In order to fully evaluate appropriate road management options the PNF will use a Trails/Roads Analysis Process (TRAP). The TRAP was developed to be compatible with subbasin review and watershed analysis. This process is being incorporated into a national Roads Analysis Process (RAP), which is required in all National Environmental Policy Act's projects involving road management since July 12, 2001.

- A journey-level Soils Scientist has been incorporated into the road maintenance crew.

1.2.3.2. Snow Plowing

- The travelway, shoulders, turnouts, and drainage ditches shall be bladed and shaped or blown to maintain the original cross section, provide a suitable driving surface, and allow for unobstructed flow of water to drainage structures.

- Snow shall be directed to the fill slope or river side of roadway wherever possible to prevent excessive snow loading of any cut slopes and mass stability problems.

- An adequate snow base shall remain to prevent roadbed materials from being bladed off the travelway.

- Snow plowing shall not undercut slopes or damage vegetation adjacent to the roadway.

- Periodic water escape areas shall be constructed in the snowbanks so that water can escape from the travelway.

- Removal of snow and slides on the travelway shall be done in a manner that will keep drainage channels and culverts clear of debris and functioning and to prevent excessive wash or other damage to the roadbed materials.

- Slides or debris from other sources shall not be left on the travelway or mixed into the roadbed materials. This material will be end-hauled to an appropriate site.

1.2.4. Documentation Requirements

The following documentation is required and will be provided to the U.S. Fish and Wildlife Service (FWS) or NMFS if requested:

- All culvert replacement will be documented with respect to location, problem, action, date, Fisheries Biologist approval, etc.

- Road resurfacing will be documented with respect to resurfacing material, method of application, dates, Fisheries Biologist approval, etc.

1.2.5. Fall Back or Emergency Steps

Situations such as culvert failures, slides, and road failures are evaluated and prioritized according to the maintenance level of the road and the potential for damage to other resources. Road maintenance problems that may pose a threat to ESA-listed fishes or their designated critical habitat will receive the highest priority. Problems on roads of either maintenance levels 1 (closed) or 2 are usually given a lower priority than more heavily used roads of levels 3, 4, or 5. Problems are usually reported to the road operations engineer and a work order is given to the road crew to repair the problem. "Road Situation" forms are available to apprise engineering staff of road-related problems or potential problems by other Forest personnel.

Road maintenance problems are usually corrected within 1 to 10 days, depending upon the priorities of the road maintenance crew. Problems threatening ESA-listed fishes or their designated critical habitat will be addressed immediately. If PNF road crews are unable to respond immediately (e.g., because of equipment problems or location), the work will be contracted and supervised by PNF personnel, including a Fisheries Biologist, Soil Scientist, or Hydrologist.

A Fisheries Biologist will review road-related maintenance problems that require more than routine maintenance (see definition above). The PNF will complete a BA and consultation with NMFS and FWS, as appropriate, for major road repairs or maintenance that may pose a threat to ESA-listed fishes or their designated critical habitat.

1.3. Action Area

"Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For purposes of this consultation, the action area is the PNF. The waters include the following 4th field

HUCs: the Hells Canyon (17060101), Little Salmon River (17060210), Lower Salmon (17060209), SFSR (17060208), Middle Salmon-Chamberlain (17060207), Lower MFSR (17060206), and Upper MFSR (17060205) watersheds. Along streams and riparian areas, the action area includes downstream reaches, which may be outside the administrative bounds of the PNF and that may carry sediment or chemical contaminants associated with road maintenance actions.

The action area is used by the freshwater life history stages of threatened Snake River fall Chinook salmon, Snake River spring/summer Chinook salmon, and Snake River Basin steelhead. Critical habitat for Snake River fall Chinook salmon within the action area includes the mainstem Salmon and Snake Rivers within the Lower Salmon and Hells Canyon 4th field HUCs (17060209 and 17060101) (Table 2). Designated critical habitat for the Snake River spring/summer Chinook salmon includes all river reaches presently or historically accessible to the species within all of the above listed 4th HUCs. Designated critical habitat for Snake River Basin steelhead includes specific reaches of streams and rivers, as published in the Federal Register (70 FR 52630), including stream segments found within all of the above listed 4th HUCs. The action area, except for areas above natural barriers to fish passage, is also EFH for Chinook salmon (Pacific Fishery Management Council [PFMC] 1999), and is in an area where environmental effects of the proposed project may adversely affect EFH for this species.

Table 2. Federal Register Notices for Rules that list species, designate critical habitat, or apply protective regulations to Evolutionarily Significant Units (ESUs)/Distinct Population Segments (DPSs) considered in this consultation.

Species ESU/DPS	Listing Status	Critical Habitat	Protective Regulations
Chinook salmon (*Oncorhynchus tshawytscha*)			
Snake River spring/summer	T 6/28/05; 70 FR 37160	10/25/99; 64 FR 57399	6/28/05; 70 FR 37160
Snake River fall	T 6/28/05; 70 FR 37160	12/28/93; 58 FR 68543	6/28/05; 70 FR 37160
Steelhead (*O. mykiss*)			
Snake River Basin	T 1/05/06; 71 FR 834	9/2/05; 70 FR 52630	6/28/05; 70 FR 37160

Note: Listing status "T" means listed as threatened under the ESA and "E" means listed as endangered.

2. ENDANGERED SPECIES ACT

2.1. Biological Opinion

The ESA establishes a national program to conserve threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies, such as the PNF, to consult with the FWS, NMFS, or both, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitats. Section 7(b)(4) requires the provision of an incidental take statement that specifies the impact of any incidental taking and includes reasonable and prudent measures (RPMs) to minimize such impacts.

This Opinion presents NMFS' review of the status of each listed species of Pacific salmon and steelhead[1] considered in this consultation, the condition of designated critical habitat, the environmental baseline for the action area, all the effects of the action as proposed, and cumulative effects (50 CFR 402.14(g)). For the jeopardy analysis, NMFS analyzes those combined factors to conclude whether the proposed action is likely to appreciably reduce the likelihood of both the survival and recovery of the affected listed species.

The critical habitat analysis determines whether the proposed action will destroy or adversely modify designated critical habitat for listed species by examining any change in the conservation value of the essential features of that critical habitat. This analysis relies on statutory provisions of the ESA, including those in section 3 that define "critical habitat" and "conservation," in section 4 that describe the designation process, and in section 7 that sets forth the substantive protections and procedural aspects of consultation. The regulatory definition of "destruction or adverse modification" at 50 CFR 402.02 is not used in this Opinion.

2.1.1. Status of the Species and Critical Habitat

This section defines biological requirements of each ESA-listed species affected by the proposed action, and reviews the status of each ESA-listed species and designated critical habitat relative to those requirements. ESA-listed species facing a high risk of extinction and critical habitats with degraded conservation value are more vulnerable to the aggregation of effects considered under the environmental baseline, the effects of the proposed action, and cumulative effects.

2.1.1.1. Status of Critical Habitat

NMFS reviews the status of designated critical habitat affected by the proposed action by examining the condition and trends of primary constituent elements (PCEs) throughout the designated area. The PCEs consist of the physical and biological features identified as essential to the conservation of the species in the documents designating critical habitat (Table 3). More specifically, these PCEs include sites essential to support one or more life stages of the ESA-listed species (sites for spawning, rearing, migration, and foraging) and contain physical or biological features essential to the conservation of the listed species (e.g., spawning gravels, water quality and quantity, side channels, or food).

1 An 'evolutionarily significant unit' (ESU) of Pacific salmon (Waples 1991) and a distinct population segment (DPS) of steelhead (final steelhead FR notice) are considered to be 'species,' as defined in Section 3 of the ESA.

Table 3. Types Of Sites and Essential Physical and Biological Features Designated as PCEs, and the Species Life Stage Each PCE Supports.

Site	Essential Physical and Biological Features	ESA-listed Species Life Stage
Snake River Basin Steelhead[a]		
Freshwater spawning	Water quality, water quantity, and substrate	Spawning, incubation, and larval development
Freshwater rearing	Water quantity & floodplain connectivity to form and maintain physical habitat conditions	Juvenile growth and mobility
	Water quality and forage[b]	Juvenile development
	Natural cover[c]	Juvenile mobility and survival
Freshwater migration	Free of artificial obstructions, water quality and quantity, and natural cover[c]	Juvenile and adult mobility and survival
Snake River Fall and Spring/summer Chinook Salmon		
Spawning & Juvenile Rearing	Spawning gravel, water quality and quantity, cover/shelter, food, riparian vegetation, and space	Juvenile and adult.
Migration	Substrate, water quality and quantity, water temperature, water velocity, cover/shelter, food[d], riparian vegetation, space, safe passage	Juvenile and adult.

a Additional PCEs pertaining to estuarine, nearshore, and offshore marine areas have also been described for Snake River Basin steelhead. These PCEs will not be affected by the proposed action and have therefore not been described in this Opinion.
b Forage includes aquatic invertebrate and fish species that support growth and maturation.
c Natural cover includes shade, large wood, log jams, beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.
d Food applies to juvenile migration only.

Snake River Spring/Summer Chinook Salmon Critical Habitat

Critical habitat was designated for Snake River spring/summer Chinook salmon on December 28, 1993 (58 FR 68543), and was revised on October 25, 1999 (64 FR 57399). The section 7 watersheds considered in this Opinion include designated critical habitat. Critical habitat is designated to include all river reaches presently or historically accessible to Snake River spring/summer Chinook salmon. Critical habitat includes the stream bottom, the water, and the adjacent riparian zone, which is defined as the area within 300 feet of the line of high water of a stream channel or from the shoreline of a standing body of water.

Habitat impairment is common in the range of this ESU, including the PNF. Spawning and rearing habitats are impaired by factors such as tilling, water withdrawals, timber harvest, grazing, mining, and alteration of floodplains and riparian vegetation. Mainstem Columbia and Snake River hydroelectric developments have altered flow regimes and estuarine habitat, and disrupted migration corridors.

During all life stages Snake River spring/summer Chinook salmon require cool water that is relatively free of contaminants. Water quality impairments in the designated critical habitat of this ESU include inputs from fertilizers, insecticides, fungicides, herbicides, surfactants, heavy metals, acids, petroleum products, animal and human sewage, dust suppressants (e.g., magnesium chloride), radionuclides, sediment in the form of turbidity, and other anthropogenic pollutants. Pollutants enter the surface waters and riverine sediments from the headwaters of the Salmon River to the Columbia River estuary as contaminated stormwater runoff, aerial drift and deposition, and via point source discharges. This species also requires rearing and migration corridors with adequate passage conditions (water quality and quantity available at specific times) to allow access to the various habitats required to complete their life cycle.

Many activities have affected the essential features in the designated critical habitat on the PNF. Water temperature, water quality, water quantity, and instream sediment levels have been affected due to the effects of fire, roads, mining, grazing, recreation, and irrigation diversions (discussed in more detail in the Environmental Baseline section of this Opinion). Road maintenance activities have the potential to directly affect water quality, spawning gravel, cover/shelter, and riparian vegetation. The conservation role of the habitat in the Salmon River basins remains important because it supports several Chinook salmon populations, including some with essentially no hatchery influence.

Snake River Fall Chinook Salmon Critical Habitat

Critical habitat was designated for Snake River fall Chinook salmon on December 28, 1993, (58 FR 68543). The historic distribution of fall Chinook salmon is limited on the PNF, occurring only in large mainstem rivers and tributaries to the Snake and Salmon Rivers. The current distribution of fall Chinook salmon potentially affected by the proposed action is located along the Snake River immediately downstream from its confluence with Deep Creek, and the lower/middle main Salmon River, from the mouth upstream to approximately its confluence with French Creek.

Previous Chinook salmon status reviews (Waples et al. 1991; Myers et al. 1998) identified several concerns regarding Snake River fall Chinook salmon; steady and severe decline in abundance since the 1940s, loss of primary spawning and rearing areas upstream of the Hells Canyon Dam complex, increase in non-local hatchery contribution to adult escapement over Lower Granite Dam, and relatively high aggregate harvest impacts by ocean and in-river fisheries (NMFS 2006a).

Snake River fall Chinook salmon, like many other species of Pacific salmon and steelhead, have experienced declines in abundance over the past several decades as a result of loss, damage, or change to their natural environment. Water diversions for agriculture, flood control, domestic use, and hydropower have greatly altered or eliminated historically accessible habitat and degraded remaining habitat. Forestry, agriculture, mining, and urbanization have degraded, simplified, and fragmented habitat. Sedimentation from extensive and intensive land use activities (e.g., timber harvests, road building, livestock grazing, and urbanization) is recognized as a primary cause of habitat

degradation throughout the range of Pacific salmon and steelhead. The destruction or modification of estuarine areas has resulted in the loss of important rearing and migration habitats (NMFS 2006a).

Dams and alterations in river flow and temperatures from various water uses in the upper Snake River and tributaries are the primary continuing threats to fall Chinook salmon range and habitat. The historic distribution of Snake River fall Chinook salmon extended from the mouth of the Snake River to a natural barrier at Shoshone Falls (River Mile [RM] 615). The construction of Swan Falls Dam in 1901 eliminated the upper 385 miles of the historic range of the species (Tiffin et al. 1999). With the construction of the Hells Canyon complex and the four lower Snake River dams from the late 1950s through mid-1970s, the spawning habitat for fall Chinook salmon in the mainstem Snake River was further reduced to its present state - approximately 100 miles of free flowing Snake River between Hells Canyon Dam and Lower Granite Reservoir. Added to the loss of more than 80% of the historic habitat in the Snake River are the heavily impacted migration conditions for the species caused by the lower four Columbia River dams. The eight dams/reservoirs which the extant population must negotiate, as both juveniles and adults, cause compounded migration delays and mortality. The Dworshak Dam-added effects on temperature and flows to the Clearwater River and to the Snake River habitats already affected by flow reductions and water temperature changes from management activities in the upper Snake River. Fall Chinook salmon now occupy mostly remnant areas with lower natural production potential than the habitats available in their former range (Connor et al. 2002; Dauble et al. 2003).

During all life stages Snake River fall Chinook salmon require cool water that is relatively free of contaminants. Water quality impairments in the designated critical habitat of this ESU include inputs from fertilizers, insecticides, fungicides, herbicides, surfactants, heavy metals, acids, petroleum products, animal and human sewage, dust suppressants (e.g., magnesium chloride), radionuclides, sediment in the form of turbidity, and other anthropogenic pollutants. Pollutants enter the surface waters and riverine sediments from the headwaters of the Salmon River to the Columbia River estuary as contaminated stormwater runoff, aerial drift and deposition, and via point source discharges. This species also requires migration corridors with adequate passage conditions (water quality and quantity available at specific times) to allow access to the various habitats required to complete their life cycle.

Road maintenance activities have the potential to directly affect water quality, spawning gravel, cover/shelter, and riparian vegetation. The conservation role of the habitat in the Salmon and Snake River basins remains important because it supports the one remaining extant population of fall Chinook salmon.

Snake River Basin Steelhead Critical Habitat

Critical habitat for Snake River Basin steelhead was designated on September 2, 2005, with an effective date of December 31, 2005 (70 FR 52630). Critical habitat on the PNF includes significant reaches in each of the section 7 watersheds included in this

consultation. Table 21 in Federal Register details the streams within the Snake River basin steelhead geographical range but excluded from critical habitat designation. Designated critical habitat for the Snake River Basin steelhead only includes the stream channel, with a lateral extent as defined by the ordinary high-water line. The bankfull elevation is used in areas where ordinary high-water line has not been defined.

The Snake River Basin Critical Habitat Analytical Review Team (CHART) concluded that all occupied areas contain spawning, rearing, or migration PCEs for this species. The CHART concluded that many of the watersheds within the PNF have high conservation values; 15 watersheds from the SFSR alone were determined to have high conservation value (NMFS 2005).

The complex life cycle of steelhead gives rise to complex habitat needs, particularly during the freshwater phase (Spence *et al.* 1996). Spawning gravels must be of a certain size and free of sediment to allow successful incubation of the eggs. Eggs also require cool, clean, and well-oxygenated waters for proper development. Juvenile steelhead need abundant food sources, including insects, crustaceans, and other small fish. They need places to hide from predators (mostly birds and bigger fish), such as under logs, root wads and boulders in the stream, and beneath overhanging vegetation. They also need places to seek refuge from periodic high flows (side channels and off channel areas) and from warm summer water temperatures (coldwater springs, cool tributaries, and deep pools). Returning adults generally do not feed in fresh water but instead rely on limited energy stores to migrate, mature, and spawn. Like juvenile steelhead, the adults also require cool water and places to rest and hide from predators.

During all freshwater life stages, steelhead require cool water that is relatively free of contaminants. Water quality impairments in the range of the Snake River Basin steelhead species include inputs from fertilizers, insecticides, fungicides, herbicides, surfactants, heavy metals, acids, petroleum products, animal and human sewage, dust suppressants (e.g., magnesium chloride), radionuclides, sediment in the form of turbidity, and other anthropogenic pollutants. Pollutants enter the surface waters and riverine sediments from the headwaters of the Salmon River to the Columbia River estuary as contaminated stormwater runoff, aerial drift and deposition, and via point source discharges. Steelhead also require rearing and migration corridors with adequate passage conditions (water quality and quantity available at specific times) to allow access to the various habitats required to complete their life cycle.

The CHART identified several management activities that have affected the PCEs in the designated critical habitat on the PNF, including agriculture, forestry, fire activity and disturbance, grazing, irrigation impoundments and withdrawals, mineral mining, recreation, urbanization, and road building and maintenance. Effects to the PCEs from these activities are scattered across the section 7 watersheds (NMFS 2005). Road maintenance activities have the potential to directly affect water quality, spawning gravel, and natural cover.

2.1.1.2. Status of the Species

NMFS reviews the condition of the listed species affected by the proposed action using criteria that describe a "viable salmonid population" (VSP) (McElhany *et al.* 2000). Attributes associated with a VSP include the abundance, productivity, spatial structure, and genetic diversity that maintain its capacity to adapt to various environmental conditions and allow it to sustain itself in the natural environment. These attributes are influenced by survival, behavior, and experiences throughout the entire life cycle, characteristics that are influenced in turn by habitat and other environmental conditions.

Snake River Spring/Summer Chinook Salmon

The Snake River spring/summer Chinook salmon ESU, listed as threatened on April 22, 1992, (67 FR 14653), includes all natural-origin populations in the Tucannon, Grande Ronde, Imnaha, and Salmon Rivers. Fish returning to several of the hatchery programs are also listed, including those returning to the Tucannon River, Imnaha, and Grande Ronde River hatcheries, and to the Sawtooth, Pahsimeroi, and McCall hatcheries on the Salmon River.

The Snake River drainage is thought to have produced more than 1.5 million adult spring/summer Chinook salmon in some years during the late 1800s (Matthews and Waples 1991). By the 1950s the abundance of spring/summer Chinook had declined to an annual average of 125,000 adults and by the mid-1960s, further declined to an average of about 60,000 adults. Adult returns counted at Lower Granite Dam reached all-time lows in the mid-1990s, although numbers have begun to increase since 1997. Over a 10-year period from 1992 to 2001, which includes the year of listing (1992), returns of wild/natural fish ranged from 183 in 1994 to 12,475 in 2001, and averaged 3,314 adults. In 2003, 70,609 adult spring Chinook salmon passed over Lower Granite Dam, and in 2004, the number remained about the same at 70,742 fish (Fish Passage Center [FPC] 2005). Approximately 73% of the spring run Chinook salmon in 2004 were of hatchery origin, which means approximately 19,100 of the 2004 Snake River spring Chinook salmon run were wild/natural fish. From 2004 to 2005 there was a 60% drop in Snake River spring Chinook salmon adults passing Lower Granite Dam. The 2007 adult spring Chinook salmon count of 22,905 was 44% lower than the 10-year average of 51,772 from 1997 to 2006 (FPC 2008). A total of 7,312 adult summer Chinook salmon was counted in 2007 at Lower Granite Dam, which is about 33% of the 2002 count (22,159 adult Snake River summer Chinook salmon) and about 75% the 10-year average of 9,714 from 1997 to 2006 (FPC 2008).

Summer run Snake River Chinook salmon primarily return to the SFSR. The estimated smolt production capacity of 10 million smolts for rivers in Idaho, coupled with historic smolt to adult return rates of 2% to 6%, indicate Idaho could produce wild/natural runs of 200,000 to 600,000 adults (FPC 2002; FPC 2003). The relatively low numbers of the last decade are reflected throughout the entire distribution of Chinook salmon subpopulations

scattered throughout the Grande Ronde, Imnaha, Tucannon, and Salmon River basins. Redd counts and estimates of parr and smolt densities generally indicate that fish production is well below the potential, and continuing to decline.

Despite fluctuations in the number of adult returns, the general trend in adult returns since 1977 has been a gradual population decline with episodic oscillations (McClure et al. 2003). Chinook salmon numbers were higher since 2000 than during the 24 previous years of record (FPC 2004). Although there were record returns in 2000 and 2001, and relatively high returns from 2002 to 2004, ESU numbers are in general very low in comparison to historic levels (Beven et al. 1994). The low returns amplify the importance that a high level of protection be afforded to each adult Chinook salmon, particularly because a very small percentage of salmon survive to the life stage of a returning, spawning adult, and because these fish are in the final stage of realizing their reproductive potential (approximately 2,000 to 4,000 progeny per adult female) (Behnke 2002).

Habitat impairment is common in the range of this species. Spawning and rearing habitats have been impaired by factors such as tilling, water withdrawals, timber harvest, grazing, mining, and alteration of floodplains and riparian vegetation. Mainstem Columbia River and Snake River hydroelectric developments have altered flow regimes and estuarine habitat, and disrupted migration corridors (Raymond 1979; Raymond 1988; NMFS 2000). Competition between natural indigenous stocks of spring/summer Chinook salmon and spring/summer Chinook of hatchery origin has likely increased due to an increasing proportion of naturally-reproducing fish of hatchery origin (Behnke 2002).

Compared to the greatly reduced numbers of returning adults for the last several decades, exceptionally large numbers of adult Chinook returned to the Snake River drainage in 2000 and in 2001. These large returns are thought to have been a result of favorable ocean conditions (Logerwell et al. 2003; Meeings and Lackey 2005), and above average flows in the Columbia River Basin when the smolts migrated downstream. Later, they migrate through the northeast Pacific Ocean (Hart 1973; Hartt and Dell 1986). However, even these large returns are only a fraction (5% to 10%) of the estimated returns of the late 1800s (Behnke 2002). Recent increases in the population are not expected to continue, and the long-term trend for this species indicates a decline. Detailed information on the range wide status of Snake River spring/summer Chinook salmon under the environmental baseline is described in Chinook salmon status reviews (Myers et al. 1998; Biological Review Team (BRT) 2003; NMFS 2004). Habitat improvements would not necessarily correspond to increased salmon productivity because a myriad of other factors can still depress populations, but diminished quality would probably correspond to reduced productivity (Regetz 2003). Additional information on the biology, status, and habitat elements for Snake River spring/summer Chinook salmon is described in the status review updates (BRT 1998; BRT 2003; NMFS 2004; Good et al. 2005).

NMFS and its Federal partners recently updated the status of the Snake River spring/summer Chinook salmon ESU by identified Technical Recovery Team (TRT) populations and for each 5th field HUC or subwatershed for the remand of the Federal Columbia River Power System Opinion (Cooney 2004; NMFS 2004). The Snake River Salmon and Steelhead Recovery Plan, which includes the Snake River spring/summer Chinook salmon ESU, is being developed by NMFS, the State of Idaho, and their Federal and state partners (NMFS 2006b). Drafts are available online at: http://www.idahosalmonrecovery.net/recoverplans/spsumchinook.html. Under the recovery plan, the Snake River spring/summer Chinook salmon includes five Major Population Groups (MPGs), two of which are included within the action area (i.e., the Middle Fork and SFSR MPGs).

The MFSR MPG includes nine independent populations, including: (1) Big Creek; (2) Lower Middle Fork Mainstem (below Indian Creek); (3) Upper Middle Fork Mainstem (above Indian Creek); (4) Camas Creek; (5) Loon Creek; (6) Sulphur Creek; (7) Bear Valley Creek; (8) Marsh Creek; and (9) Chamberlain Creek. As defined by the Interior Columbia Basin TRT (ICBTRT 2005), Big Creek has been classified as a *Large* population, while Bear Valley and the Upper Middle Fork as *Intermediate* populations. The remaining populations in this MPG are considered *Basic*. Of the nine populations, only the Big Creek, Lower Middle Fork Mainstem, and Chamberlain Creek populations occur on the PNF. Of these three populations, only portions of the Big Creek population occur in the action area on the non-wilderness portions of the PNF (NMFS 2006b).

Minimum threshold abundance for the entire Middle Fork Salmon MPG is 5,000 adult spawners (Table 4), including 500 from the Camas Creek population, 750 from the Bear Valley population, and 500 from the Marsh Creek population (ICBTRT 2005; NMFS 2006b). Thurow (1985) estimated that an escapement of 8,000 fish may be required to fully use the productive capabilities of the available habitat in the Middle Fork. Spawner escapement is far below historical levels. In 1970, estimated escapement was over 5,000. From 1974 to 1982, spawner escapement was below 2,000. The Idaho Department of Fish and Game (IDFG) parr density monitoring from 1985 through 1989 showed that the mean percent of estimated carrying capacity in monitored sections of the MFSR was 11% (IDFG 1992; NMFS 2006b).

The SFSR MPG includes four independent populations. Independent populations in the MPG include: (1) Little Salmon River; (2) SFSR Mainstem; (3) Secesh River; and (4) East Fork South Fork Salmon River (EFSFSR). As defined by the ICBTRT (McClure et al. 2003), the SFSR Mainstem and EFSFSR populations have been classified as a *Large* population, while the other two are classified as *Intermediate* populations (Table 4). The Little Salmon River population, which includes spring- and summer-run fish, is included in this MPG on the basis of geographic proximity (ICBTRT 2005; NMFS 2006b).

Table 4. Characteristics of independent populations in the Middle Fork and South Fork Salmon River spring/summer Chinook Salmon MPGs (NMFS 2006b).

Population	Extant/ Extinct	Life History	Size	Threshold Abundance	Minimum Productivity
South Fork Salmon MPG					
Little Salmon River	*Extant*	*Spring/summer*	*Intermediate*	*750*	*1.6*
South Fork Salmon River	*Extant*	*Summer*	*Large*	*1,000*	*1.45*
Secesh River	*Extant*	*Summer*	*Intermediate*	*750*	*1.6*
East Fork South Fork Salmon River	*Extant*	*Summer*	*Large*	*1,000*	*1.45*
Middle Fork Salmon River MPG					
Chamberlain Creek	*Extant*	*Spring*	*Intermediate*	*750*	*1.60*
Lower Middle Fork	*Extant*	*Spring*	*Basic*	*500*	*1.90*
Big Creek	*Extant*	*Spring/Summer*	*Large*	*1,000*	*1.45*
Camas Creek	Extant	Spring	Basic	-	1.90
Loon Creek	Extant	Spring/Summer	Basic	500	1.90
Upper Middle Fork	Extant	Spring	Intermediate	750	1.60
Sulphur Creek	Extant	Spring	Basic	500	1.90
Bear Valley Creek	Extant	Spring	Intermediate	750	1.60
Marsh Creek	Extant	Spring	Basic	500	1.90

Note - Minimum abundance and productivity values represent levels needed to achieve a 95% probability of existence over 100 years. Populations in *italics* are found within the action area.

Hatchery supplementation programs have targeted natural production areas in two of the three independent populations within the SFSR drainage, the SFSR Mainstem and the EFSFSR populations. The SFSR Mainstem population also is influenced by a harvest mitigation program (segregated hatchery program) that utilizes within-population stock. The Secesh River population is managed for natural wild production; however, hatchery strays have been documented in the population in recent years. A spring Chinook salmon segregated hatchery mitigation program is operated on Rapid River, within the Little Salmon River population. Rapid River upstream from the Rapid River Hatchery weir supports naturally produced summer-run Chinook salmon, with annual returns of 200 to 400 adult salmon. The remainder of the Little Salmon population consists of naturally produced putative spring-run fish (NMFS 2006b).

The MFSR MPG currently does not meet MPG-level viability criteria (Table 5). For the MPG to be considered viable, a minimum of five of the nine independent populations in the MPG must be considered viable. The current recovery planning objective for the MPG is for the Big Creek, Bear Valley Creek, Chamberlain Creek, Loon Creek and Marsh Creek populations to be rated as viable. To reach recovery, the Big Creek population is a must have population for this MPG, as it represents the only Very Large or Large sized population in the MPG (ICBTRT criteria #3). Currently, none of the nine populations in the MPG meet population level viability criteria. The majority of the MFSR MPG is located in wilderness, and much of the habitat is considered to be in near reference condition. Therefore, to address Chinook salmon population viability in this

MPG, it is likely that the smolt-to-adult return (SAR) rate will need to improve from its current level. Low SAR's have been identified as a major out-of-basin limiting factor for the Salmon River basin (NMFS 2006b).

Table 5. VSP risk matrix for independent salmonid populations in the MFSR and SFSR MPGs.

Abundance/ Productivity Risk	Spatial Structure/Diversity Risk: Very Low	Low	Moderate	High
Very Low <1%	**HV**	**HV**	**V**	
Low 1-5%	**V**	**V**	**V**	
Moderate 6 – 25%				
High >25%		Secesh; EFSFSR; Marsh; Bear Valley; Chamberlain.	SFSR Mainstem; Big Creek; Sulphur Creek; Lower MFSR; Upper MFSR; Camas Creek; Loon Creek.	Little Salmon

Viability Key: HV = Highly Viable; V= Viable; Shaded cells= does not meet viability criteria. SFSR MPG Populations – *Secesh, EFSFSR, SFSR Mainstem, Little Salmon.* ***Middle Fork Salmon River MPG Populations*** *– Marsh, Bear Valley, Chamberlain, Big, Sulphur, Lower MFSR, Upper MFSR, Camas, and Loon.*

Similarly, the SFSR MPG also does not meet MPG-level viability criteria (Table 5). The SFSR drainage contains three of the populations; the fourth lies outside of that drainage. At least two of the populations (one *Intermediate* and one *Large*) must be at viable status for the MPG to be considered viable, and one of the two must be Highly Viable.
For a detailed discussion and updates regarding the status and viability of Snake River spring/summer Chinook salmon and its independent populations, please refer to the following website: http://www.idahosalmonrecovery.net/.

Snake River Fall Chinook Salmon

The Snake River fall Chinook salmon ESU, listed as threatened on April 22, 1992, (67 FR 14653), includes all natural populations of fall Chinook salmon in the mainstem Snake River below Hell's Canyon Dam, and the Tucannon, Grande Ronde, Imnaha, Salmon, and Clearwater Rivers. Fall Chinook from the Lyons Ferry Hatchery are included in the ESU but are not listed.

The historic distribution of fall Chinook salmon is limited on the PNF, occurring only in large mainstem rivers and tributaries to the Snake and Salmon Rivers. The current distribution of fall Chinook salmon potentially affected by the proposed action is located along the lower/middle main Salmon River, from the mouth upstream to approximately its confluence with French Creek. Counts of returning wild fall Chinook salmon at Lower Granite Dam from 1975 through 1980 averaged 600 fish per year (Waples et al. 1991). From 1985 to 1999 an average of 459 naturally produced fall Chinook salmon reached Lower Granite Dam (USDI BLM 2000). In recent years, two fall Chinook

satellite hatchery facilities have been operated on the Snake River to increase the numbers of fall Chinook salmon. The facilities are used to acclimate and release one-year smolts from Lyons Ferry hatchery.

Historical abundance of Snake River fall Chinook salmon prior to 1938 is not known. Idaho Power Company (IPC) estimated that prior to development of the Snake River, between 288,000 and 450,000 adults returned annually (IPC 2003). Using IPC's formula and updated estimates of habitat productivity in the Columbia and Snake Rivers (Dauble et al. 2003), NMFS estimated that the annual returns to the Snake River were likely between 416,000 and 650,000 adult fall Chinook salmon (NMFS 2006c; NMFS 2006a).

The estimated annual return for the period 1938 to 1949 was 72,000 fish; and by the 1950s numbers had declined to an annual average of 29,000 fish (Bjornn and Horner 1980). Numbers of fall Chinook salmon continued to decline during the 1960s and 1970s as approximately 80% of their historic habitat was eliminated or severely degraded by the construction of the Hells Canyon complex[2] (1958–1967) and the lower Snake River dams (1961 to 1975) (NPPC 2004). Counts of natural-origin[3] adult Snake River fall Chinook salmon at Lower Granite Dam were 1,000 fish in 1975, and ranged from 78 to 905 fish (with an average of 489 fish) over the ensuing 25-year period through 2000 (Good et al. 2005). Numbers of natural-origin Snake River fall Chinook salmon have increased over the last few years, with estimates at Lower Granite dam of 2,652 fish in 2001 (Good et al. 2005), 2,095 fish in 2002, and 3,895 fish in 2003 (ODFW and WDFW 2005).

The Snake River component of the fall Chinook run has been increasing during the past few years as a result of the hatchery and supplementation efforts in the Snake and Clearwater River basins. Greater than 10,000 adult fall Chinook were counted in five of the last 6 years over Lower Granite Dam. In 2007, 10,167 adult fall Chinook salmon crossed Lower Granite Dam, exceeding the 1997 to 2006 10-year average of 7,764 (FPC 2008).

There is only one extant[4] population in the Snake River fall Chinook salmon ESU, the Lower Snake River Mainstem population. This population occupies the Snake River from its confluence with the Columbia River to Hells Canyon Dam, and the lower reaches of the Clearwater, Imnaha, Grande Ronde, Salmon, and Tucannon Rivers. The majority of the fish spawn in the mainstem Snake River between the head of Lower Granite Reservoir (RM 146.8) and Hells Canyon Dam (RM 247.6), with the remaining fish distributed among lower sections of the major tributaries. Fall Chinook salmon in the mainstem Snake River appear to be distributed in a series of aggregates from the mouth of Asotin Creek to RM 219, although smaller numbers have been reported spawning in the tailraces of the Lower Snake dams. Due to their proximity and the likelihood that individual tributaries did not support separate populations of sufficient

2 Hells Canyon, Oxbow, and Brownlee Dams
3 Adult fish produced from naturally spawning parents (regardless of the origin of the parents).
4 The ICBTRT also designated two populations of Snake River fall Chinook salmon that are not extant: the Marsing Reach population and the Salmon Falls population (ICBTRT May 11, 2005, memorandum regarding updated population delineation in the Interior Columbia Basin).

size to be self-sustaining, the ICBTRT considered these aggregates and the fish in the lower portions of major tributaries to the Snake River to be a single population (McClure et al. 2003; NMFS 2006a).

Because there is only one extant population of Snake River fall Chinook salmon, ICBTRT criteria indicate that this population should be Highly Viable to achieve recovery of this ESU (Table 6; ICBTRT 2005). To be Highly Viable under the VSP guidelines, this population must have: (1) a combination of abundance and productivity that create a very low risk of extinction (<1% over a 100-year period), and (2) spatial structure and genetic/phenotypic diversity that have no more than a low risk of not maintaining key components of spatial structure and diversity described by the ICBTRT.

The single extant population of Snake River fall Chinook salmon, the Lower Snake River Mainstem population, is currently not viable. To meet the criteria for Highly Viable, the abundance/productivity levels and spatial structure/diversity risk ratings would need to improve. The most recent 8-year geometric mean abundance is 1,128 natural-origin fish, compared to the ICBTRT recommended minimum abundance of 3,000 natural-origin fish. The BRT ratings for spatial structure and diversity risks were moderately high at the ESU-scale. The BRT's ratings were based in part on ESU-scale considerations, such as the loss of much of the historic range and loss of two of the three historic populations. The combination of moderate and high ratings for both abundance/productivity and spatial structure/diversity places the Snake River fall Chinook salmon population in one of the four dark-shaded cells in the viability matrix (NMFS 2006a).

Table 6. VSP risk matrix for Snake River fall Chinook salmon, Lower Snake River Mainstem population.

		Spatial Structure/Diversity Risk			
		Very Low	**Low**	**Moderate**	**High**
Abundance/ Productivity Risk	**Very Low <1%**	**HV**	**HV**	**V**	
	Low 1-5%	**V**	**V**	**V**	
	Moderate 6 – 25%			Lower Snake Mainstem	Lower Snake Mainstem
	High >25%			Lower Snake Mainstem	Lower Snake Mainstem

Viability Key: HV = Highly Viable; V= Viable; Shaded cells= does not meet viability criteria.

For a detailed discussion and updates regarding the status and viability of Snake River fall Chinook salmon and its independent populations, please refer to the following website: http://www.idahosalmonrecovery.net/.

Snake River Basin Steelhead

Snake River Basin steelhead, were listed as threatened on August 18, 1997 (62 FR 43937), with a revised listing as a DPS on January 5, 2006 (71 FR834). Snake River Basin steelhead include all natural-origin populations of steelhead in the Snake River Basin of southeast Washington, northeast Oregon, and Idaho. One of the hatchery stocks in the Snake River Basin is listed (originating from Dworshak Reservoir) under the B-Run Program, and most hatchery stocks are included in the listing under the 2004 NMFS hatchery stock policy (June 14, 2004, 69 FR 33102).

Natural runs of Snake River Basin steelhead have been declining in abundance over the past decades. Some significant factors in the declining populations are mortality associated with the many dams along the Columbia and Snake Rivers, losses from harvest, loss of access to more than 50% of their historic range, and degradation of habitats used for spawning and rearing (NMFS 2006d). Another potential threat to Snake River Basin steelhead is genetic introgression from hatchery stocks since wild fish comprise such a small proportion of the populations (Behnke 2002). Additional information on the biology, status, and habitat elements for Snake River Basin steelhead is described in Busby et al. (1996) and NMFS (2006d).

The longest and most consistent indicator of Snake River Basin steelhead abundance is derived from counts of natural-origin steelhead at Lower Granite Dam, the uppermost dam on the lower Snake River. The 2000 and 2001 counts at Lower Granite Dam indicated a short-term increase in returning pre-spawning adults. Adult returns (hatchery and wild) in 2001 were the highest in 25 years, and 2000 counts were the sixth highest on record (FPC 2001). According to estimates, the abundance of natural-origin summer steelhead at Lower Granite Dam declined from a 4-year average of 58,300 in 1964 to a 4-year average of 8,300, ending in 1998. The more recent 4-year return average from 2004 to 2007 is 33,775 wild fish, where natural-origin fish represented approximately 22% of the total adult returns (FPC 2008). Increased levels of adult returns were likely a result of favorable ocean (Logerwell et al. 2003; Meeings and Lackey 2005) and instream flow conditions for these cohorts. Although steelhead numbers have dramatically increased, wild steelhead comprise only 10% to 26% of the total returns since 1994 (FPC 2008). Recent increases in the population are not expected to continue, and the long-term trend for this species indicates a decline (McClure et al. 2003; NMFS 2006d).

Survival of downstream migrants in 2001 was the lowest level since 1993. Low survival was due to record low run-off volume and elimination of spills from the Snake River dams to meet hydropower demands (FPC 2002). Average downstream travel times for steelhead nearly doubled and were among the highest observed since recording began in 1996. Consequently, wide fluctuations in population numbers are expected over the next few years when adults from recent cohorts return to spawning areas. Detailed information on the current range-wide status of Snake River Basin steelhead, under the environmental baseline, is described in the steelhead status review (Busby et al. 1996), the status review update (BRT 2003), and the DPS listing (January 5, 2006, 71 FR834).

The Salmon River steelhead MPG includes 12 independent populations (NMFS 2006d), all of which are currently considered extant (Table 7). Eight of the populations are classified as supporting A-run steelhead and four are classified as supporting B-run steelhead. Population size designations, based on intrinsic potential habitat, range from Basic to Large.

Table 7. Characteristics of independent populations in the Salmon River steelhead MPG.

Population	Extant/ Extinct	Life History	Size	Threshold Abundance	Minimum Productivity
Little Salmon River	*Extant*	*A-Run*	*Intermediate*	*1,000*	*1.2*
South Fork Salmon	*Extant*	*B-Run*	*Intermediate*	*1,000*	*1.2*
Secesh River	*Extant*	*B-Run*	*Basic*	*500*	*1.4*
Chamberlain Creek	*Extant*	*A-Run*	*Intermediate*	*1,000*	*1.2*
Lower Middle Fork	*Extant*	*B-Run*	*Large*	*1,500*	*1.13*
Upper Middle Fork	*Extant*	*B-Run*	*Large*	*1,500*	*1.13*
Panther Creek	Extant	A-Run	Intermediate	1,000	1.2
North Fork Salmon	Extant	A-Run	Basic	500	1.4
Lemhi	Extant	A-Run	Intermediate	1,000	1.2
Pahsimeroi River	Extant	A-Run	Intermediate	1,000	1.2
East Fork Salmon	Extant	A-Run	Intermediate	1,000	1.2
Upper Salmon Mainstem	Extant	A-Run	Intermediate	1,000	1.2

Note – Minimum abundance and productivity values represent levels needed to achieve a 95% probability of persistence over 100 years. Italicized populations or portions of those populations occur on the PNF.

Steelhead artificial propagation programs in the Salmon River drainage mitigate for the impacts of hydropower dams outside of the drainage. Hatchery programs funded by the IPC mitigate for the effects of the Hells Canyon dam complex, constructed in the Hells Canyon reach of the Snake River. Approximately 1.5 million smolts are released annually from IPC-funded hatcheries; release locations include the Little Salmon River, upper Salmon River, and Pahsimeroi River (mitigation hatchery location). Mitigation for the four lower Snake River dams is provided through the Lower Snake River Compensation Plan (LSRCP), which is administered by the FWS. The annual planned production release in the Salmon River drainage for the LSRCP program is 3.07 million smolts. Those smolts are released in the Little Salmon and upper Salmon rivers. The mitigation hatchery releases are primarily made for harvest augmentation purposes. All juvenile hatchery steelhead released under the harvest augmentation programs are marked by an adipose fin clip.

Hatchery steelhead also are released at locations within the Salmon River steelhead MPG for supplementation purposes. Numbers of fish to be released and release locations are determined through United States *vs.* Oregon negotiations. Target annual release numbers for brood years 2006 through 2008 at all locations in the Salmon River

drainage sum to 730,000 smolts, of which 530,000 are not adipose-clipped. Approximately 1 million steelhead eyed-eggs will be outplanted annually in addition to the supplementation smolt releases. The Secesh River population, the two MFSR populations, and the Chamberlain Creek population have no history of hatchery steelhead releases and are managed for wild production.

Independent population viability assessments were completed for the 12 populations in the MPG (Table 8; NMFS 2006d). The Salmon River steelhead MPG currently does not meet MPG-level viability criteria. For the MPG to be considered viable, a minimum of six of the 12 extant independent populations in the MPG must be considered viable. The current recovery planning objective for the MPG is for the Chamberlain Creek, Secesh River, SFSR, Upper MFSR, and Upper Salmon River Mainstem populations (plus one additional Large or Intermediate population) to be rated as viable, and one must be rated as highly viable. Currently, none of the 12 extant populations in the MPG meet population level viability criteria. For a detailed discussion and updates regarding the status and viability of Snake River Basin steelhead and its independent populations, please refer to the following website: http://www.idahosalmonrecovery.net/.

Table 8. VSP risk matrix for independent steelhead populations in the Salmon River steelhead MPG.

		Spatial Structure/Diversity Risk			
		Very Low	**Low**	**Moderate**	**High**
Abundance/ Productivity Risk	**Very Low** (<1%)	HV	HV	V	
	Low (1-5%)	V	V	V	
	Moderate (6 – 25%)				
	High (>25%)		Little Salmon; SFSR; Secesh; Chamberlain; Lower Middle Fork; Upper Middle Fork; North Fork	Lemhi; Pahsimeroi; East Fork Salmon; Upper Salmon Mainstem	Panther Creek

Viability Key: HV – Highly Viable; V – Viable; Shaded cells = does not meet viability criteria.

2.1.2. Environmental Baseline

The "environmental baseline" includes the past and present impacts of all Federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process (50 CFR 402.02). An environmental baseline that does not meet the biological requirements of a listed species may increase the likelihood that adverse effects of the proposed action will result in jeopardy to a listed species or in destruction or adverse modification of a designated critical habitat.

NMFS describes the environmental baseline in terms of the biological requirements for habitat features and processes necessary to support all life stages of each listed species within the action area. The biological requirements of salmon and steelhead in the action area vary depending on the life history stage present and the natural range of variation present within that system (Groot and Margolis 1991; NRC 1996; Spence et al. 1996). During spawning migrations, adult salmon generally require clean water with cool temperatures and access to thermal refugia, dissolved oxygen near 100% saturation, low turbidity, adequate flows and depths to allow passage over barriers to reach spawning sites, and sufficient holding and resting sites. Fish select spawning areas based on species-specific requirements of flow, water quality, substrate size, and groundwater upwelling. Embryo survival and fry emergence depend on substrate conditions (e.g., gravel size, porosity, permeability, and oxygen concentrations), substrate stability during high flows, and cold water temperatures (i.e., 55°F or less for most species). Habitat requirements for juvenile rearing include seasonally suitable microhabitats for holding, feeding, and resting. Migration of juveniles to rearing areas, whether the ocean, lakes, or other stream reaches, requires unobstructed access to these habitats. Physical, chemical, and thermal conditions may all impede migrations of adult or juvenile fish.

Each ESA-listed species considered in this Opinion resides in or migrates through the action area. Thus, for this action area, the biological requirements for salmon and steelhead are the habitat characteristics that support successful adult and juvenile migration, adult holding, spawning, incubation, rearing, and growth and development to smoltification. The habitat features likely to be affected by the proposed actions are water quality, spawning substrate, natural cover/shelter, and riparian vegetation. Below are descriptions of environmental baseline conditions within each section 7 watershed.

2.1.2.1. Deep Creek (excerpted from USDA 2007a)

Deep Creek lies within the Columbia River and Snake River basins, and enters the Snake River just downstream of Hells Canyon dam. The Deep Creek watershed is approximately 19,000 acres and ranges from 1,500 feet in elevation at its confluence with the Snake River to nearly 7,800 feet in elevation at the headwaters. Federal and private lands exist in the watershed that covers about 28 square miles. Deep Creek flows to the northwest from its headwaters just north of Smith Mountain, and drains into the Snake River at T22N, R3W, section 15, just downstream of Hells Canyon Dam.

The Deep Creek watershed consists of an extremely steep, uplifted mountain ridge system composed mainly of extrusive, igneous rocks of the Seven Devils formation with scattered inclusions of metasedimentary and granitic rock. Soils generally have moderate to high surface erosion potential, and low to moderate productivity. The potential for instability and erosion is fairly high in the over-steepened landforms present in the area.

Vegetation at lower elevations is typically grasslands, shrublands, ponderosa pine, and Douglas-fir on south and west aspects, and Douglas-fir and grand fir forests on north and east aspects. Mid and upper elevations are dominated by shrubs and forest communities

of Douglas-fir, grand fir, and subalpine fir, with pockets of western larch, lodgepole pine, whitebark pine, and aspen.

The watershed is predominately undeveloped with relatively few road miles: 5.2 miles of classified road of which 2.2 miles are open to use, and 2.7 miles of unclassified road (both FS and private). A variety of land uses occur on NFS lands, including recreation, forage production, and some timber management. No timber harvest has occurred on Forest lands in the Deep Creek subwatershed since 1993. Large fires, both natural and prescribed, have occurred within the Deep Creek watershed.

Forest Roads [FR] #106 and #112 provide access to trailheads into the Deep Creek drainage. Access to two of the mines in the drainage, the Helena and South Peacock Mines, is also from FR#106. These mines have not been operational since the turn of the century. One other mine, the Red Ledge Mine, also occurs in the drainage approximately 2 miles upstream of the mouth of Deep Creek. Water quality in the Deep Creek subwatershed is excellent, with the exception of influences from the Red Ledge Mine. The mine is upstream of steelhead and Chinook habitat, and adit outflow contains high levels of iron, copper, zinc, and manganese. Adit drainage is diluted when it enters Deep Creek but may be having effects on pH and conductivity downstream (Hogen and Burns 2001).

Survey data from the mouth of Deep Creek to the confluence of Oxbow Creek show Deep Creek to be a steep, confined Rosgen A3-type channel. Most stream channels in the drainage are likely to be high gradient and confined due to the steep topography found over much of the area. Spring/summer Chinook salmon and steelhead have been documented in the lower portion of Deep Creek, but data are not available to assess status or population trends. Distribution is limited to the lower sections of Deep Creek by steep gradients and a natural barrier approximately 3 miles upstream of the mouth. A natural barrier, a 20- to 30-foot bedrock falls, is located approximately 1 mile upstream from the Red Ledge Mine. This falls is a considered a fish passage barrier at all flows. Habitat access is not known to be altered by human activity with the exception of drainage associated with the Red Ledge Mine. Polluted mine drainage is likely creating a chemical barrier at least seasonally, during low flow periods. Drainage from the mine affects water quality in the lower 2 miles of Deep Creek, and this water flows downstream into the Snake River. Spawning and rearing habitat is generally scarce in Deep Creek, and is likely most plentiful near the mouth. There is no documentation of Deep Creek being used by fall Chinook. Natural fall Chinook salmon spawning now occurs primarily in the Snake River below Hells Canyon Dam and in the lower reaches of the main Salmon River.

Baseline conditions within the action area were evaluated for the program at the section 7 watershed scale. The PNF based its evaluation of the environmental baseline on Southwest Idaho's version of NMFS' "matrix of pathways and indicators" (NMFS 1996). This method assesses the current condition of instream, riparian, and watershed factors that collectively provide properly functioning aquatic habitat essential for the survival and recovery of the ESA-listed species.

Habitat is generally "functioning at risk" in the Deep Creek section 7 watershed. Deep Creek watershed conditions indicators (WCIs) rated "functioning at risk" include: chemical contamination/nutrients, physical barriers, substrate embeddedness, refugia, streambank stability, and disturbance history. The remaining indicators were rated "properly functioning." Acidic drainage from the Red Ledge Mine was listed as the cause for the "at risk" classification for the physical barriers, chemical contamination/nutrients, refugia, and disturbance indicators. Please refer to the section 7 watershed BA for a more detailed description of the environmental baseline for individual subwatersheds (USDA 2007a).

2.1.2.2. Little Salmon River (excerpted from USDA 2007b)

The Little Salmon River runs north through west-central Idaho for a length of about 44 miles, entering the main Salmon River at the town of Riggins, Idaho. A broad-valley surrounded by heavily forested mountain slopes characterizes the upper half of the watershed. The valley is mostly irrigated pasture, with the Little Salmon River meandering through the center. At about the midpoint of the watershed, near Round Valley Creek, the valley narrows, and from that point to the mouth the Little Salmon River flows through a steep, narrow canyon to the main Salmon River. Highway 95, a main travel way connecting north and south Idaho, follows the Little Salmon most of its length.

Headwater tributaries range from 6,600 to 8,000 feet in elevation, with the mainstem Little Salmon flowing from an elevation of about 6,600 ft. to 1,800 ft. at its confluence with the Salmon River. Physical characteristics vary considerably throughout the area changing with local geology, elevation, and land management practices on Federal and non-Federal land. Stream gradients in major subwatersheds range from 2.1% to 22.8%. Lithologies consist of four major types: volcanics, border, transition, and granitics.

The watershed is predominately rural and sparsely populated, though rural housing development has increased substantially in recent years. Farms, ranches, and sometimes housing developments lie between communities, particularly in the upper valley. The economy of the area has historically depended on ranching and logging. The predominant uses of NFS lands within the analysis area are timber management, forage production, and recreation. Most of the area has experienced some degree of timber harvest. Numerous tree plantations exist, many with young trees less than 20 feet in height. Sheep and cattle allotments cover almost the entire area.

The Goose Lake Road (FR #257) provides access to popular recreation areas Brundage Mountain Ski Area, Goose, Granite, Brundage Reservoirs, and Hazard Lakes. Hunting and fishing, occur on National Forest lands throughout the watershed. Chinook salmon and steelhead fishing occurs seasonally in the mainstem Little Salmon River. Water diversion, primarily for irrigation, but also to generate electricity also occurs in the watershed. The entire watershed drains an area of about 576 square miles. Fifty-six

percent of the watershed is NFS land (Payette and Nez Perce National Forests), 30.5% is privately owned land, 6% is Wilderness, National Recreation Area, and Wild and Scenic River Corridor (all in the Rapid River subwatershed), 4% is administered by the Bureau of Land Management (BLM), and 3.5% is administered by the State of Idaho.

Stream channels are highly variable throughout the watershed. Headwater streams and smaller tributary streams are predominately Rosgen A2 and A3 channel types. These are steep gradient, confined channels, with high sediment transport capacity. Below these reaches are typically Rosgen B3 and B4 channels, which are moderate gradient and are moderately confined. These relatively stable channels are also efficient at sediment transport. The meadow reaches of the mainstem Little Salmon River are Rosgen C4 and C5 type stream channels, characterized by low gradient, a wide floodplain, and low sediment transport capacity. Stream types for larger streams within the fluvial break lands are commonly Rosgen B2, B3, and G2. These are moderately to well confined high-energy channels with coarse substrate. Smaller tributary streams within the break lands are typically Rosgen A1, A2, and A3. Many of these channels are bedrock-controlled and subject to frequent scouring events.

Vegetation is diverse throughout the watershed, and has been influenced by grazing, logging, and wildfires. Vegetation along the main Little Salmon River on private lands is primarily pasture and grasslands. Riparian areas commonly contain mixed conifer overstories and alder, red-osier dogwood, and willow understories. Healthy riparian vegetation with a high percentage of late seral species can be found in some tributaries. Uneven aged stands with a high frequency of young trees in the understory also exist in some areas. Late and mid-seral stages exist in response to logging. Upland vegetation types are diverse and represent a range of seral stages influenced by wildfires and past timber harvest.

Both spring/summer Chinook salmon and steelhead are found in the Little Salmon section 7 watershed. Fall Chinook are found only in the mainstem Salmon River upstream and downstream from the mouth of the Little Salmon River. In general, anadromous species in the Little Salmon section 7 watershed are limited to the mainstem Little Salmon River below the falls at RM 21, and to lower sections and mouths of streams by steep gradients and passage impairments. Very limited amounts of habitat for spawning and early life history stages of spring/summer Chinook salmon are found in Little Salmon tributaries, although spawning and rearing may occur at the mouths of tributaries. A scarcity of suitable habitat, natural impairments, and barriers have limited historic and current Chinook salmon and steelhead distribution. More habitat is available to steelhead as they migrate to spawning areas when flows are more elevated, and spawning and rearing is thought to occur in several Little Salmon River tributaries below existing fish migration barriers.

Human activities on Federal and non-Federal lands in the watershed include logging, road construction, water withdrawal, agriculture, livestock grazing, and other activities. These activities have reduced vegetation, increased sedimentation, and altered stream channels and water flows. Documented timber harvest administered by the FS dates back

to 1950. There is a large network of roads in the Little Salmon River subbasin, with roughly 1,001 miles of road. High road densities occur across the Little Salmon River section 7 watershed, with the upper Little Salmon subwatershed containing the highest densities of classified road (Table 9).

Table 9. Total Road density and RCA Road Density by 5th Field HUC[a] (data include classified and unclassified roads).

Subwatershed	Road Density (mi./sq. mi.)	RCA Road Density (mi./sq. mi.)
Middle Little Salmon	4.8	6.4
Hazard	1.1	1.5
Upper Little Salmon	6.2	8.0
Rapid River	0.0	0.1
Lower Little Salmon	2.0	3.0

[a] Data for PNF lands only; includes classified & unclassified roads.

Habitat conditions vary greatly across the Little Salmon River section 7 watershed. Rapid River is a relatively pristine (unroaded) watershed, with good overall habitat quality that's generally "functioning appropriately" for all Matrix indicators. Across the remainder of the section 7 watershed, overall watershed function is impaired with many WCIs functioning "at risk" or "unacceptable risk." The WCIs identified by the PNF as the biggest limiting factors in the watershed include, persistence and genetic integrity, chemical contamination/nutrients, road location/density, and disturbance regime.

The persistence and genetic integrity WCI was identified as a concern because the Little Salmon is managed as a hatchery supported system for Chinook and steelhead, making the probability of hybridization with native fish high. Chemical contamination/nutrients are at issue as evidenced by the development of a Total Maximum Daily Load (TMDL) for nutrients by Idaho Department of Environmental Quality for Big Creek and the Big Creek to Round Valley Creek reach of the Little Salmon River. Road density is at issue with overall road density for the subbasin at 3.2 mi./sq. mi., with some subwatersheds having elevated road density in RCA's. In addition, fish passage is also a concern, with many culverts at road crossings reportedly fish passage barriers. Lastly, disturbance history has been degraded through past and current activities, indicated by substantially reduced habitat quality/diversity/complexity in the mainstem Little Salmon and some of its tributaries. Riparian vegetation is often scant along the mainstem Little Salmon and tributary reaches on private lands. In addition, some channelization has been noted, and stream flows are often very low or a trickle in tributaries during irrigation season. Please refer to the section 7 watershed BA for a more detailed description of the environmental baseline for individual subwatersheds (USDA 2007b).

2.1.2.3. South Fork Salmon River (excerpted from USDA 2007c)

The SFSR watershed covers 721,926 acres on the Payette (594,432 acres) and Boise (104,427 acres) National Forests. State and private lands make up less than 4% of the watershed's land base. Designated wilderness areas total 69,100 acres. The SFSR flows

generally north and enters the Salmon River near Mackay Bar, Idaho. Elevations range from 2,166 feet at the mouth to about 9,280 feet at North Loon Mountain. A variety of land uses occur on public and private land, including, but not limited to, livestock grazing, mining, recreation, road maintenance and reconstruction, road use and timber harvest. Wildfire has been a common occurrence on PNF lands in the watershed.

The composition and structure of rocks in the SFSR watershed includes four major types: glacial and stream sediments, granitic rocks of the Idaho batholith, metavolcanic and metasedimentary rocks, and rocks associated with the Challis volcanics. Metamorphic rock roof pendants occupy a northwest-southeast trend in the eastern part of the watershed. The rest of the watershed is underlain by various types of granitic rocks, and some volcanics along the extreme eastern portion of the watershed. Weathering of granitic rocks breaks them down into a sandy material, and stream channels that flow through areas of granitic material have a higher percentage of sand-sized particles than streams associated with other geologic types.

Vegetation consists of several cover types. Lower elevations support mixed conifer, ponderosa pine, and Douglas-fir. Mid and higher elevation areas support lodgepole pine, grand fir, Engelmann spruce, and subalpine fir. Slopes are characteristically steep, and high elevation areas are marked by craggy peaks, cirque basins, and other evidence of glacial activity. Much of the lower elevation area is open grassland with scattered trees on steep slopes, especially on the southern aspects.

In 1964 and 1965, a series of intense storms and rain-on-snow events created numerous landslides and slumps triggered by logging and associated road construction, inundating the SFSR and some of its tributaries with heavy sediment loads. Changes in channel profiles and cross-sections have indicated a decrease in channel bed elevation and percentage of fines. High runoff in the winter and spring of 1995-96, extensive flooding, and hillslope failures in the winter and spring of 1996-97 appear to have had less effect on substrate quality than the events of 1964-65.

Both spring/summer Chinook salmon and steelhead are found in the SFSR section 7 watershed. Fall Chinook are found only in the mainstem Salmon River downstream from the mouth of the SFSR.

Habitat conditions are generally “functioning at risk” in the SFSR section 7 watershed, with the Secesh River generally in the best condition, and the EFSFSR generally in the worst habitat condition. In the EFSFSR, decades of mining has degraded habitat conditions, with all WCIs “functioning at risk” with the exception of LWD, drainage network increase, road density/location, disturbance history, and RCAs, all of which are “functioning at unacceptable risk.” In the Secesh River, the sediment, chemical contamination/nutrients, pool frequency/quality, off-channel habitat, refugia, width to depth ratio, and streambank disturbance WCIs were all rated “functioning appropriately.” All other indicators were “functioning at risk.” There are approximately 663.5 miles of road in the SFSR section 7 watershed. However, road density is relatively low at

0.71 miles/square mile. Please refer to the section 7 watershed BA for a more detailed discussion of the environmental baseline for individual subwatersheds (USDA 2007c).

2.1.2.4. Middle Fork Salmon River Tributaries NW and Main Salmon River Tributaries SE (excerpted from USDA 2007d)

This section 7 watershed includes the MFSR (including Big Creek and all of its tributaries, and the PNF portion of Marble Creek), and the Main Salmon River Southeast (includes Chamberlain Creek and other face tributaries which flow north into the Main Salmon River between the SFSR and MFSR). The MFSR analysis area includes about 340,000 acres of wilderness, historical and present mining activities, private summer residences, two guest outfitter lodges, water diversions, hydropower sites, five airstrips, a FS guard station, about 6,000 acres of State/private land, 53 miles of FS system roads, and 400 miles of system trails. The Main Salmon Southeast portion of the watershed is located entirely in the wilderness. Because road maintenance will not occur in the wilderness, this portion of the section 7 watershed will not be discussed further.

Elevations in the Big Creek subwatershed range from about 3,400 feet at its confluence with the MFSR to over 9,000 feet on some peaks. Wildfire is a common disturbance on PNF lands. Much of the area consists of steep canyonlands that drain into Big Creek. The Idaho batholith and Challis volcanics are the dominant geology throughout the subwatershed. Geological features are core and transitional granitics and volcanics. Soils in the area are diverse, primarily of granitic origin.

Wide ranges in elevation with accompanying climatic variations result in diverse vegetation. Vegetation varies from ponderosa pine/bluebunch wheatgrass or Idaho fescue and Douglas fir/ninebark or snowberry at lower-mid elevations to subalpine fir types in areas above 5,000 feet. Near-alpine habitat occurs in the highest areas. Fires have continually influenced the succession of the vegetative landscape, creating brush fields, large lodgepole pine stands, extensive snag patches, and variations in the age and structure of the vegetation. Riparian vegetation has generally not been impacted by human disturbance, except for minimal, localized road construction and past grazing effects.

The upper portions of Big Creek, its tributary Monumental Creek, and the headwaters of Marble Creek have been most influenced by human activity compared to other parts of the section 7 watershed, primarily through mining and related activities such as road building and clearing of trees. Over 700 acres of land in upper Big Creek are privately owned in the Edwardsburg-Big Creek town site. In Marble Creek, about 210 acres of private mining land in the Thunder Mountain area are within the PNF boundary.

Grazing by livestock on private land and by pack/saddle stock throughout the subwatershed has occurred and is currently occurring in localized areas. Water diversions for irrigation and domestic use are concentrated in the upper Big Creek area.

Scattered mining disturbance in the upper Big Creek area dates back almost a century. Numerous placer and lode deposits were prospected and worked in the area, but most are abandoned now with the exception of the Golden Hand, Velvet Quartz, Fourth of July, and Snowshoe Mines (Snowshoe and Golden Hand produced gold, but are no longer in operation).

The Logan and Smith Creek Roads in upper Big Creek (FRs #343, #371, and #373) are primarily located within the riparian zones of these creeks. They are native-surfaced roads and minimally maintained, but receive use by miners, hunters, and the general public. The Smith Creek Road fords Smith Creek and its tributaries several times. Cut and fillslopes are unstable and road surface drainage is not well controlled on either road, resulting in altered hydrological patterns that have increased sedimentation. The Big Creek, Smith Creek, and Mosquito Ridge Trailheads are located within the riparian zones of Smith Creek and the North Fork of Smith Creek. Sedimentation, removal of riparian vegetation and animal waste are documented effects relating to the overuse of these areas by extended camping, horses, and pack animals brought in for fall hunting in these areas. Areas in the Smith Creek watershed have been noted where abandoned mining debris was left in or near stream channels.

Non-system roads (primarily into active or inactive mining areas) exist in the mid-upper Big Creek subwatershed and most are not used or maintained on a regular basis. Erosion and sediment off these roads could have a greater effect than that of system roads because there are more miles of non-system roads than system roads. Non-system roads are not typically designed with resource protection standards, and most non-system roads are not maintained. However, roads in the Big Creek watershed are typically rocky, with very little sediment generated, compared to roads on the Forest within the Idaho batholith. Few problems have been identified associated with them.

Habitat conditions are generally “functioning appropriately” in the MFSR section 7 watershed, with all WCIs functioning appropriately except for the road density/location, fish passage, and water temperature indicators (all “functioning at risk”). Please refer to the section 7 watershed BA for a more detailed description of the environmental baseline for individual subwatersheds (USDA 2007d).

2.1.2.5. Main Salmon Southwest (excerpted from USDA 2007e)

The MSSW section 7 watershed is not a true watershed, but a grouping of several tributaries of the main Salmon River. As defined here, only 5th field HUCs with some portion of their area on the PNF are considered, though some of the 5th field HUCs contain land outside the PNF boundary on both sides of the Salmon River. The watershed contains primarily Federally administered lands with sections of private land in the lower portions of several subwatersheds. Private land also exists in the upper portions of some tributary watersheds, particularly Warren Creek in the Warren Mining District, because of current and historic mining operations. The watershed also contains a large section of BLM land on Marshall Mountain (the Marshall Mountain Mining

District). The Federally administered lands are largely the responsibility of the PNF, though BLM administers some areas. Land uses across the watershed include timber harvest, grazing, localized areas of mining, recreation, road and trail maintenance, and others.

The streams in this watershed are generally steep because the Salmon River canyon is steep, creating high-energy systems and streams that are classified primarily as Rosgen "A" channels. Elevations range from about 1,800 feet at the mouth of Lake Creek to 8,841 feet at the summit of Patrick Butte. Overall, the area is mountainous and rugged. Wildfire is a common disturbance on PNF lands, and was especially well expressed in this watershed in 1994 and 2000.

Riparian vegetation generally consists of shrubs and trees including Engelmann spruce, dogwood, and alder. High, fast flows in the lower portions of the main channels of most tributaries prevent the establishment of grasses and forbs. Riparian zones are narrow where steep canyons form stream channels. At higher elevations, there are open grassy meadows surrounded by sparse conifer forest in some analysis areas, and particularly in the Elkhorn Creek, French Creek, and Warren Creek drainages.

Domestic livestock grazing, timber harvest, and road construction have all influenced the characteristics of the watershed. Mining has altered the natural characteristics of the Warren Creek subwatershed in particular, and has played a lesser role in some other areas. Recreation and fire suppression have also influenced the watershed. In general, these activities result in ground disturbance and vegetation removal and increase the potential for erosion and sediment delivery to stream channels. Effects are more pronounced near the mouths of streams, where grazing, residential development, timber harvest and associated road construction occurs on private land, typically with less regulation than on Federally administered land. Removal of shading vegetation (from anthropogenic activities) has resulted in localized increases in stream temperatures. Some portions of the section 7 watershed are isolated by their steep terrain, with few roads and few anthropogenic influences. Timber harvest is generally low in the section 7 watershed, but some areas have been salvage logged since fires in 1994. Some old logging areas still contain old roads that have not been obliterated and are still open to use. There are approximately 357 miles of road in the MSSW section 7 watershed, although road density is relatively low at 0.69 miles/square mile.

Limited amounts of listed and sensitive fish habitat exist in this watershed, with available habitat primarily near the mouths of tributaries. Although additional isolated habitat occurs higher in some of the subwatersheds, steep gradients and natural impairments/ barriers to movement influence the distribution of the listed species in this watershed. During low flows, large, steep deltas lacking defined channels develop at the mouths of some tributaries, creating passage impairments or barriers for anadromous fish. In general, anadromous species in the MSSW section 7 watershed are limited to the lower sections and mouths of streams by steep gradients and passage impairments. Very limited amounts of habitat for spawning and early life history stages of spring/summer Chinook salmon are found in Main Salmon tributaries, and although spawning and

rearing may occur at the mouths of tributaries; a dearth of suitable habitat, natural impairments, and barriers have limited historic and current Chinook salmon distribution. There is more habitat available to steelhead, and spawning and rearing is thought to occur in most Main Salmon River tributaries below existing fish migration barriers.

The MSSW section 7 watershed includes numerous tributaries and habitat conditions vary greatly. In general, habitat conditions are generally "functioning appropriately" to "functioning at risk" in California, Maxwell, and Carey Creeks, and "functioning at risk" to "functioning at unappropriate risk" in French, Warren, and Elkhorn Creeks. For a more detailed description of baseline conditions in each subwatershed, please refer to the section 7 watershed BA (USDA 2007e).

2.1.3. Effects of the Action

"Effects of the action" means the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, which will be added to the environmental baseline (50 CFR 402.02). Effects of the action that reduce the ability of a listed species to meet its biological requirements may increase the likelihood that the proposed action will result in jeopardy to that listed species or in destruction or adverse modification of a designated critical habitat.

The section 7 watershed BAs provides a detailed analysis of the effects of the proposed action on Snake River spring/summer Chinook salmon, Snake River fall Chinook salmon, Snake River Basin steelhead, and their critical habitat in the action area. The analysis uses the Southwest Idaho LRMP's Matrix of Pathways and Indicators and information in the BAs to evaluate elements of the proposed action, which have the potential to affect the listed fish or essential habitat features of their critical habitat.

2.1.3.1. Effects on ESA-Listed Species

Activities associated with the proposed action are likely to mobilize sediments and temporarily increase downstream turbidity levels in action area streams. Fish are likely to be disturbed by project activities, and could also be affected through impacts on water quality from increased stream temperatures and/or through chemical contamination. Clearing or mortality of riparian vegetation could result in localized stream temperature increases. Chemical contamination may occur from dust suppression chemicals or any time construction equipment is working adjacent to the stream channel.

Road Maintenance

Road maintenance, as defined for the proposed action, includes surface blading, culvert repair and cleaning, brushing along roadways, ditch cleaning, snow plowing, and dust

abatement. The proposed action also includes resurfacing of existing roads, replacing existing facilities (e.g., road, culvert/bridges, retaining walls, etc.), and repair of up to 500 feet of road prism affected by natural disturbances. However, as previously discussed, replacement of culverts and bridges will not be analyzed in this Opinion, since these activities will be completed in accordance with NMFS' regional programmatic Opinion for stream crossings (2005/06396).

The effects of road construction and maintenance on fish habitat and watershed function have been described by Furniss et al. (1991). Roads and associated ditch systems increase watershed drainage networks, intercept overland flow, and shift timing of peak flows. During precipitation events, fine sediments can be washed from the road surface into streams. This is especially true for poorly maintained roads. Although serving to minimize chronic sediment delivery, road maintenance near streams will also have short-term construction related effects. An analysis of these potential effects follows.

Blading, Brushing, and Ditch Cleaning. Road use and maintenance result in increased runoff rates and fine sediment delivery at tributary crossings primarily during rain events.

Road surfaces are compacted, impermeable surfaces lacking vegetation. As a result, most water falling on the road surface in the form of rain or delivered there from upslope does not infiltrate, but rather quickly runs off the road surface. Water flowing on the road surface picks up fine sediment and delivers it to the action area streams, resulting in increased turbidity and fine sediment deposition into substrate. Use and maintenance of the road exposes new soil and prevents vegetation from becoming established on the roadway. Generally there is at least a narrow vegetative strip between the roads and action area streams where water from the road can infiltrate or be filtered prior to entering the river. However, there are also unvegetated areas where runoff can be delivered directly into the streams.

Regular road maintenance is needed to keep roads in good condition and to quickly identify and correct issues (Furniss et al. 1991; Yee and Roelofs 1980). Improperly maintained roads can transport fine sediment to streams. Road maintenance activities are 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 is likely to have some minor adverse effects on ESA-listed salmonids and their habitat. In a study of forest roads in the Oregon Coast Range, Luce and Black (2001) found that road maintenance and road traffic were two primary factors responsible for increased sediment production from forest roads. They reported that road grading can break up amour layers on both the road surface and in roadside ditches leading to increased surface erosion.

Blading is often done on the inside road shoulder to maintain drainage ditches, and on the outside shoulder to maintain road width or recover gravels pushed toward the edge by vehicular use. When roads are immediately adjacent to streams, improper blading can push materials over the road shoulder, introducing sediment directly into streams, or causing streambanks to become over-steepened as soils and gravels accumulate. Over-steepened banks eventually fail from rilling or mass erosion.

Ditch maintenance generally removes vegetation from drainage ditches and often excavates some portion of the cutslope. In the absence of ditch maintenance, chronic erosion of road surfaces is likely to occur from surface runoff that carves rills and gullies in the road. Ditch maintenance can substantially reduce the amount of surface erosion on unpaved roads by controlling the runoff. The disturbed surfaces are easily eroded during the first few rain events, and a spike of sediment delivery is common during this period. After the first few rain events, ditches and cutslopes become more resistant to erosion. However, Luce and Black (2001) found that the action of ditch blading itself had a greater effect on sediment yield than traffic, resulting in increased sediment yields greater than the traffic equivalent of 12 log trucks per day. As a result, the authors concluded that although important and necessary, indiscriminate ditch grading should be avoided, recommending ditch armoring in locations where sediment delivery is likely (e.g., cross drains, stream crossings, etc.).

The most critical aspects of sediment-related effects are timing, duration, intensity and frequency of exposure (Bash et al. 2001). Depending on the level of these parameters, turbidity can cause lethal, sublethal, and behavioral effects in juvenile and adult salmonids (Newcombe and Jensen 1996). For salmonids, turbidity has been linked to a number of behavioral and physiological responses (i.e., gill flaring, coughing, avoidance, and increase in blood sugar levels) which indicate some level of stress (Bisson and Bilby 1982; Berg and Northcote 1985; Servizi and Martens 1987). The magnitude of these stress responses is generally higher when turbidity is increased and particle size decreased (Bisson and Bilby 1982; Servizi and Martens 1987; Gregory and Northcote 1993). Although turbidity may cause stress, it has been shown that moderate levels of turbidity (35 to 150 nephelometric turbidity units) accelerate foraging rates among juvenile Chinook salmon, likely because of reduced vulnerability to predators (camouflaging effect). Turbidity and fine sediments can reduce prey detection, alter trophic levels, reduce substrate oxygen, smother redds, and damage gills, among other deleterious effects (Bjornn 1991; Spence et al. 1996).

Road maintenance work will likely deliver temporary pulses (minutes to hours) of sediment, although the majority of this sediment would not be delivered until upcoming rain events. Quantifying turbidity levels and their effect on fish species and their habitat is complicated by several factors. First, turbidity from an activity will typically decrease as distance from the activity increases. The time needed to attenuate these levels depends on the quantity of material in suspension (e.g., mass or volume), particle size, the amount and velocity of ambient water (dilution factor), and the physical/chemical properties of the sediments. Second, the impact of turbidity on fish is not only related to the turbidity levels but also to the particle size of the suspended sediments.

Fine sediment delivered to action area streams from road maintenance activities is likely to increase turbidity in the water column immediately downstream along the shoreline during rainstorms and potentially increase fine sediment levels in interstitial spaces of substrate nearshore. Turbidity is likely to exceed ambient levels and potentially affect ESA-listed fish species present downstream of project activities for a short distance

(NMFS expects that nearly all of this sediment will likely be deposited within 300 feet downstream of project activities). The likely effect of a turbidity plume for this short distance along the streams edge will likely be in the form of avoidance of the plume by rearing juveniles, forcing them to temporarily seek alternate rearing areas. Similarly, spawning adults in close proximity to the plume are also likely to move out of the plume until water clears. Increased turbidity is expected to be short-lived and highly localized because of the dispersed nature of road maintenance activities, and the mitigation measures proposed to specifically reduce or avoid sediment delivery. Fish present downstream from road maintenance activities are expected to be able to avoid or reduce their exposure to turbidity by swimming to adjacent, less turbid habitat (i.e., behavioral response only). However, take of juveniles is still likely to occur as a result of increased turbidity through harm, as exposure of juveniles to predators will likely increase as they seek alternate rearing habitat. Take of adults due to increased turbidity is not expected to occur since adults are not at risk of increased predation, and it's unlikely they will abandon a redd even if they temporarily move out of turbid conditions.

Road maintenance can also benefit fish and fish habitat in the long-term. Maintaining roads in good condition should decrease chronic delivery of fine sediment to streams, as roads in close proximity to streams can convey large amounts of fine sediments (Furniss et al. 1991). As fine sediment decreases in spawning areas, more substrates become suitable for spawning and egg incubation success rates should increase. Rearing juvenile salmonids should have additional interstitial hiding spaces available and greater amounts of prey. These improvements should reduce impediments limiting reproductive success and juvenile survival, abundance, and productivity.

Excess noise caused by road maintenance activities may disturb individual fish. Noise from heavy equipment operating adjacent to live water may disturb fish in the immediate vicinity causing short-term displacement. However, flight/avoidance responses such as this are considered behavioral and not outside the reaction that would be expected to occur in response to natural perturbations. Consequently, although noise from road maintenance activity may periodically disturb individual fish, it is not expected to result in individual mortality during the short duration of each road maintenance project.

Disturbance of riparian vegetation has the potential to result in decreased shade and increased solar radiation, which potentially could locally increase water temperatures in streams bordering road maintenance activities. Elevated water temperatures may adversely affect salmonid physiology, growth, development, alter life history patterns, induce disease, and may exacerbate competitive predator-prey interactions (Spence *et al.* 1996). However, mitigation measures to not undercut cutslopes, to seed and mulch disturbed areas, and to not excessively brush vegetation along roads where the vegetation is stabilizing slopes or providing shade to streams should effectively minimize the amount of riparian vegetation disturbed and effectively mitigate the likelihood of these effects to insignificant levels.

Culvert Repair and Cleaning. As described by Furniss et al. (1991), stream crossings pose the greatest risk to fish habitats of any road feature. Plugged culverts become

overtopped by flood flows, often resulting in road damage, channel realignment, and severe sediment delivery. Therefore, repair and cleaning of plugged culverts should be beneficial in the long-term, preventing culvert and road blow outs before they can occur. However, despite the overall benefit from this part of the proposed action, repair and cleaning of existing culverts also has the potential for short-term effects. These activities will result in temporary increases in turbidity, removal LWD from action area streams, potential damage to riparian vegetation, and potential disturbance to individual redds and/or fish in nearby habitat.

Because of the nature of this activity, it's likely that repair and cleaning of culverts will be accomplished from the existing road prism or nearby streambanks. However, operation of machinery below the ordinary high water mark is not restricted by mitigation measures described for the section 7 watershed BAs. Therefore, effects to instream habitat must also be considered in this analysis.

Turbidity generated as a result of culvert repair and cleaning is expected to limited in both amount and duration. Cleaning of culverts should involve minimal instream work, and can typically be done by extending the arm of a backhoe from the road prism or shoreline. Consequently, turbidity plumes would likely consist of temporary pulses (seconds to minutes) easily avoided by downstream fishes, and should not result in mortality or any long-term avoidance of the project area by fish present nearby.

Riparian vegetation could be temporarily trampled or destroyed by machinery operating from streambanks, potentially affecting ESA-listed fish through localized increases in stream temperature. However, these types of projects are expected to be scattered across the PNF, with alteration of riparian vegetation occurring only in the immediate vicinity of individual culverts. Therefore, culvert repair and clearing is not expected to affect the overall function of riparian vegetation at the stream reach or watershed scales.

Clearing of LWD from stream channels to unplug culverts has the potential to reduce levels of instream LWD as instream wood is often a contributing factor to blockages. Much of this material will be of size classes too small to function as LWD (<30 feet long, and <20-inches diameter at breast height [dbh]), although larger pieces can also be present. Although the proposed action requires movement of suitably sized LWD present on the road surface to the downslope side of the road, it does not mandate movement of suitably sized LWD blocking culverts to the downstream side of the culvert. However, because this activity will occur only periodically, is spread across roads on the entire PNF, and will only affect LWD levels in very short segments of stream, the removal of this amount of LWD is not expected to be significant, and is not expected to affect instream habitat conditions at the stream reach or watershed scales.

Noise caused by road maintenance activities may disturb individual fish, but is not expected to result in individual mortality during the short duration of these activities (as previously described). However, because PNF mitigation measures do not restrict operation of machinery to the road prism or streambanks, crushing of juvenile salmonids or their redds cannot be ruled out. Because it's anticipated that most repair and cleaning

of culverts will be able to be accomplished from the existing road prism or nearby streambanks, machinery operation below the ordinary high water mark would be expected to occur only on rare occasions. Where necessary to operate from in channel, it's expected that machinery will enter from the side of the channel, impacting a very small stream segment for each problem culvert. Because these activities would occur irregularly, and would be scattered occur across a wide variety of habitat types/action area streams, it is not possible to quantify the number of fish that would be affected from inwater operation. However, based on the short duration and small footprint necessary to clean a culvert, NMFS would expect harm to occur to only a few individual fish from each incidence, but not in numbers high enough to affect ESA-listed fish at the watershed or population scale.

Snow Plowing. Snowplowing of roads near streams can have adverse effects on salmonids and their habitat. If an unpaved road is plowed to its bare surface, fine sediment and rocks can be side cast into streams or deposited at road-stream crossings. If large amounts of snow are deposited at road/stream crossings, temporary blockages of the streams can form, flooding the road and causing subsequent deposition of fine sediment in the stream. Roadside vegetation can be disturbed if the plow wanders off the road. The PNF proposed minimization measures such as leaving a snow base on unpaved roads, not undercutting slopes or damaging riparian vegetation, and removal of snow and slides on the travelway in a manner that will keep drainage channels and culverts clear of debris and functioning to avoid these potential adverse effects.

Riprap/Headwalls. Riprap placement for culvert inlet and outlet protection and bridge repairs can occur if limited to a cumulative length of 100 feet at an individual site. However, riprap placement will only occur following approval by a Fisheries Biologist, and only in streams where the potential to affect ESA-listed fish species and/or designated critical habitat does not exist. Therefore, these activities will not affect ESA-listed fish species or their critical habitats and will not be considered further in this Opinion.

Road Realignment. Road realignment can occur under the proposed action, although its occurrence will be very infrequent. Road realignment could occur under this programmatic if the Ranger, through the input of Fisheries Biologists, Hydrologists, and others, has determined that ESA-listed species or designated critical habitats would benefit by the realignment. Then, road realignments could only occur under the programmatic if a Fisheries Biologist determined that there would be no adverse effects due to sediment delivery, harassment of adults, or other mechanisms of effect. Therefore, as proposed, for road realignment to occur the effects from the realignment would be completely beneficial, likely resulting in long-term beneficial effects to floodplain function, the sediment budget, and overall riparian function and processes.

Chemical Contamination and Dust Abatement. Heavy machinery use adjacent to the stream raises concern for 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

ESA-listed species. 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). 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). Brake fluid is also a mixture of glycols and glycol ethers, and has about the same toxicity as antifreeze.

The majority of work is anticipated to occur outside of flowing water which limits the potential for chemical contamination to occur. To further prevent toxic materials from entering live water, the PNF has required that fuel storage areas will be located outside of RCAs, and that spill control facilities will be provided to contain the largest possible spill. Also, equipment will be monitored for leaks of motor oil and hydraulic fluids to ensure water quality is not contaminated. With the possible rare exception of some culvert cleaning activities, the operation of machinery completing road maintenance activities will occur from existing roadways and outside the ordinary high water mark. In addition, it is unlikely that antifreeze, brake, or transmission fluid will be present on-site or spilled in volumes or concentrations large enough to harm salmonids in or downstream from project sites. Therefore, NMFS believes that fuel spill and equipment leak contingencies and preventions described in the proposed action and the PNF mitigation measures are sufficient to effectively minimize the risk of negative impacts to ESA-listed fish and fish habitat from toxic contamination.

Road maintenance activities include the use of dust abatement chemicals ($MgCL_2$ and $CaCl_2$ products) that can have negative effects on water quality when used near streams. Heffner (1996) concluded that although the overall risk to aquatic life from using dust abatement compounds is low, in certain circumstances, their use may cause some adverse effects. Salmonids have been shown to be able to withstand chloride levels of approximately 400 parts per million (ppm) (Heffner 1996). However, chloride levels in waterbodies receiving runoff from application areas would probably drop to 70 ppm where a 3 to 50 foot buffer between the application site and the water exists (Schwendeman 1981).

Plant life in the direct vicinity of the application site are at more risk, as application of dust abatement compounds can cause necrosis of plant tissues (Heffner 1996). Some vegetation including pine is sensitive to salt-based dust abatement chemicals. If these chemicals are applied to areas where pine trees are present close to the road, these trees can be killed. This can lead to a localized reduction in stream shade and LWD recruitment if not carried out with the proper minimization measures.

Magnesium and calcium are already present in most waters, commonly occurring in rocks and soils, and both readily soluble. Heffner (1996) noted that the addition of these chemicals for dust suppression would likely be insignificant when compared to the amount already present in the environment. Furthermore, the author noted that calcium and magnesium toxicity only pertains to the immediate area around the application site, as neither will generally migrate far from the site of application. Bolander and Yamada (1999) and Heffner (1996) concluded that a vegetative buffer of 25 feet or greater

reduced the influences from using dust abatement chemicals. The PNF does not propose a buffer zone, with mitigation measures instead specifying that dust abatement additives/chemicals will be applied so they avoid runoff into streams. No petroleum products are proposed for dust abatement.

The overall viability ratings for the Snake River Chinook salmon and steelhead populations present in the action area are not currently viable due to current risk ratings for abundance/productivity and spatial structure/diversity (Tables 5, 6, and 8). Increased exposure of juveniles to predation from avoidance of sediment and seeking alternate cover, in addition to reduced foraging success due to sedimentation is expected to have a minor negative effect on abundance and productivity. The effect is expected to be minor, considering application of mitigation measures designed to keep sediment out of streams and work being spread across the Forest and not concentrated in any given watershed for prolonged periods of time. Furthermore, road maintenance activities may result in an overall reduction in sediment delivery contributed through forest road use and wear. The limited amount of sediment produced is not expected to result in long-term habitat degradation of spawning or rearing habitat. Therefore, the proposed activities are expected to have a minimal effect on spatial structure or diversity because the proposed action will not prevent ESA-listed salmon and steelhead from accessing available habitat and will not eliminate any habitat types.

2.1.3.2. Effects on Critical Habitat

Freshwater Spawning

Water Quality. Potential effects to water quality are described above in the species section. There will likely be a minor decrease in water quality associated with increased turbidity during rain events immediately following road maintenance activities. Turbidity is not expected to extend further than 300 feet downstream of newly maintained roads. However, any turbidity generated will be of short duration, with road maintenance activities not expected to result in chronic sediment delivery to action area streams. Mitigation measures designed specifically to minimize and avoid sediment delivery are expected to render the amount of sediment delivered to insignificant levels. In addition, regular road maintenance is expected to address chronic sediment delivery associated with everyday road use and erosion, likely resulting in an overall decrease in sediment delivery to action area streams. Therefore, the proposed action should not reduce the conservation value of action area streams, and may result in an localized long-term improvement.

The potential for adverse effects to water quality from a fuel spill should be effectively minimized to a discountable level by successful implementation of the required fuel and storage restrictions, machinery inspections for potential leaks, and the PNF's spill control and containment plan.

Substrate. Potential effects to water quality are described above in the species section. There will be a minor increase in substrate fine sediment resulting from sediment delivery associated with road maintenance. However, mitigation measures designed specifically to minimize and avoid sediment delivery are expected to render the amount of sediment delivered to insignificant levels, not reducing the conservation value of action area streams.

Freshwater Rearing

Water Quality. See discussion for Freshwater Spawning.

Forage. Increased interstitial fine sediment levels could slightly reduce habitat available to macroinvertebrates. However, because these projects will be spread across the PNF and mitigation measures have been designed to keep the majority of road maintenance generated sediment out of the streams, the small amount of sediment delivered as a result of road maintenance activities is not likely to be in amounts sufficient to affect overall species composition or abundance of action area macroinvertebrates. Because road maintenance may actually address chronic sediment delivery problems associated with normal road use, the action may result in long-term improvement to instream sediment levels and result in an overall improvement for salmonid prey species. Therefore, road maintenance activities are not expected to reduce the conservation value of action area streams.

Natural Cover. Cover provided by riparian vegetation and streambanks could be reduced through mortality associated with dust abatement chemicals or placement of riprap. However, tree morality associated with dust abatement application has not been documented on the PNF and is not expected to occur. Limitations on the amount of riprap that can be placed under this programmatic will limit the amount of streambank and riparian vegetation that will be disturbed in any given stream segment. However, these actions should not affect critical habitat because they are not addressed by this programmatic along streams where they have the potential to affect designated critical habitat. Therefore, road maintenance activities are not expected to reduce the overall conservation value of natural cover in action area streams.

Riparian Vegetation. Road maintenance activities have the potential to affect the riparian vegetation PCE. However, no intentional clearing of riparian vegetation is anticipated, although some vegetation could be trampled during culvert cleaning activities, inadvertently cleared during road or ditch blading, or inadvertently killed by dust abatement chemicals. Trampling of vegetation is expected to be limited and isolated to the immediate vicinity of blocked culverts, with vegetation likely to grow back or rebound immediately following termination of these activities. Although possible, mortality of riparian vegetation from dust abatement application has not been widely reported on the PNF. Therefore, dust abatement application is not expected to result in significant mortality of riparian vegetation. Mitigation designed to protect cut and fill slopes during blading and snow plowing should be effective at minimizing damage to riparian vegetation, and activities will be spread across a wide geographic area.

Therefore, the small amount of riparian vegetation expected to be affected by this project is insignificant in terms of riparian function and processes, particularly when considered in the context of the stream reach or watershed scales.

Freshwater Migration Corridors

Water Quality. See discussion for Freshwater Spawning.

Natural Cover. See previous discussion for Freshwater Rearing.

Riparian Vegetation. See previous discussion for Freshwater Rearing.

2.1.3.3. Cumulative Effects

"Cumulative effects" are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02). Cumulative effects that reduce the ability of a listed species to meet its biological requirements may increase the likelihood that the proposed action will result in jeopardy to that listed species or in destruction or adverse modification of a designated critical habitat.

The action area contains Federal lands administered by the PNF, which comprise the majority of the watershed acreage, interspersed with BLM, state and privately-owned lands. The BAs identified a risk from activities occurring on private, state, and other Federal lands within the action area. The BAs also revealed that activities occurring on private, state, and other Federal lands within the action area may contribute to the need to maintain or increase the proposed levels of road maintenance for many years into the future. Land use within the action area potentially influencing the proposed action at some level includes livestock grazing, agriculture, timber harvest, facility maintenance, recreation, prescribed fire, emergency fire, rehabilitation, and other surface-disturbing activities. Current levels of these uses are likely to continue, but detailed information on other Federal and non-Federal activities in the action area is not available.

County governments also have road maintenance programs with potentially less stringent measures to prevent water contamination. Roads are maintained by county transportation departments, sometimes several times a year. Any effects occurring from the proposed PNF action could potentially combine with effects from other Federal and non-Federal activities, and contribute to cumulative effects that could kill or harm listed steelhead or salmon. While the mechanisms for cumulative effects are clear, the actual effects cannot be quantified. However, it is likely that these effects will continue near current levels.

Cumulative effects are likely to affect listed species, PCEs, and the conservation role of critical habitat in a manner similar to that described in the effects analysis of this Opinion. Although quantifying an incremental change in survival for the ESUs/DPSs and in the conservation role of critical habitat considered in this consultation due to

cumulative effects is not possible, it is reasonably likely that the action as proposed will have a small, temporary to short-term adverse effect on listed species and critical habitat. This is not expected to negatively affect the likelihood that these ESUs/DPSs will survive and recover. However, because active road maintenance should address potential issues with chronic sediment delivery, it is also expected that the proposed action will result in a small, long-term, beneficial effect on the conservation role of critical habitat.

2.1.4. Conclusion

After reviewing the status of the affected species and their designated critical habitats, the environmental baseline for the action area, the effects of the proposed action, and cumulative effects, NMFS concludes that the action as proposed is not likely to jeopardize the continued existence of Snake River Basin steelhead, Snake River spring/summer Chinook salmon, or Snake River fall Chinook salmon. NMFS has also determined that the action is not likely to result in the adverse modification or destruction of designated critical habitat. These determinations are based upon the following considerations:

- Take is expected to occur in the form of harm and harassment only; the action is not expected result in lethal take;

- Proposed mitigation measures are designed to keep sediment and fuel/chemicals out of action area streams;

- Active road maintenance should reduce chronic sediment delivery to streams and result in a beneficial long-term effect;

- Activities will be of short duration in any given location, with projects spread across time and across the entire roaded portion of the PNF. Consequently, only scattered portions of ESA-listed salmon and steelhead populations would be exposed to risks from this action at any given time; and

- The adverse effects of this action on critical habitat PCEs will likely result in small, localized, negative impacts on the conservation value of critical habitats. However, it is not likely that these localized effects will have a significant impact on the overall conservation value of critical habitat in the affected stream reach or watershed as a whole. Immediately following project completion and into the long-term, the conservation value of affected critical habitats should realize a localized improvement through reduced sediment delivery.

2.1.5. Conservation Recommendations

Section 7 (a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the

threatened and endangered species. The following recommendations are discretionary measures that NMFS believes are consistent with this obligation and therefore should be carried out by the PNF:

1. Coordinate road maintenance activities closely with County governments to work toward consistent and broadscale application of best management practices designed to avoid or minimize effects to ESA-listed species and designated critical habitats.

2. Review recovery plans and implement identified recovery strategies and management actions whenever possible.

3. Conduct an assessment of non-system and system roads not regularly maintained by the PNF to help identify chronic sediment delivery issues and to identify and help prioritize watershed restoration opportunities.

Please notify NMFS if any of these recommendations are implemented so that we will be kept informed of actions that minimize or avoid adverse effects, and those that benefit species or their habitats.

2.1.6. Reinitiation of Consultation

Reinitiation of formal consultation is required and shall be requested by the PNF or by NMFS where discretionary Federal involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of taking specified in the ITS is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the identified action is subsequently modified in a manner that has an effect to the listed species or critical habitat that was not considered in the Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR. 402.16). If reinitiation of consultation appears warranted due to one or more of the above circumstances, contact the Idaho State Habitat Office of NMFS and refer to the NMFS Number assigned to this consultation.

2.2. Incidental Take Statement

Section 9(a)(1) of the ESA prohibits the taking of listed species without a specific permit or exemption. Protective regulations adopted pursuant to section 4(d) extend the prohibition to threatened species (July 10, 2000, 65 FR 42422). Among other things, an action that harasses, wounds, or kills an individual of an ESA-listed species or harms a species by altering habitat in a way that significantly impairs its essential behavioral patterns is a taking (50 CFR 222.102). Incidental take refers to takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the

Federal agency or applicant (50 CFR 402.02). Section 7(o)(2) exempts any taking that meets the terms and conditions of a written incidental take statement from the taking prohibition.

2.2.1. Amount or Extent of Take

The proposed action is reasonably certain to result in incidental non-lethal take of steelhead, spring/summer and fall Chinook salmon. NMFS is reasonably certain that the incidental take described here will occur because: (1) Snake River Basin steelhead, and spring/summer and fall Chinook salmon are known to occur in the action area; and (2) the proposed action is likely to cause impacts to critical habitat that could impair feeding, breeding, migrating, or sheltering for the listed species during action implementation.

Despite the use of best scientific and commercial data available, NMFS cannot quantify the specific amount of incidental take of individual fish or incubating eggs for this action. The amount of take from the proposed action depends on the circumstances at the specific times and locations that road maintenance actions will occur, particularly proximity of treatment actions to individual fish or redds. Due to the programmatic nature of this action, these factors are not known. Because circumstances causing take are likely to arise, but cannot be quantitatively predicted from available information, the extent of incidental take is described, pursuant to 50 CFR 402.14 [I].

In this case, part of the extent of take will be described as the extent of turbidity caused by the proposed action. As noted above, as turbidity increases, the potential for and intensity of adverse impacts to listed species increases. A brief, low intensity sediment plume is expected to extend up to 300 feet downstream of operations. NMFS expects that any exposed fish would volitionally seek out adjacent, less turbid habitats, thus avoiding direct sediment exposure. This movement is expected to be of short duration (minutes to several hours) and extent (less than 300 feet). Any take associated with project generated sediment is expected to be sublethal in nature and in the form of harassment or harm, but is not expected to reach levels resulting in mortality. For each treatment site, the extent of take will be exceeded if turbidity is visible above background levels at more than 300 feet downstream of each project area.

If at any time the level or method of take exempted from take prohibitions and quantified in this Opinion is exceeded, reinitiation of consultation will be required.

2.2.2. Reasonable and Prudent Measures

The RPMs are non-discretionary measures to avoid or minimize take that must be carried out by cooperators for the exemption in section 7(o)(2) to apply. The PNF has the continuing duty to regulate the activities covered in this incidental take statement where discretionary Federal involvement or control over the action has been retained or is

authorized by law. The protective coverage of section 7(o)(2) may lapse if the PNF fails to exercise its discretion to require adherence to terms and conditions of the incidental take statement, or to exercise that discretion as necessary to retain the oversight to ensure compliance with these terms and conditions. Similarly, if any applicant fails to act in accordance with the terms and conditions of the incidental take statement, protective coverage may lapse.

NMFS believes that full application of conservation measures included as part of the proposed action, together with use of the RPMs and terms and conditions described below, are necessary and appropriate to minimize the likelihood of incidental take of ESA-listed species due to completion of the proposed action.

The PNF shall minimize incidental take by:

1. Minimizing the amount and extent of incidental take from road maintenance activities by implementing additional minimization/avoidance measures.

2. Ensure completion of a monitoring and reporting program to confirm that the extent of take anticipated in this Opinion is not exceeded and that the project is implemented as proposed.

2.2.3. Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the PNF and its cooperators, including the applicant, if any, must fully comply with conservation measures described as part of the proposed action and the following terms and conditions that implement the RPMs described above. Partial compliance with these terms and conditions may invalidate this take exemption, result in more take than anticipated, and lead NMFS to a different conclusion regarding whether the proposed action will result in jeopardy or the destruction or adverse modification of critical habitats.

1. To implement RPM #1, the PNF shall:

    a. Restrict mechanized equipment operation to streambanks or the road prism; not entering streams or other waterways during culvert repair and cleaning actions.

    b. Place all LWD (>30 feet long, 12 –inches dbh) removed from obstructed culverts into the floodplain or into the active channel downstream from the affected stream crossing during culvert repair and cleaning actions.

    c. Ensure that all equipment conducting instream work or working in close proximity to streams is clean and free of fuel and lubricant leaks, and is inspected daily prior to beginning work.

d. Ensure that a minimum 25-foot buffer is applied between roads and streams where dust abatement chemicals are applied.

2. To implement RPM #2, above, the PNF shall:

   a. Ensure that visual turbidity monitoring will be completed during project implementation activities by observing any sediment plumes that might be caused by project activities. If the sediment plumes are visible more than 300 feet downstream, the PNF shall immediately notify NMFS to determine if reinitiation of consultation is necessary.

   b. NOTICE. If a steelhead or salmon becomes sick, injured or killed as a result of project-related activities, and if the fish would not benefit from rescue, the finder should leave the fish alone, make note of any circumstances likely causing the death or injury, location and number of fish involved, and take photographs, if possible. If the fish in question appears capable of recovering if rescued, photograph the fish (if possible), transport the fish to a suitable location, and record the information described above. Adult fish should generally not be disturbed unless circumstances arise where an adult fish is obviously injured or killed by proposed activities, or some unnatural cause. The finder must contact the Boise Field Office of NMFS Law Enforcement at (208) 321-2956 as soon as possible. The finder may be asked to carry out instructions provided by Law Enforcement to collect specimens or take other measures to ensure that evidence intrinsic to the specimen is preserved.

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

The consultation requirements of section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions, including proposed actions, that may adversely affect EFH. Adverse effects include the direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside EFH, and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) also requires NMFS to recommend measures that may be taken by the action agency to conserve EFH.

The Pacific Fishery Management Council has designated EFH in Idaho for Chinook salmon and coho salmon (PFMC 1999). Chinook salmon EFH is designated in the action area as described in section 1.3 of the Opinion.

3.1. Effects of the Proposed Action on EFH

The effects of the proposed PNF road management activities on anadromous fish habitat is described in the habitat effects section of the Opinion. Based on information provided in the BA and the analysis of effects presented in the ESA portion of this document, NMFS concludes that proposed action will have the following potential adverse effects on EFH designated for Pacific Coast salmon:

1. Localized effects to water quality – increased turbidity, water temperature, and/or potential chemical contamination as described in Sections 2.1.3.1 and 2.1.3.2 of this Opinion;

2. Localized effects to instream habitat – increased sediment deposition as described in Sections 2.1.3.1 and 2.1.3.2 of this Opinion; and,

3. Localized effects to riparian vegetation – short-term effects to riparian vegetation as described in Section 2.1.3.2 of this Opinion.

3.2. EFH Conservation Recommendations

NMFS believes that the following conservation measure is necessary to avoid, mitigate, or offset the impact that the proposed action has on EFH. This Conservation Recommendation is a non-identical set of the ESA Terms and Conditions.

1. RPM # 1, and associated terms and conditions 1a. to 1d. in the Opinion above.

3.3. Statutory Response Requirement

Federal agencies are required to provide a detailed written response to NMFS' EFH conservation recommendations within 30 days of receipt of these recommendations (50 CFR 600.920(j)(1)). The response must include a description of measures proposed to avoid, mitigate, or offset the adverse effects that the activity has on EFH. If the response is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations, including the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, in your statutory reply to the EFH portion of this consultation, NMFS requests that the number of conservation recommendations accepted be clearly identified.

3.4. Supplemental Consultation

The PNF must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH conservation recommendations (50 CFR 600.920(k)).

4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

Section 515 of the Treasury and General Government Appropriations Act of 2001 (Public Law 106-554) (Data Quality Act (DQA)) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the Opinion addresses these DQA components, documents compliance with the DQA, and certifies that this Opinion has undergone pre-dissemination review.

Utility: This ESA section 7 Consultation and Magnuson-Stevens Fishery Conservation and Management Act EFH Consultation on proposed road maintenance activities by the PNF, concluded that the action is not likely to jeopardize the continued existence of Snake River Basin steelhead, Snake River spring/summer Chinook salmon, Snake River fall Chinook salmon, or result in the adverse modification or destruction of designated critical habitat. Pursuant to the MSA, NMFS provided the PNF with conservation recommendations to conserve EFH for Chinook salmon.

The intended user of this consultation is the PNF. The American public will benefit from the consultation.

This consultation will be posted on the NMFS Northwest Region web site (http://www.nwr.noaa.gov). The format and naming adheres to conventional standards for style.

Integrity: This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

Objectivity:

Information Product Category: Natural Resource Plan.

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the ESA *Consultation Handbook*, ESA

Regulations, 50 CFR 402.01 et seq., and the MSA implementing regulations regarding EFH, 50 CFR 600.920(j).

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the literature cited section. The analyses in this Opinion/EFH consultation contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA and MSA implementation, and reviewed in accordance with Northwest Region ESA quality control and assurance processes.

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