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

Refer to NMFS No: WCR-2016-5445

September 19, 2016

Charles Mark
Forest Supervisor
Salmon-Challis National Forest
1206 South Challis
Salmon, Idaho 83467

Lt. Col. Damon A. Delarosa
U.S. Army Corps of Engineers
Idaho Falls Regulatory Office
900 North Skyline Drive, Suite A
Idaho Falls, Idaho 83402

Re: Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Salmon-Challis National Forest Challis Creek Road Repair Project, HUC #1706020117 - Challis Creek, Custer County, Idaho

Dear Mr. Mark and Lt. Col. Delarosa:

Thank you for your letter dated May 9, 2016, received on May 13, 2016, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the Salmon-Challis National Forest (SCNF) Challis Creek Road Repair Project.

In this biological opinion (Opinion), NMFS concludes that the action, as proposed, is not likely to jeopardize the continued existence of Snake River Basin steelhead. NMFS also determined the action will not destroy or adversely modify designated critical habitat for Snake River spring/summer Chinook salmon. Rationale for our conclusions is provided in the attached Opinion.

As required by section 7 of the ESA, NMFS provides an incidental take statement (ITS) with the Opinion. The ITS describes reasonable and prudent measures (RPM) NMFS considers necessary or appropriate to minimize the impact of incidental take associated with this action. The take statement sets forth nondiscretionary terms and conditions, including reporting requirements, that the SCNF, and any permittee who performs any portion of the action must comply with to carry out the RPM. Incidental take from actions that meet these terms and conditions will be exempt from the ESA take prohibition.

This document also includes the results of our analysis of the action's effects on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and includes five conservation recommendations to avoid, minimize, or otherwise offset potential adverse effects on EFH. These Conservation Recommendations are 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 these recommendations.

If the response is inconsistent with the EFH Conservation Recommendations, the SCNF must explain why the recommendations will not be followed, including the justification for any disagreements over the effects of the action and the recommendations. 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 asks that you clearly identify the number of Conservation Recommendations accepted.

If you have questions regarding this consultation, please contact Mrs. Kimberly Murphy (208) 756-5180 or Mr. Bill Lind (208) 378-5697.

Sincerely,

Michael Tehan

for Barry A. Thom
Regional Administrator

Enclosure

cc: R. Holder – USFWS
B. Gamett – SCNF
C. Colter – SBT

bcc: SBAO – Read File, File copy, K. Murphy, B. Lind *(electronic only)*

Murphy:Lind:ChallisCreekRd:am:20160919:WCR-2016-5445

cc Addresses:

Russ Holder
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Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

Salmon-Challis National Forest Challis Creek Road Repair Project
HUC 1706020117 - Challis Creek
Custer County, Idaho

NMFS Consultation Number: WCR-2016-5445

Lead Action Agency: USDA Forest Service, Salmon-Challis National Forest

Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species or Critical Habitat?	Is Action Likely To Jeopardize the Species?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
Snake River steelhead (*Oncorhynchus mykiss*)	Threatened	Yes – Species; No – Critical Habitat	No	N/A
Snake River spring/summer Chinook Salmon (*O. tshawytscha*)	Threatened	No – Species; Yes – Critical Habitat	N/A	No

Fishery Management Plan That Describes EFH in the Project Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Salmon	Yes	Yes

Consultation Conducted By: National Marine Fisheries Service, West Coast Region

Issued By: for Barry A. Thom
Regional Administrator

Date: September 19, 2016

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ACRONYMS

BA	Biological Assessment
BLM	Bureau of Land Management
BMP	Best Management Practice
COE	U.S. Army Corps of Engineers
CWA	Clean Water Act
dB	decibel
DPS	Distinct Population Segment
DQA	Data Quality Act
EFH	Essential Fish Habitat
ESA	Endangered Species Act
ESU	Evolutionarily Significant Units

HAPC	Habitat Areas of Particular Concern
ICTRT	Interior Columbia Basin Technical Recovery Team
IDFG	Idaho Department of Fish and Game
ISAB	Independent Scientific Advisory Board
ITS	Incidental Take Statement
LGD	Lower Granite Dam
MPGs	Major Population Groups
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Unit
OHWM	Ordinary High Water Mark
Opinion	Biological Opinion
PBFs	Physical and Biological Features
PCEs	Primary Constituent Elements
PFMC	Pacific Fishery Management Council
re: 1µPa	micropascal
RHCAs	Riparian Habitat Conservation Areas
RMO	Ribarian Management Objectives
RMS	Root Mean Square
RPM	Resonable and Prudent Measures
SCNF	Salmon-Challis National Forest
SPPP	Stormwater Pollution Prevention Plan
Tribes	Shoshone-Bannock Tribes
VSP	Viable Salmonid Population

1. INTRODUCTION

This Introduction section provides information relevant to the other sections of this document and is incorporated by reference into Sections 2 and 3 below.

1.1 Background

The National Marine Fisheries Service (NMFS) prepared the biological opinion (Opinion) and incidental take statement (ITS) portions of this document in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973 (16 USC 1531, *et seq.*), and implementing regulations at 50 CFR 402.

We also completed an Essential Fish Habitat (EFH) consultation, 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.

We completed pre-dissemination review of this document using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (DQA) (section 515 of the Treasury and General Government Appropriations Act of 2001 [Public Law 106-5444]). A complete record of this consultation is on file at the Snake Basin Area Office, Boise, Idaho.

The Challis Creek Road (Forest Road #40-080) is a 9.9-mile long route located in the Challis and Mill Creek drainages west of Challis, Idaho (Figure A-1). The road originates at Sleeping Deer Road (Forest Road #40-086) near the confluence of White Valley Creek and Challis Creek, and terminates at the Custer Motorway (Forest Road #40-070) near Fanny's Hole in the Mill Creek drainage. The road provides access to the upper portion of the Challis Creek drainage, including Mosquito Flat Reservoir.

In 2013, the Lodgepole Fire burned a large portion of the Challis Creek subwatershed. The fire generated moderate to high intensity burns in the areas adjacent to the Challis Creek Road. Following the fire, heavy precipitation events caused substantial stream discharge and numerous debris flows within the burned area. These stream discharges and debris flows impacted the Challis Creek Road in five locations (referred to as sites 1 through 5) between Bear and Lodgepole Creeks (Figure A-2).

Site #1 is located approximately 1.1 road miles upstream of where the Challis Creek Road crosses Bear Creek (Figure A-2). On July 31, 2014, a heavy precipitation event generated a debris flow in an unnamed tributary along the south side of Challis Creek. This debris flow entered Challis Creek and damaged the Challis Creek Road. The Salmon Challis National Forest (SCNF) repaired the damaged section of road in early August 2014. However, less than 24 hours after the repairs were completed, another heavy precipitation event generated a much larger debris flow in the same unnamed tributary (Figure A-3). This debris flow filled the Challis Creek floodplain with a considerable amount of material and created a dam across Challis Creek. This dam caused a pond to form on Challis Creek that submerged approximately 150 feet of the

Challis Creek Road (Figure A-4). The debris flow also forced Challis Creek below the dam onto the Challis Creek Road obliterating approximately 750 additional feet of the road (Figures A-5 through A-7).

Site #2 is located approximately 2.2 road miles upstream of where the Challis Creek Road crosses Bear Creek (Figure A-2). At this location, a heavy precipitation event generated a debris flow in an unnamed tributary along the north side of Challis Creek which buried an approximately 100-foot section of road (Figure A-8).

Site #3 is located approximately 0.5 road miles downstream of where the Challis Creek Road crosses Lodgepole Creek (Figure A-2). At this location, a heavy precipitation event generated a debris flow and heavy runoff in an unnamed tributary along the north side of Challis Creek. The debris flow and runoff partially buried and washed out approximately 100 feet of road (Figure A-9).

Site #4 is located approximately 0.1 road miles downstream of where the Challis Creek Road crosses Lodgepole Creek (Figure A-2). At this location, a heavy precipitation event generated a debris flow and heavy runoff in an unnamed tributary along the north side of Challis Creek. This debris flow and runoff partially buried and washed out approximately 50 feet of road (Figure A-10).

Site #5 is located where the Challis Creek Road crosses Lodgepole Creek (Figure A-2). At this location, heavy precipitation and material deposition has caused the stream to spread out over the floodplain. This has caused the formation of multiple channels across the road and damaged an approximately 400-foot section of road (Figure A-11). A 3-foot culvert, through which Lodgepole Creek passed prior to the runoff events, was buried by the runoff events and is not functional.

Given the substantial damage to the road, repair costs, ecological impacts of the road on the stream, and that there are two other roads that provide access to the upper portion of the Challis Creek subwatershed, the SCNF initially elected to not repair the road. However, this decision was met with substantial opposition from the Custer County Commissioners and some local residents. Subsequently, the SCNF has elected to repair the road. The SCNF also considered relocating the road to other areas but ultimately elected not to pursue this option due to costs and ecological impacts.

1.2 Consultation History

This Opinion is based on information provided in the May 6, 2016, biological assessment (BA), May 9, 2016, consultation request letter that was received on May 13, 2016, and the July, 21, 2016, email explaining in more detail the scope of the proposed action and clarifying the engineering designs. NMFS engineering review was completed on July 7, 2016. Comments and questions from NMFS' engineer were sent to the SCNF on July 7, 2016, requesting more info on the proposed action and clarification on the engineering designs. The SCNF provided additional information on the proposed action on July 21, 2016. After coordinating with our engineer, NMFS determined that the BA package was complete and consultation was initiated on July 26, 2016.

NMFS provided copies of the draft proposed action and terms and conditions to the Shoshone-Bannock Tribes and requested comments on September 6, 2016, because the proposed action will likely affect tribal trust resources. The Tribes did not respond.

1.3 Proposed Action

"Action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies (50 CFR 402.02). Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. No interdependent or interrelated actions have been identified for this action.

The Federal action is for the SCNF to authorize, fund, and oversee the repair of the five sections of damaged road (approximately 1,400 feet) between Bear Creek and Lodgepole Creek. This action also requires a U.S. Army Corps of Engineers (COE) permit under section 404 of the Clean Water Act (CWA). This is a separate Federal action and its effects are analyzed within this opinion. A Stormwater Pollution Prevention Plan (SPPP) will be prepared by or approved by the SCNF and will conform to the National Pollutant Discharge Elimination System (NPDES) general permit requirements. The SPPP will contain a description of the specific hazardous materials, procedures, and spill containment that will be used, including inventory, storage, and handling of hazardous materials. The project may be implemented by the SCNF, contractors hired by the SCNF, or partners working with the SCNF. The project is expected to be implemented over the next 3 years (i.e., starting in 2016 or 2017, and ending in 2018 or 2019 depending on what year project is started) using heavy equipment such as excavators, dump trucks, road graders, and bulldozers. A detailed description of the work to be completed at each site is provided below.

1.3.1 Detailed Project Activities

1.3.1.1 Site 1

Approximately 750 feet of road will be reconstructed with an additional 200 feet of the road raised within its original location. Repair work will also include: (1) Constructing a bypass stream channel; (2) realigning the unnamed tributary with Challis Creek; (3) dewatering the roadway by redirecting flows into the bypass-stream channel; (4) constructing up to seven stream barbs to protect the roadway; and (5) stabilizing the slopes adjacent to the roadway (Figures A-12 and A-13). All work at this site will be completed between July 15 and November 15.

The bypass channel will be constructed in the dry, between the ponded water over the road and a section of Challis Creek downstream of the pond (Figure A-12). The channel will be constructed in the material deposited by the debris flow and will be constructed to mimic natural channel dimensions found in this stream reach. The bypass channel will remain in place as the new stream channel. The approximate dimensions will be 350 feet long, with a bankfull width of 20 feet, and a bankfull depth of 2 feet.

To the extent practical, a floodplain will be created adjacent to the channel. Constructing this channel will involve excavating approximately 2,500 cubic yards of material. This material will be placed adjacent to the bypass stream channel and will then be used to repair the road. However, some of the material may also be placed at the toe of the slope along the south and west sides of the floodplain in a manner that mimics the natural topography of the site. The bypass channel will provide a place for water to flow when the roadway is dewatered, will allow for better control of the stream, and will significantly reduce the amount of sediment and other material that will be mobilized if Challis Creek was allowed to naturally cut its way through the debris flow.

A small unnamed tributary, where the debris flow originated, will be realigned to flow down valley into Challis Creek in a manner similar to its original condition (Figure A-12). This will involve relocating approximately 100 feet of channel. A small berm, approximately 50 feet long will be constructed along the north side of the unnamed tributary to help keep the stream directed down valley (Figure A-12). This berm will not extend onto the floodplain of Challis Creek. The purposed realignment is to help prevent stream flows and any future debris flows from flowing directly at the reconstructed road.

After the work on the bypass stream channel and the unnamed tributary is complete, the roadway will be dewatered by directing flows into the bypass stream channel. This will be done by breaching the last section of the debris flow between the channel and the pond. The length of roadway that will be dewatered is approximately 750 feet long and 15 feet wide. Additionally, approximately 250 feet of side channel downstream of the roadway will also be dewatered. Redirecting flows from the road into the bypass stream channel will lower the pond but may not completely eliminate it. If this is the case, a barrier will be constructed between the work area and the pond. This barrier will be constructed with t-posts and canvas (or a similar material) and will be approximately 40 feet long and 4 feet high. The project side of the barrier will be reinforced with rock and other material. This material will seal the bottom of the barrier and will also serve as part of the roadway. This barrier will isolate the area where the road will be reconstructed from the pond and stream. The t-posts and canvas will be removed and disposed of at an offsite location once the road is completed.

Fish are present in Challis Creek and may be present in the section of the roadway that will be dewatered. Therefore, measures will be taken to prevent fish stranding and death as the roadway is dewatered. To the extent possible, the roadway will be gradually dewatered which will provide an opportunity for any fish present on the roadway to move downstream into Challis Creek. As dewatering occurs, SCNF fisheries staff will walk the area that is being dewatered looking for fish. Any fish observed will be collected with dip nets, placed in buckets, and released into Challis Creek at least 300 feet below the project site. No electrofishing will be used to collect fish. Water will be allowed to remain in this bypass stream channel following the completion of the work at this site. Natural stream flows will be maintained in Challis Creek below the site while the project is implemented. No water pumping is expected to occur at this site.

Once the roadway is dewatered, the obliterated road will be reconstructed in its original location (Figure A-12). This process will begin with debris (primarily trees) being removed from the roadway. Although this material will be moved off the roadway, it will be left on the floodplain. Once the debris is cleared, the new road will be constructed using standard road construction techniques. The new road will be raised an average of approximately five feet above the current elevation to prevent stream flows and any future debris flows from impacting the road. Additionally, approximately 200 feet of the existing road on the eastern end of the obliterated road will be raised to connect with the reconstructed obliterated road (Figure A-12).

The reconstructed road surface will be approximately 14 feet wide. The road base will have an average width of approximately 24 feet which will be an average of approximately 7 feet wider than the original road. The cut and fill slopes will be 2:1. The sides of the roadway that are likely to be exposed to significant flow will be armored with large rock. The reconstruction of the road will involve placing approximately 2,300 cubic yards of material in the floodplain below the ordinary high water mark (OHWM) and will result in a loss of approximately 0.2 acres of floodplain in addition to what the road originally occupied.

Up to seven stream barbs will be constructed along the road to help reduce the impact of stream flows and any future debris flows on the road (Figure A-12). The barbs will be up to 30 feet long, 6 feet high, and 6 feet wide (2 feet below and 4 feet above the existing streambed) and constructed of rocks that are 2 to 4 feet in diameter. The barbs will face upstream at an angle of approximately 30 degrees from the road, with a horizontal slope of approximately 20:1. All construction will occur in the dry (Jeremy Powell, SCNF Engineer, July 5, 2016 email). The barbs are considered on the far edge of normal design guidelines because this is not a normal situation. The SCNF engineering staff decided to include barbs as part of the road armoring because: (1) They tend to hold soil adjacent to the road allowing vegetation to take hold and further mitigate road stream interaction; (2) they tend to absorb stream energy reducing downstream "reflective" scour commonly associated with riprap armor installations in rivers; and, (3) the barbs, in concert with road armoring, will enable the road structure to remain in place even if flows from the side channel deposit enough material to cover the road. If the stream were to cut its way through the deposited material the barbs and armor are expected to be able to guide the stream back to the center of the valley without destroying the road again. The barbs are meant to act like a sediment catchment device (Mike Carrol, personal communication by email July 21, 2016, and in person on August 22, 2016).

A culvert will be replaced on the east side of the site to provide drainage associated with a small seep (Figure A-15). The slopes on the uphill side of the roadway will be reshaped where necessary to stabilize the slopes and prevent material from sloughing off onto the road.

1.3.1.2 Site #2

Work at this site will involve removing debris from the roadway; regrading the existing roadway; rebuilding the ditches; replacing the existing culvert with a larger culvert (Figure A-15); constructing a drainage basin; and stabilizing the slopes adjacent to the roadway. Approximately 100 feet of road will be repaired at this site. No material will be pushed off the road prism into the stream channel or floodplain of Challis Creek. The stream channel at this site is intermittent/ephemeral and work at this site will be done when the stream channel is dry. Therefore, no dewatering will be needed at this site. Work at this site may indirectly affect Challis Creek and all work at this site will be completed between July 15 and November 15.

1.3.1.3 Site #3

Work at this site will involve removing debris from the roadway, regrading the existing roadway, rebuilding the ditches, and stabilizing the slopes adjacent to the roadway. Due to the small size of the drainage above this site there is not a culvert at this site and a culvert will not be installed at this site. Approximately 100 feet of road will be repaired at this site. No material will be pushed off the road prism into the stream channel or floodplain of Challis Creek. The stream channel at this site is intermittent/ephemeral and work at this site will be done when the stream channel is dry. Therefore, no dewatering will be needed at this site. All work at this site will be completed between July 15 and November 15.

1.3.1.4 Site #4

Work at this site will involve removing debris from the roadway, regrading the existing roadway, rebuilding the ditches, and stabilizing the slopes adjacent to the roadway. Due to the small size of the drainage above this site there is not a culvert at this site and a culvert will not be installed at this site. Approximately 50 feet of road will be repaired at this site. No material will be pushed off the road prism into the stream channel or floodplain of Challis Creek. The stream channel at this site is intermittent/ephemeral and work at this site will be done when the stream channel is dry. Therefore, no dewatering will be needed at this site. All work at this site will be completed between July 15 and November 15.

1.3.1.5 Site #5

The obliterated section of road will be reconstructed in the original location at this site. This will involve rebuilding the obliterated roadway, removing a buried culvert, and building up to three armored fords. Approximately 400 feet of road will be reconstructed at this site. Work at this site will affect Lodgepole Creek and may affect Challis Creek. The grade of the segment of the ford structure downstream of the road travel way will be limited to not more than 1.5 times the grade of the stream bed immediately upstream of the road. The toe of the apron will be shaped to concentrate low water flow enough to ensure aquatic organism passage during low flow periods (Michael Carroll, SCNF Engineer email comments July 21, 2016). It is expected that all work at Lodgepole Creek will be completed between July 15 and August 15. If work at this site cannot be completed by August 15, the work window may be extended to September 15. A detailed description of the work to be completed at this site is provided below:

The obliterated road will be reconstructed in its original location. This process will begin with debris (primarily trees) being removed from the roadway. This material will be placed adjacent to the road. Once the debris is cleared, the new road will be constructed using standard road construction techniques. The road will be approximately the same dimensions as the road that existed prior to the runoff events that impacted the road. The sides of the roadway that are likely to be exposed to significant flow will be armored with large rock. The buried culvert will be removed from the roadway at the time the road is reconstructed.

Up to three hardened fords will be constructed on the road. Given the unstable nature of the floodplain and the presence of multiple stream channels across the road, the decision was made to use hardened fords for the stream crossings instead of culverts. The number of fords constructed will depend on the number of active streams channels that are present at the time of construction but the number of fords is not expected to exceed three. The use of fords instead of culverts will result in this section of the Challis Creek Road changing from a road maintenance level 3 (suitable for passenger cars) to a road maintenance level 2 (suitable for high clearance vehicles). The fords will be hardened with rock to ensure stability and to minimize erosion.

Stream channels with flowing water that are within the work areas will be dewatered during ford construction. This will be done using either a temporary bypass channel or a pump and hose. If a temporary bypass channel is used, it will originate at a point on Lodgepole Creek a short distance upstream of the road and terminate back into Lodgepole Creek a short distance downstream of the road. The bypass channel will be constructed in the dry and will be lined (i.e., pipe or plastic) to limit sediment production. A temporary dam will then be placed in Lodgepole Creek at the upstream end of the bypass channel. This dam will dry up Lodgepole Creek below the dam and direct water into the bypass channel. Once work is completed, flows will be returned to the natural channel by removing the temporary dam. The temporary bypass channel will then be obliterated and rehabilitated. If a pump and hose are used, the pump will be placed at a point on Lodgepole Creek a short distance upstream of the road. The hose will start at the pump, go around the work area, and terminate at Lodgepole Creek a short distance downstream of the road. A temporary dam will then be placed in Lodgepole Creek where the pump is located. This dam will dry up Lodgepole Creek below the dam and provide a pool from which the pump could draw water. Once work is completed, flows will be returned to the natural channel by removing the temporary dam. The pump and pipe will then be removed. If a pump is used, it will be screened in a manner that meets the specifications of the National Marine Fisheries Service (NMFS 1996). The sections of stream that will be dewatered will not exceed 200 feet and will have an average width of approximately 5 feet. If three fords are constructed, the total length of channel dewatered will not exceed 600 feet. Natural stream flows will be maintained in Lodgepole Creek below the site while the project is implemented.

Fish are present in Lodgepole Creek and may be present in the stream channel or the bypass channel when they are dewatered. Therefore, measures will be taken to prevent fish stranding and death when these two areas are dewatered. To the extent possible, the stream channel and the bypass channel will be gradually dewatered which will provide an opportunity for any fish present to move into downstream areas. As dewatering occurs, SCNF fisheries staff will walk the area that is being dewatered looking for fish. Any fish observed will be collected with dip nets, placed in buckets, and released into Lodgepole Creek or Challis Creek at least 300 feet below the project site. No electrofishing will be used to collect fish.

Any additional material needed for the repair work at these sites will come from two borrow pits. The first pit is an established administrative borrow pit on White Valley Creek (Figure A-3). The second pit is a new pit in the Bear Creek drainage (Figure A-3). This site will be located along the north side of the Sleeping Deer Road and will cover about one acre. This borrow pit will be isolated from Bear Creek by the Sleeping Deer Road. Material will generally be hauled from these borrow pits as it was needed for repair work and there will be no long-term stockpiling of material for this project. A small amount of material such as large rock may be stored for a short period of time at a pullout on the Challis Creek Road that is located approximately 0.7 miles below Site #1.

1.3.1.6 Best Management Practices

In addition to the site specific best management practices (BMPs) described above, the following general BMPs will be employed over the course of the project to minimize the impact of the project on aquatic resources:

1. All heavy equipment will be free of noxious weeds and aquatic invasive species prior to entering the project area.

2. All heavy equipment will be free of fuel or oil leaks that could wash off into water.

3. Heavy equipment will be inspected daily for fuel and oil leaks. Any significant leaks will be repaired immediately.

4. The storage of fuel, oil, or other toxicants within the Riparian Habitat Conservation Areas (RHCAs) of perennial streams will not be allowed. The RHCAs extend 300 feet from perennial fish bearing streams (i.e., Bear Creek, Challis Creek, Lodgepole Creek, and White Valley Creek) and 150 feet from perennial non-fish bearing streams.

5. Fueling activities will not be allowed in RHCAs unless there are no other reasonable alternatives. If fueling does occur within an RHCA, it must be approved by a SCNF fish biologist or hydrologist and use an approved spill containment plan. This plan must include a spilled fuel containment/catchment device.

6. Fuel or oil contamination will be cleaned up and disposed of properly.

7. No blasting will occur as part of the project.

8. It is expected that all debris will be incorporated into the project as described above. However, if there is any additional excess debris, it will be stockpiled in a dry upland area away from any wetlands or waterbodies.

9. The project will require a CWA permit from the COE, a permit from the Idaho Department of Water Resources, and a SPPP. The SPPP will be prepared by or approved by the SCNF and will conform to the NPDES general permit requirements and will contain a description of the specific hazardous materials, procedures, and spill containment that will be used; including inventory, storage, and handling of hazardous materials.

1.4 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). This project's action area includes the extent of project generated noise disturbances and potentially visible turbidity influences and is defined as the following:

1. All areas to be disturbed by construction activities including access routes and off-site material sources, waste sites, and staging areas.

2. Challis Creek, 500 feet upstream of the project site, to accommodate noise associated with equipment operation.

3. Challis Creek, 1,500 feet downstream from the construction limits to accommodate project-induced sediment that may be visible. This distance is based on visual turbidity plumes reported in the Twin Creek Project Completion Report (Rose 2007).

The project has the potential to affect fish or fish habitat in the following areas: (1) Challis Creek between Lodgepole Creek and Bear Creek; (2) Lodgepole Creek from the dewatering points downstream to Challis Creek; (3) each of the unnamed tributaries that cross Site #2, Site #3, and Site #4, from the Challis Creek Road downstream to Challis Creek; (4) the area occupied by the borrow pits; and (5) the area extending from the borrow pits out to the nearest road or 100 feet, whichever is less. Therefore, these areas have been included in the action area for this Opinion.

Snake River Basin steelhead may be present in the action area, although no designated critical habitat for Snake River Basin steelhead occurs within the action area. Chinook salmon are not present within the action area, with the closest Chinook salmon observed in the lower reach of Challis Creek approximately 6 stream miles downstream from the action area. However, streams within the action area are designated critical habitat for Snake River spring/summer Chinook salmon (Table 1). Designated critical habitat for the Snake River spring/summer Chinook salmon includes all river reaches presently or historically accessible to the species (64 FR 57399). It also includes the adjacent riparian zone, which is defined as the area within 300 feet of the high water line of a stream channel. The action area, except for areas above natural barriers to fish passage, is also EFH for Chinook salmon (PFMC 1999), and is in an area where environmental effects of the proposed project may adversely affect EFH for this species.

Table 1. Listing status, status of critical habitat designations and protective regulations, and relevant Federal Register decision notices for ESA-listed species considered in this opinion.

	Listing Status	Critical Habitat	Protective Regulations
Chinook salmon *(Oncorhynchus tshawytscha)*			
Snake River spring/summer-run	T 6/28/05; 70 FR 37160	10/25/99; 64 FR 57399	6/28/05; 70 FR 37160
Steelhead (*O. mykiss*)			
Snake River Basin	T 1/05/06; 71 FR 834	9/02/05; 70 FR 52630	6/28/05; 70 FR 37160

Note: Listing status'T' means listed as threatened under the ESA; 'E' means listed as endangered.

2. ENDANGERED SPECIES ACT: BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat upon which they depend. As required by section 7(a)(2) of the ESA, Federal agencies must 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 habitat. Per the requirements of the ESA, Federal action agencies consult with NMFS and section 7(b)(3) requires that, at the conclusion of consultation, NMFS provides an opinion stating how the agency's actions would affect listed species and their critical habitat. If incidental take is expected, section 7(b)(4) requires NMFS to provide an ITS that specifies the impact of any incidental taking and includes non-discretionary reasonable and prudent measures (RPMs) and terms and conditions to minimize such impacts.

The SCNF determined that the proposed action may affect, and is likely to adversely affect Snake River Basin steelhead and Snake River spring/summer Chinook salmon designated critical habitat. The SCNF also made no effect determinations for Snake River Basin steelhead designated critical habitat and Snake River spring/summer Chinook salmon.

2.1 Analytical Approach

This Opinion includes both a jeopardy analysis and an adverse modification analysis.

The jeopardy analysis relies upon the regulatory definition of "to jeopardize the continued existence of a listed species," which is "to engage in an action that would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 CFR 402.02). Therefore, the jeopardy analysis considers both survival and recovery of the species.

The adverse modification analysis relies upon the regulatory definition of "destruction or adverse modification" of critical habitat that was published in 81 FR 7414 on February 11, 2016. The destruction or adverse modification of critical habitat means, "a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of species. Such alterations may include, but are not limited to, those that alter the physical or biological features (PBFs) essential to the conservation of a species or that preclude or significantly delay development of such features."

We use the following approach to determine whether a proposed action is likely to jeopardize listed species or adversely modify critical habitat:

- Identify the rangewide status of the species and critical habitat likely to be adversely affected by the proposed action.
- Describe the environmental baseline in the action area.
- Analyze the effects of the proposed action on both species and their habitat using an "exposure-response-risk" approach.
- Describe any cumulative effects in the action area.
- Integrate and synthesize the above factors to assess the risk that the proposed action poses to species and critical habitat.
- Reach jeopardy and adverse modification conclusions.
- If necessary, define a reasonable and prudent alternative to the proposed action.

2.2 Rangewide Status of the Species and Critical Habitat

This opinion examines the status of each species that would be adversely affected by the proposed action. The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species' likelihood of both survival and recovery. The species status section also helps to inform the description of the species' current "reproduction, numbers, or distribution" as described in 50 CFR 402.02.

This opinion also examines the condition of critical habitat throughout the designated area, evaluates the conservation value of the various watersheds that make up the designated area, and discusses the current function of the essential physical and biological features (PBFs) that help to form that conservation value. The designations of critical habitat for Chinook salmon (58 FR 68543) and steelhead (70 FR 52630) use the phrases "essential features" and "primary constituent elements (PCEs)," respectively to identify features essential to the conservation of the species. New critical habitat regulations (81 FR 7214) replace these with PBF, the current terminology used to define critical habitat under the ESA. In this opinion, we use the term PBF to mean PCE or essential feature, as appropriate for the specific critical habitat.

2.2.1 Status of the Species

This section describes the present condition of Snake River Basin steelhead distinct population segment (DPS). NMFS expresses the status of a salmonid evolutionarily significant unit (ESU) or DPS in terms of likelihood of persistence over 100 years (or risk of extinction over 100 years). NMFS uses McElhaney *et al.*'s (2000) description of a viable salmonid population (VSP) that defines "viable" as less than a five percent risk of extinction within 100 years and "highly viable" as less than a one percent risk of extinction within 100 years. A third category, "maintained," represents a less than 25% risk within 100 years (moderate risk of extinction). To be considered viable an ESU or DPS should have multiple viable populations so that a single catastrophic event is less likely to cause the ESU/DPS to become extinct and so that the ESU/DPS may function as a metapopulation that can sustain population-level extinction and recolonization processes (ICTRT 2007). The risk level of the ESU/DPS is built up from the aggregate risk levels of the individual populations and major population groups (MPGs) that make up the ESU/DPS.

Attributes associated with a VSP, are: (1) Abundance (number of adult spawners in natural production areas); (2) productivity (adult progeny per parent); (3) spatial structure; and (4) diversity. A VSP needs sufficient levels of these four population attributes in order to: safeguard the genetic diversity of the listed DPS; enhance its capacity to adapt to various environmental conditions; and allow it to become self-sustaining in the natural environment (ICTRT 2007). These viability attributes are influenced by survival, behavior, and experiences throughout the entire salmonid life cycle, characteristics that are influenced in turn by habitat and other environmental and anthropogenic conditions. The present risk faced by the DPS informs NMFS' determination of whether additional risk will appreciably reduce the likelihood that the DPS will survive or recover in the wild.

2.2.1.1 Snake River Basin Steelhead

The Snake River Basin steelhead was listed as a threatened ESU on August 18, 1997 (62 FR 43937), with a revised listing as a DPS on January 5, 2006 (71 FR 834). This DPS occupies the Snake River basin, which drains portions of southeastern Washington, northeastern Oregon, and north/central Idaho. Reasons for the decline of this species include substantial modification of the seaward migration corridor by hydroelectric power development on the mainstem Snake and Columbia Rivers, and widespread habitat degradation and reduced streamflows throughout the Snake River basin (Good *et al.* 2005). Another major concern for the species is the threat to genetic integrity from past and present hatchery practices, and the high proportion of hatchery fish in the aggregate run of Snake River Basin steelhead over Lower Granite Dam (LGD) (Good *et al.* 2005; Ford 2011). On May 26, 2016, in the agency's most recent 5-year review for Pacific salmon and steelhead, NMFS concluded that the species should remain listed as threatened (81 FR 33468).

Life History. Adult Snake River Basin steelhead enter the Columbia River from late June to October to begin their migration inland. After holding over the winter in larger rivers in the Snake River basin, steelhead disperse into smaller tributaries to spawn from March through May. Earlier dispersal occurs at lower elevations and later dispersal occurs at higher elevations. Juveniles emerge from the gravels in 4 to 8 weeks, and move into shallow, low-velocity areas in side channels and along channel margins to escape high velocities and predators (Everest and Chapman 1972). Juvenile steelhead then progressively move toward deeper water as they grow in size (Bjornn and Reiser 1991). Juveniles typically reside in fresh water for 1 to 3 years, although this species displays a wide diversity of life histories. Smolts migrate downstream during spring runoff, which occurs from March to mid-June depending on elevation, and typically spend 1 to 2 years in the ocean.

Steelhead can spawn more than once and adults may return to the ocean after spawning. Repeat spawning rates for steelhead are highly variable (e.g., range from under one percent to over 50% in the Pacific Northwest) and are regulated by several biological, ecological, and anthropogenic factors. Under natural conditions these fish could swim back downstream to the Pacific Ocean to feed and restore depleted energy reserves before attempting to spawn again. In 1999 the Yakama Nation and the Columbia River Inter-Tribal Fish Commission partnered on a project to capture these fish in the spring as they start back downstream and "recondition" them in hatchery facilities home basins (e.g., Clearwater River, Yakima River, Methow River). The Nez Perce Tribe captures kelts at LGD from March through June for reconditioning at the Dworshak National Fish Hatchery before release back into the Snake River basin in the late fall so they can spawn again the following spring.

Spatial Structure and Diversity. This species includes all naturally-spawning steelhead populations below natural and manmade impassable barriers in streams in the Snake River basin of southeast Washington, northeast Oregon, and Idaho, as well as the progeny of six artificial propagation programs (71FR834). The hatchery programs include Dworshak National Fish Hatchery, Lolo Creek, North Fork Clearwater River, East Fork Salmon River, Tucannon River, and the Little Sheep Creek/Imnaha River steelhead hatchery programs. The Snake River Basin steelhead listing does not include resident forms of *O. mykiss* (rainbow trout) co-occurring with steelhead.

The Interior Columbia Technical Recovery Team (ICTRT) identified 24 extant populations within this DPS, organized into five MPGs (ICTRT 2003). The ICTRT also identified a number of potential historical populations associated with watersheds above the Hells Canyon Dam complex on the mainstem Snake River, a barrier to anadromous migration. The five MPGs with extant populations are the Clearwater River, Salmon River, Grande Ronde River, Imnaha River, and Lower Snake River. In the Clearwater River, the historic North Fork population was blocked from accessing spawning and rearing habitat by Dworshak Dam. Current steelhead distribution extends throughout the DPS, such that spatial structure risk is generally low. For each population in the DPS, Table 2 shows the current risk ratings that the ICTRT assigned to the four parameters of a VSP (spatial structure, diversity, abundance, and productivity).

Table 2. Summary of VSP parameter risks and overall current status for each population in the Snake River Basin steelhead DPS (NWFSC 2015).

MPG	Population	VSP Parameter Risk		Overall Viability Rating
		Abundance/ Productivity	Spatial Structure/ Diversity	
Lower Snake River	Tucannon River	High?	Moderate	High Risk?[1]
	Asotin Creek	Moderate?	Moderate	Maintained?
Grande Ronde River	Lower Grande Ronde		Moderate	Maintained?
	Joseph Creek	Very Low	Low	Highly Viable
	Wallowa River	High?	Low	Moderate Risk?
	Upper Grande Ronde	Viable	Moderate	Viable
Imnaha River	Imnaha River	Moderate?	Moderate	Moderate Risk
Clearwater River (Idaho)	Lower Mainstem Clearwater River	Moderate?	Low	Maintained?
	South Fork Clearwater River	High	Moderate	Maintained/High Risk?
	Lolo Creek	High	Moderate	Maintained/High Risk
	Selway River	Moderate?	Low	Maintained?
	Lochsa River	Moderate?	Low	Maintained?
	North Fork Clearwater River	Extirpated		
Salmon River (Idaho)	Little Salmon River	Moderate?	Moderate	Maintained?
	South Fork Salmon River	Moderate?	Low	Maintained?
	Secesh River	Moderate?	Low	Maintained?
	Chamberlain Creek	Moderate?	Low	Maintained?
	Lower Middle Fork Salmon River	Moderate?	Low	Maintained?
	Upper Middle Fork Salmon River	Moderate?	Low	Maintained?
	Panther Creek	Moderate	High	High Risk?
	North Fork Salmon River	Moderate	Moderate	Maintained?
	Lemhi River	Moderate	Moderate	Maintained?
	Pahsimeroi River	Moderate	Moderate	Maintained?
	East Fork Salmon River	Moderate	Moderate	Maintained?
	Upper Mainstem Salmon River	Moderate	Moderate	Maintained?
Hells Canyon	Hells Canyon Tributaries	Extirpated		

[1] The question mark indicates that information on the population size is incomplete.

The Snake River basin DPS steelhead exhibit a diversity of life-history strategies, including variations in fresh water and ocean residence times. Traditionally, fisheries managers have classified Snake River Basin steelhead into two groups, A-run and B-run, based on ocean age at return, adult size at return, and migration timing. A-run steelhead predominantly spend 1-year in the ocean; B-run steelhead are larger with most individuals returning after 2 years in the ocean. New information shows that most Snake River populations support a mixture of the two run types, with the highest percentage of B-run fish in the upper Clearwater River and the South Fork Salmon River; moderate percentages of B-run fish in the Middle Fork Salmon River; and very low percentages of B-run fish in the Upper Salmon River, Grande Ronde River, and Lower Snake River (NWFSC 2015). Maintaining life history diversity is important for the recovery of the species.

Diversity risk for populations in the DPS is either moderate or low. Large numbers of hatchery steelhead are released in the Snake River, and the relative proportion of hatchery adults in natural spawning areas near major hatchery release sites remains uncertain. Moderate diversity risks for some populations are thus driven by the high proportion of hatchery fish on natural spawning grounds and the uncertainty regarding these estimates (NWFSC 2015). Reductions in hatchery-related diversity risks would increase the likelihood of these populations reaching viable status.

Abundance and Productivity. Historical estimates of steelhead production for the entire Snake River basin are not available, but the basin is believed to have supported more than half the total steelhead production from the Columbia River basin (Mallet 1974, as cited in Good *et al.* 2005). Historical estimates of steelhead passing Lewiston Dam (removed in 1973) on the lower Clearwater River were 40,000 to 60,000 adults (Ecovista *et al.* 2003), and the Salmon River basin likely supported substantial production as well (Good *et al.* 2005). In contrast, at the time of listing in 1997, the 5-year mean abundance for natural-origin steelhead passing LGD, which includes all but one population in the DPS, was 11,462 adults (Ford 2011). Counts have increased since then, with between roughly 23,000 and 44,000 adult wild steelhead passing LGD in the most recent 5-year period (2011 through 2015) (NWFSC 2015).

Population-specific abundance estimates exist for some but not all populations. Of the populations for which we have data, three (Joseph Creek, Upper Grande Ronde, and Lower Clearwater) are meeting minimum abundance/productivity thresholds and several more have likely increased in abundance enough to reach moderate risk. Despite these recent increases in abundance, the status of many of the individual populations remains uncertain, and four out of the five MPGs are not meeting viability objectives (NWFSC 2015). In order for the species to recover, more populations will need to reach viable status through increases in abundance and productivity.

Presence of Snake River Basin Steelhead in the Action Area. Snake River Basin steelhead adults and juveniles are present in the action area. Steelhead are not known to spawn within the action area but do spawn in Challis Creek downstream of the action area (SCNF BA, 2016). Adult steelhead begin arriving in the action area in early March with spawning activity extending through mid-June in some locations (USBWP 2005). Depending on spawning initiation timing and water temperature, incubation can extend from mid-March through the first week in July. The only Snake River Basin steelhead population present in the action area is the East Fork Salmon River population (Table 2).

2.2.2 Status of Critical Habitat

In evaluating the condition of designated critical habitat, NMFS examines the condition and trends of PBFs which are essential to the conservation of the ESA-listed species because they support one or more life stages of the species. Proper function of these PBFs is necessary to support successful adult and juvenile migration, adult holding, spawning, incubation, rearing, and the growth and development of juvenile fish. Modification of PBFs may affect freshwater spawning, rearing or migration in the action area. Generally speaking, sites required to support one or more life stages of the ESA-listed species (i.e., sites for spawning, rearing, migration, and foraging) contain PBF essential to the conservation of the listed species (e.g., spawning gravels, water quality and quantity, side channels, or food) (Table 3).

Table 3. Types of sites and essential physical and biological features designated as PBFs, and the species life stage each PBF supports.

Site	Essential Physical and Biological Features	ESA-listed Species Life Stage
Snake River 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[a], riparian vegetation, space, safe passage	Juvenile and adult.

[a] Food applies to juvenile migration only.

Spawning and rearing habitat quality in tributary streams in the Snake River varies from excellent in wilderness and roadless areas to poor in areas subject to intensive human land uses (NMFS 2015b). Critical habitat throughout much of the Interior Columbia (which includes the Snake River and the Middle Columbia River) has been degraded by intensive agriculture, alteration of stream morphology (i.e., channel modifications and diking), riparian vegetation disturbance, wetland draining and conversion, livestock grazing, dredging, road construction and maintenance, logging, mining, and urbanization. Reduced summer streamflows, impaired water quality, and reduction of habitat complexity are common problems for critical habitat in non-wilderness areas. Human land use practices throughout the basin have caused streams to become straighter, wider, and shallower, thereby reducing rearing habitat and increasing water temperature fluctuations.

In many stream reaches designated as critical habitat in the Snake River basin, streamflows are substantially reduced by water diversions (NMFS 2015b). Withdrawal of water, particularly during low-flow periods that commonly overlap with agricultural withdrawals, often increases summer stream temperatures, blocks fish migration, strands fish, and alters sediment transport (Spence *et al.* 1996). Reduced tributary streamflow has been identified as a major limiting factor for Snake River spring/summer Chinook salmon (NMFS 2015b).

Many stream reaches designated as critical habitat for Snake River spring/summer Chinook are listed on the CWA 303(d) list for impaired water quality, such as elevated water temperature (IDEQ 2011). Many areas that were historically suitable rearing and spawning habitat are now unsuitable due to high summer stream temperatures, such as some stream reaches in the Upper Grande Ronde. Removal of riparian vegetation, alteration of natural stream morphology, and withdrawal of water for agricultural or municipal use all contribute to elevated stream temperatures. Water quality in spawning and rearing areas in the Snake River has also been impaired by high levels of sedimentation and by heavy metal contamination from mine waste (e.g., IDEQ and USEPA 2003; IDEQ 2001).

Migration habitat quality for Snake River salmon has also been severely degraded, primarily by the development and operation of dams and reservoirs on the mainstem Columbia and Snake Rivers (NMFS 2008). Hydroelectric development has modified natural flow regimes in the migration corridor causing higher water temperatures and changes in fish community structure that have led to increased rates of piscivorous and avian predation on juvenile salmon and steelhead, and delayed migration for both adult and juveniles. Physical features of dams such as turbines also kill migrating fish.

The present condition of PBF within Snake River spring/summer Chinook designated critical habitat and the human activities that affect PBF trends within the action area are further described in the environmental baseline.

2.2.3 Climate Change Implications for ESA-listed Species and their Critical Habitat

One factor affecting the rangewide status of Snake River salmon and steelhead, and aquatic habitat at large is climate change. Several studies have revealed that climate change has the potential to affect ecosystems in nearly all tributaries throughout the state (Battin *et al.* 2007; Independent Scientific Advisory Board [ISAB] 2007). While the intensity of effects will vary by region (ISAB 2007), climate change is generally expected to alter aquatic habitat (water yield, peak flows, and stream temperature). As climate change alters the structure and distribution of rainfall, snowpack, and glaciations, each factor will in turn alter riverine hydrographs. Given the increasing certainty that climate change is occurring and is accelerating (Battin *et al.* 2007), NMFS anticipates salmonid habitats will be affected. Climate and hydrology models project significant reductions in both total snow pack and low-elevation snow pack in the Pacific Northwest over the next 50 years (Mote and Salathé 2009), changes that will shrink the extent of the snowmelt-dominated habitat available to salmon. Such changes may restrict our ability to conserve diverse salmon life histories.

In the Pacific Northwest, most models project warmer air temperatures, increases in winter precipitation, and decreases in summer precipitation. Average temperatures in the Pacific Northwest are predicted to increase from 0.1 to 0.6ºC (32.18 to 33.08ºF) per decade (Mote and Salathé 2009). Warmer air temperatures will likely lead to more precipitation falling as rain rather than snow. As the snow pack diminishes, seasonal hydrology will likely shift to more frequent and severe early large storms, changing stream flow timing and increasing peak river flows, which may limit salmon survival (Mantua *et al.* 2009). The largest driver of climate-induced decline in salmon populations is projected to be the impact of increased winter peak flows, which scour the streambed and destroy salmon eggs (Battin *et al.* 2007).

Higher water temperatures and lower spawning flows, together with increased magnitude of winter peak flows are all likely to increase salmon mortality. The ISAB (2007) predicted that higher ambient air temperatures will likely cause water temperatures to rise. Salmon and steelhead require cold water for spawning and incubation. As climate change progresses and stream temperatures warm, thermal refugia will be essential to persistence of many salmonid populations. Thermal refugia are important for providing salmon and steelhead with patches of suitable habitat while allowing them to undertake migrations through or to make foraging forays into areas with greater than optimal temperatures. To avoid waters above summer maximum temperatures, juvenile rearing may be increasingly found only in the confluence of colder tributaries or other areas of cold water refugia (Mantua *et al.* 2009).

Climate change is expected to make recovery targets for salmon populations more difficult to achieve. Climate change is expected to alter critical habitat by generally increasing temperature and peak flows and decreasing base flows. Although changes will not be spatially homogenous, effects of climate change are expected to decrease the capacity of critical habitat to support successful spawning, rearing, and migration. Habitat action can address the adverse impacts of climate change on salmon. Examples include restoring connections to historical floodplains and freshwater and estuarine habitats to provide fish refugia and areas to store excess floodwaters, protecting and restoring riparian vegetation to ameliorate stream temperature increases, and purchasing or applying easements to lands that provide important cold water or refuge habitat (Battin *et al.* 2007; ISAB 2007).

The earth's oceans are also warming, with considerable interannual and inter-decadal variability superimposed on the longer-term trend (Bindoff *et al.* 2007). Historically, warm periods in the coastal Pacific Ocean have coincided with relatively low abundances of salmon and steelhead, while cooler ocean periods have coincided with relatively high abundances (Scheuerell and Williams 2005, Zabel *et al.* 2006, USGCRP 2009). Ocean conditions adverse to salmon and steelhead may be more likely under a warming climate (Zabel *et al.* 2006). Moreover, as atmospheric carbon emissions increase, increasing levels of carbon are absorbed by the oceans, changing the pH of the water. Marine fish species have exhibited negative responses to ocean acidification conditions that include changes in growth, survivorship, and behavior. Marine phytoplankton, which are the base of the food web for many oceanic species, have shown varied responses to ocean acidification that include changes in growth rate and calcification (Feely *et al.* 2012).

2.3 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).

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. Snake River Basin steelhead occur in the action area. Thus, for this action area, the biological requirements for steelhead are the habitat characteristics that support successful completion of spawning, rearing, and freshwater migration.

The environmental baseline information submitted by the SCNF in their BA provides a description of the environmental baseline within the action area and for the Challis Creek subwatershed (5th field hydrologic unit code: 1706020117). The following discussion on environmental baseline conditions within the action area based on the SCNF's final BA, dated May 6, 2016. The baseline conditions for the entire subwatershed can be found in Appendix B of the BA.

2.3.1 General Description of Habitat Conditions

Challis Creek and Lodgepole Creek within the action area have been significantly impacted by the 2013 Lodgepole Fire and the runoff and debris flow events that followed the fire. Although natural processes, this has included substantial impacts to the stream channel, riparian vegetation, and floodplain. Challis Creek within the action area has also been impacted to some extent by flow alterations associated with Mosquito Flat Reservoir and road construction, maintenance, and use (Gamett 2016). The lower end of Lodgepole Creek has been impacted to a small degree by road construction, maintenance, and use (Gamett 2016).

2.3.2 Major Limiting Factors

The most significant anthropogenic activities that have affected listed fish and listed fish habitat within the action area are flow alterations associated with Mosquito Flat Reservoir; road construction, maintenance, and use; and the introduction of brook trout (*Salvelinus fontinalis*). As indicated above, the Lodgepole Fire and runoff events following the fire have substantially altered Challis Creek and Lodgepole Creek.

2.3.3 Description of the Matrix of Pathways and Indicators

The condition of the pathways and indicators (NMFS 1996) within this subwatershed are provided in full in Appendix B of the BA. Habitat conditions in the action area primarily range from functioning at risk to functioning appropriately. The temperature, sediment, water quality, physical barriers, substrate embeddness, off-channel habitat, refugia, change in peak/base flows, road density and location, disturbance history, disturbance regime, and habitat quality and connectivity indicators are functioning at risk; while the chemical characteristics, large woody debris, pool frequency and quality, channel width to depth ratio, streambank condition, floodplain connectivity, increase drainage network, and riparian conservation area indicators are functioning appropriately. Of these indicators, the proposed action is most likely to impact sediment (including turbidity), pool frequency and quality, width to depth ratio, streambank condition, and floodplain connectivity. Therefore, the description of the indicators and the analysis of effects will focus on these five indicators. The impact of the project on the fish and fish habitat will be limited to the five project sites. Project work at the borrow sites is not expected to impact fish or fish habitat because they are set back from exisiting waterbodies and are not expected to generate any turbidity. Therefore, the analysis will not consider these sites any further and will focus on the five project sites.

2.3.3.1 Sediment (Including Turbidity)

Runoff and debris flows following the Lodgepole Fire have substantially increased sediment levels in the action area. The SCNF has one long-term sediment monitoring site within the action area. This site is located in Challis Creek just upstream of the confluence with Bear Creek (Gamett 2016). In 2010, fines (particles less than 0.25 inches in diameter) were 20% at this site. The Lodgepole Fire occurred in 2013. In 2014, prior to the large runoff events that mobilized large amounts of sediment, depth fines at this site remained at 20%. Later in 2014, large runoff events mobilized large amounts of sediment. Sediment levels were reassessed at this site in 2014 following these events and depth fines had increased to 49%. In 2015, depth fines at this site had increased to 75%. At the site above Lodgepole Creek (Site 2A), depth of fines were 16% in 2012, increased to 31% in 2014, and dropped to eight percent in 2015. At the site above Mosquito Flat Reservoir (Site 3A), depth of fines were 23% in 2010 and 26% in 2015. The matrix indicator for sediment at the monitoring sites ranges from functioning at risk to not properly functioning.

2.3.3.2 Pool Frequency and Quality.

Quantitative data are not available for pool frequency or quality within the action area. However, pool frequency and quality within the action area and across Federal Lands (i.e., SCNF and Bureau of Land Management [BLM]) are likely similar to natural conditions although it is possible that flow alterations and roads may have had some minor impacts on this indicator (Gamett 2016). Runoff and debris flows following the Lodgepole Fire substantially modified this indicator within the action area but these changes are considered to be natural (Gamett 2016). The matrix indicator for pool frequency and quality is functioning appropriately.

2.3.3.3 Width to Depth Ratio

The PACFISH riparian management objectives (RMO) for width to depth ratio was originally set at less than 10 but the SCNF has modified this RMO to better reflect natural conditions. The modified values are based on the mean values observed for streams in natural condition within the Salmon River (Overton *et al.* 1995). The modified RMO for a Rosgen B channel (Rosgen 1996) such as Challis Creek and Lodgepole Creek within the action area is 27. Quantitative data are not available for width to depth ratio within the action area. However, width to depth ratios within the action area are likely similar to natural conditions, although it is possible that flow alterations and roads may have had some minor impacts on this indicator (Gamett 2016). Runoff and debris flows following the Lodgepole Fire impacted this indicator within the action area but these changes are considered to be natural (Gamett 2016). The matrix indicator for width to depth ratio is functioning appropriately.

2.3.3.4 Streambank Condition

Streambank condition within the action area has been impacted by the Lodgepole Fire. The Lodgepole Fire burned a large amount of the riparian vegetation along Challis Creek and Lodgepole Creek within the action area. This and the large runoff events following the fire have impacted bank stability. The SCNF has a long-term bank stability monitoring site within the action area located in Challis Creek, just upstream of the confluence with Bear Creek (Gamett 2016). In 2010, bank stability at this site was 97%. The Lodgepole Fire occurred in 2013 and in 2014, bank stability remained high at 93%. Later in 2014, large runoff events began impacting this area. In 2015, bank stability at this site had decreased to 85%. The matrix indicator for streambank condition is functioning appropriately.

2.3.3.5 Floodplain Connectivity

Streams should exhibit a natural level of connectivity to their floodplains. This is critical to maintaining off-channel habitats, wetland function, and riparian vegetation. Quantitative data are not available for floodplain connectivity within the action area. However, floodplain connectivity within the action area is likely similar to natural conditions although it is possible that flow alterations and roads may have had some impacts on this indicator (Gamett 2016). Runoff and debris flows following the Lodgepole Fire likely increased floodplain connectivity within the action area (Gamett 2016). The matrix indicator for floodplain connectivity is functioning appropriately.

2.4 Effects of the Action

Under the ESA, "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, that will be added to the environmental baseline (50 CFR 402.02). Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur.

The SCNF determined the proposed action is "likely to adversely affect" Snake River Basin steelhead and unoccupied Snake River spring/summer Chinook salmon designated critical habitat. The proposed road repair and bank stabilization is anticipated to increase bank stability at the treatment sites and could enhance instream habitat complexity for rearing fish. Potential short-term negative effects to individual fish include sediment and turbidity related impacts, disturbance of individuals during construction, and possible chemical contamination. Because the action proposes to install additional bank stabilization and channel narrowing features (i.e., rock barb) in a reach already compromised by anthropogenic confinements, some form of downstream bank erosion at the next unprotected bank is expected. This indirect effect of the action is likely to lead to additional future bank stabilization proposals, which will exacerbate the reach-scale problems described in the environmental baseline.

2.4.1 Effects on ESA-Listed Species

The proposed action will directly affect ESA-listed fish through: (1) Direct disturbance of individuals from equipment and construction noise; (2) exposure to multiple turbidity plumes; (3) salvage related harm/harassment; and, (4) potential chemical contamination. The proposed action includes BMPs (Section 1.3.1) to avoid and/or minimize adverse effects to ESA-listed species and the following assessment presumes those measures will be implemented as described during all activities. The following sections will discuss each of these various effects pathways.

2.4.1.1 Disturbance and Noise-related Effects

Heavy equipment operation near the Salmon River (i.e., excavator, graders, dump trucks, etc.) will create noise and vibration disturbances. Popper *et al.* (2003) and Wysocki *et al.* (2007) discussed potential impacts to fish from long-term exposure to anthropogenic sounds, predominantly seismic air guns and aquaculture equipment, respectively. Popper *et al.* (2003) and Popper and Hastings (2009) reported possible effects to fish include temporary, and potentially permanent hearing loss (via sensory hair cell damage), reduced ability to communicate with conspecifics due to hearing loss, non-auditory tissue damage, and masking of potentially biologically important sounds. Studies referenced by Popper *et al.* (2003) evaluated peak noise levels ranging from 170 to 255 decibels mircoPascal (dB) (re: 1µPa). Wysocki *et al.* (2007) did not identify any adverse impacts to rainbow trout from prolonged exposure to three sound treatments common in aquaculture environments (115, 130, and 150 dB root mean square [RMS]) (re: 1µPa). In the studies identified by Popper *et al.* (2003) that caused ear damage in fishes, all evaluated fish were caged and thus incapable of moving away from the disturbance. Popper and Hastings (2009) discuss how differences in how fish use sound (i.e., generalist versus specialists), fish size, development, and possibly genetics can lead to different effects from the same sounds. As a result, they caution that studies on the effects of sound, particularly if they are from different sources, are not readily extrapolated between species, fish sizes, or geographic location. Construction activities will occur from July 15 and August 15 with the work window potentially being extended to November15 depending on site locations. Project work could occur for up to 3 years until project completion; thus, steelhead juveniles may be exposed to construction noise at some point.

The Federal Highways Administration (2008) has found that typical construction equipment (e.g., backhoe, excavator, and trucks) noise production ranges between 74 and 89 dB at 50 feet. These noises are in-air and cannot be directly compared against the 150 dB RMS disturbance threshold for underwater noise. It is unknown if the expected dB levels will cause fish to temporarily move away from the disturbance or if fish will remain present. However, because the decibel scale is logarithmic, there is nearly a 100-fold difference between noise levels expected from the action and noise levels known to have generated adverse effects to surrogate species, as discussed above. Therefore, noise-related disturbances of this magnitude are unlikely to result in injury or death. It is not expected that disturbance from equipment noise will extend any farther away than 500 feet upstream or downstream of proposed activities.

Visual stimulus from the nearby activities may also cause temporary behavior modifications. Even if fish move, juveniles are expected to migrate only short distances to an area where they feel more secure and only for a few hours in any given day. Adult fish will likely simply continue their upstream migration unharmed. Each day fish are routinely disturbed by passing birds, walking mammals, and other fish. NMFS does not anticipate that short-term movements caused by construction equipment will result in effects substantially different than those typically experienced by fish on a daily basis in their natural environment and are not expected to harm rearing or migrating fish. Therefore, the expected noise levels and level of disturbance caused by construction equipment will be minimal and are unlikely to be lethal or result in injury.

2.4.1.2 Turbidity/Sediment Effects

The proposed action is likely to suspend sediments and cause turbidity plumes when water is transferred into the bypass stream channel (at Site # 1) which will mobilize sediment deposited by the debris flow. At Sites #2, #3, and #4, project activities might generate some sediment when stream flows return to the intermittent channels where repair work occurred. At Site #5, project activities will generate sediment into Lodgepole Creek and possibly in Challis Creek. The amount of sediment generated by project activities at Site # 5 will be limited since repair work will be done in the dry and the bypass channel, if used, will be lined (i.e., pipe or plastic). A small amount of sediment could be generated when stream flows are returned to the hardened fords.

Elevated turbidity can cause lethal, sublethal, and behavioral effects in juvenile and adult salmonids depending on the duration and intensity (Newcombe and Jensen 1996). Increased turbidity levels in the action area may result in temporary displacement of fish from preferred habitat or potential sublethal effects such as gill flaring, coughing, avoidance, and increase in blood sugar levels (Bisson and Bilby 1982; Sigler *et al.* 1984; Berg and Northcote 1985; Servizi and Martens 1992). Accumulated fine sediment in the gravel can restrict intergravel flow and block emergence of fry (Lisle and Lewis 1992), decrease growth and survival of juvenile fish, and decrease the availability of invertebrate prey species (Alexander and Hansen 1986).

Any fish exposed to turbidity plumes could be temporarily displaced from preferred habitat or potentially exhibit the sublethal effects discussed above. Although turbidity may cause stress, Gregory and Northcote (1993) have shown that moderate levels of turbidity (35 to 150 nephelometric turbidity units [NTUs]) accelerate foraging rates among juvenile Chinook salmon, likely because of reduced vulnerability to predators (camouflaging effect). Lloyd (1987) suggested that salmonids reacted negatively, by moving away, when turbidity reaches 50 NTU. Because there is potential for the 50 NTU net increase to be exceeded, there is potential that exposed juvenile steelhead could experience intermittent sublethal effects ranging from: (1) Minor physiological stress and increased rates of coughing and respiration; (2) moderate physiological stress; and/or (3) impaired homing. All these effects can be considered to ‘harm’ exposed fish. Because of most of the work occurring in the dry, the majority of the expected turbidity will occur in the form of brief, narrow, and short (length) pulses. However, juvenile steelhead could also be exposed to several higher intensity turbidity plumes as well, particularly during wetting of the bypass channel and rewatering of the dewaterted work areas. However, these plumes are not expected to reach a magnitude where they will completely mix with Challis Creek, and should be confined to one margin of the stream. That being the case, juvenile steelhead should readily be able to move to the non-turbid side of the stream channel if turbidity becomes too intense to easily find suitable refugia, thus avoiding harm (i.e, behavioral effect only).

Overland sediment delivery from upland disturbances is likely to occur, but should be effectively minimized if proper erosion control measures are employed. Although the BA does not identify any erosion control measures, NMFS presumes that standard erosion control practices (i.e., silt fences, coir logs, etc.) will be applied to ensure that the action agency meets State water quality standards.

2.4.1.3 Dewatering and Fish Handling

Steelhead have been detected at Site #1 (Challis Creek), but have not been detected at Site #5 (Lodgepole Creek) during the most recent sampling efforts conducted in July 2016 (B. Gamett, email August 24, 2016). However, there is no passage barrier excluding fish accessing Lodgepole Creek from Challis Creek. Therefore, Snake River Basin steelhead are considered present in the action area and individual fish could be impacted during dewatering events at Sites #1 and #5. Measures will be taken at these sites to prevent fish stranding and death as the roadways and stream channels are dewatered. To the extent possible, dewatering will occur on a controlled ramp-down fashion which will give fish time to volitionally leave the areas being dewatered. As dewatering is occurring, SCNF fisheries staff will walk the areas being dewatered looking for fish. Any fish observed will be collected with dip nets, placed in buckets, and released into the stream channel at least 328 feet below the project areas. While this will minimize the impacts to individual fish, it is possible that some fish could be injured, become stranded, and/or die.

The total number of steelhead exposed to site dewatering is not expected to exceed 25 juvenile steelhead. These numbers were estimated based on data describe in the BA from two sampling sites in Challis Creek within the action that were sampled in 2015 (SCNF, unpublished data). The steelhead estimate was calculated by multiplying the observed density of fish per linear-foot of stream (0.013 fish per linear-foot of stream) by the total length of stream to be dewatered (1,550 feet) plus adding a 25% safety margin (Gamett, Challis Creek Road Repair Project BA). Site dewatering is scheduled to occur only 1 time at Site #1 and Site #5. The year in which dewatering will occur has not been identified. However, dewatering is only authorized to occur one time at each site.

As stated earlier, dewatering will occur in a controlled ramp-down. The gradual dewatering of the project sites will provide an opportunity for any fish present on the roadway to volitionally move downstream into Challis Creek. This gradual dewatering should occur over the course of several hours. It will start with an initial significant reduction in flow but still maintain enough flow for fish to leave the area. Very low densities of fish have been observed at Site #1. In addition, most of the dewatered area at Site #1 is a roadway that is now composed of low to moderate gradient riffle with no deep pools or hiding habitat present. That being the case, any remaining fish should readily be observed and collected with a dip net.

The Idaho Department of Fish and Game (IDFG) has successfully implemented this procedure to effectively salvage fish stranded in irrigation ditches and other construction areas. Applying observations from those efforts, IDFG anticipates 75% to 90% of the fish present will emigrate during the proposed ramp-down schedules (Diluccia 2012). The remaining 10% to 25% of the dewatered area population will be exposed to capture, handling, and transport to a safe location. Applying the potential juvenile fish densities described above and using the lowest estimated emigration rate (75%) results in an estimate that at least six of the 25 juvenile steelhead will remain present, be handled, and transported to a safe location.

Assuming a conservative mortality rate estimate of five percent of the six juvenile steelhead handled, NMFS estimates that no more than two (calculated 1.25 and rounded up to two) juvenile steelhead will die during capture and handling. Approximately 19 juvenile steelhead are expected to volitionally migrate out of the dewatered area. Displaced fish are likely to move to higher quality habitat either upstream or downstream of the dewatered area and their displacement is considered a minor behavioral change that does not result in harm. Because of the proposed work window for the project (i.e., July to November), adult steelhead are extremely unlikely to be trapped in the work area and thus none will be exposed to salvage efforts.

2.4.1.4 Chemical Contamination

The use of heavy machinery increases the risk for potential spills of fuel, lubricants, hydraulic fluid, or other similar contaminants into the riparian zone, or directly into the water where they could adversely affect habitat, injure or kill aquatic food organisms, or directly impact ESA-listed species. The SCNF requires that all fueling, storing, and/or staging of fuel, oil, or other toxicants within the RHCAs of perennial streams will not be allowed. The RHCAs extend 300 feet from perennial fish bearing streams (i.e., Bear, Challis, Lodgepole, and White Valley Creeks) and 150 feet from perennial non-fish bearing streams. In addition, a SPPP will be developed and adhered to by the construction contractor to ensure spills are prevented/minimized and appropriate cleanup provisions are in place. It is unlikely that antifreeze, brake, or transmission fluid will be present onsite or spilled in volumes or concentrations large enough to harm salmonids in or downstream from the project site. Therefore, NMFS believes that fuel spill, and equipment leak contingencies and preventions described in the proposed action are sufficient to effectively minimize the risk of negative impacts to ESA-listed fish and fish habitat from chemical contamination. Therefore, effects to juvenile steelhead from chemical contamination are very unlikely to occur.

2.4.2 Effects on Designated Critical Habitat

The action area contains unoccupied designated critical habitat for Snake River spring/summer Chinook salmon. Critical habitat within the action area has an associated combination of PBFs essential for supporting freshwater rearing and migration for Chinook salmon. Chinook salmon spawning is not known or expected to occur in the action area.

The critical habitat PBFs most likely to be affected by the proposed action include water quality (i.e., turbidity, and chemical contamination), riparian vegetation, cover/shelter, and space. Modification of these PBFs may affect rearing or migration in the action area. Proper function of these PBFs is necessary to support successful juvenile migration, rearing, and the growth and development of juvenile Chinook in the action area.

2.4.2.1 Effects on Water Quality

As discussed in the species effects section, water quality in the action area may be temporarily degraded due to suspended sediment (turbidity) and/or temporary toxic chemical contamination (petroleum based fuels, and lubricants). However, proposed conservation measures (e.g., low water work window, anticipated and dewatered work areas) are anticipated to reduce the amount of sediment suspended from the creek bottom or input into the action area, which is, in return, expected to reduce turbidity in action area streams. Sediment introductions and resulting turbidity are expected to be effectively minimized, of low magnitude, and temporary in nature, and will not result in the long-term reduction of the action area habitat's conservation value.

Although machinery will be used adjacent to Challis Creek, the risk for chemical contamination is minor. Fuel storage and equipment fueling will occur more than 300 feet from fish-bearing streams, and 150 feet from non fish-bearing from surface water to reduce the likelihood of spills causing water contamination. Equipment will also be cleaned and inspected prior to arrival onsite to ensure no leaks or drips will occur. Spill containment and cleanup materials will also be on hand to address any spills as quickly as possible. Together these measures result in only a very small likelihood of chemical contamination.

2.4.2.2 Riparian Vegetation

The Lodgepole Fire burned a large amount of the riparian vegetation along Challis and Lodgepole Creeks within the action area. This and the large runoff events following the fire have impacted bank stability and riparian vegetation. The placement of riprap will likely further prevent the long-term recovery of riparian vegetation in areas that are hardened within the action area. There is no proposed revegetation plan proposed to speed up the recovery of riparian vegetation. Many years will be required for recovery to occur. However, full recovery will likely occur over time in areas that are not riprapped. The conservation value of the action area's riparian vegetation will be reduced in areas were the streambank is hardened which will be further discussed in Section 2.4.2.4.

2.4.2.3 Cover/Shelter

This debris flow filled the Challis Creek floodplain with a considerable amount of material significantly reducing or eliminating cover, shelter, and pool quality and quantity within the action area. Considering inwater work being conducted in dewatered work areas, combined with the anticipated effectiveness of standard erosion control measures expected to be used, the action is expected to resuspend and/or deliver only minor amounts of sediment to action area streams. Therefore, effects to rearing cover in the form of interstitial spacing, is expected to be minor and not expected to be affected in the long term.

The project as proposed is not expected to enhance or create pool habitat (i.e., space), or other forms of natural cover and shelter. If in the future, the channel accesses the floodplain where the fallen trees and bank barbs are located along the road there may be some increase in stream habitat complexity locally improving the amount and quality of cover in the associated pools. However, because any of these benefits would only occur in the immediate footprint of the project area, should they occur, such improvements are expected to provide only a localized, small increase in the conservation value of the action area's critical habitat. However, the placement of riprap and bank barbs also decreases the potential for new natural cover and shelter to form.

Because the action proposes to install additional bank stabilization and channel narrowing features (i.e., rock barb) in a reach already compromised by anthropogenic confinements, some form of downstream bank erosion at the next unprotected bank is expected. This indirect effect of the action is likely to lead to additional future bank stabilization proposals, which will exacerbate the reach-scale problems described in the environmental baseline.

The placement of riprap is known to cause adverse effects to stream morphology, fish habitat, and fish populations (Schmetterling *et al.* 2001; Garland *et al.* 2002; USFWS 2000). As reported by Washington Department of Fish and Wildlife (WDFW *et al.* 2002), juvenile life stages of salmonids are especially affected by bank stabilization projects. In low flows, juveniles depend on cover provided by undercut banks and overhanging vegetation to provide locations for resting, feeding, and protection from predation. During periods of high streamflow, juveniles often seek refuge in low velocity microhabitats, including undercut banks and off-channel habitat. Riprap will preclude the future development of new undercut banks off-channel rearing habitats, and cover/shelter by fixing the channel in its current location.

As proposed, riprap to be placed as part of the propose action will occur along the edge of the repaired roadway and will be placed mainly in areas that were previously riprapped or disturbed for the existing roadway. Consequently, there are no undercut banks and there is no overhanging vegetation that will be affected by placement of this riprap because those areas have already been impacted by the debris flow or existing bank hardening. The placement of bank barbs will occur in the existing debris flow and not within the existing stream channel. Because placement of rock will occur in a previously riprapped/disturbed location, the proposed action is expected to maintain the existing negative channel morphology impacts associated with riprapping and road construction within riparian areas. Absent the proposed action the stream would have adjusted to some form of natural equilibrium, creating undercut banks, etc. It may not be an impact to cover and shelter now because of the debris torrent has filled the channel and homogenized current instream habitats. However, absent the proposed action, the stream would have created cover and shelter over time, cover and shelter that won't occur with the riprap in place. However, because these effects will be limited to the immediate footprint of the project area, effects from riprap will not affect the conservation value of this PBF at the stream reach or watershed scales.

2.4.2.4 Space

The debris flow filled the Challis Creek floodplain with a considerable amount of material and created a dam across Challis Creek. To the extent practical, a floodplain will be created adjacent to the new channel. This channel will be constructed in the dry. However, some of the material may also be placed at the toe of the slope along the south and west sides of the floodplain. If this is done, it will be done in a manner that mimics the natural topography of the site. The reconstruction of the road will involve placing approximately 2,300 cubic yards of material in the floodplain below the OHWM and will result in a loss of approximately 0.2 acres of floodplain in addition to what the road originally occupied. The space along this bank will still be taken up with riprap and fill, but the amount of water in channel will not change with this action. The stream will not be confined on the other side, thereby allowing the channel to adjust and ensuring there should be no net loss of overall space in the action area.

2.5 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). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

The action area contains Federal lands administered by the SCNF, which comprise the majority of the watershed acreage, interspersed with BLM, state, and privately-owned lands. The BA did not identify any future state or private activities that will occur in the watershed. There are no state or private lands in the action area. NMFS is also not aware of any state, tribal, or private activities proposed within the action area at this time. Therefore, there are no cumulative effects.

2.6 Integration and Synthesis

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action (Section 2.4) to the environmental baseline (Section 2.3) and the cumulative effects (Section 2.5), taking into account the status of the species and critical habitat (Section 2.2), to formulate the agency's biological opinion as to whether the proposed action is likely to: (1) Reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) reduce the value of designated or proposed critical habitat for the conservation of the species. These assessments are made in full consideration of the status of the species and critical habitat (Section 2.2).

The action area currently provides habitat that is used by the freshwater life history stages of threatened Snake River Basin steelhead (migratory, and rearing). As noted above, successful implementation of the proposed action, including the described design criteria and BMPs, will have the following adverse effects on Snake River Basin steelhead and Snake River spring/summer Chinook salmon designated critical habitat:

1. Behavioral modifications from exposure to multiple low intensity turbidity plumes. These temporary and low intensity turbidity plumes are likely to cause temporary behavioral modifications to exposed fish. Most exposed fish are expected to simply temporarily relocate to nearby non-turbid water during the exposure. Several temporary turbidity plumes will cause short-term adverse effects to ESA-listed fish up to 1,500 feet downstream. None of the exposed fish will die from the low intensity turbidity plumes.

2. Minor behavioral modifications, from construction noise and equipment use may occur. Fish are expected to move only short distances (likely only a few feet). Similar habitat types exist upstream and downstream of the affected areas and are expected to provide forage and hiding cover similar to the areas fish are displaced from. Thus, relocations are not expected to have a measurable effect on species growth. Movements could result in an unknown level of increased predation. Risk is likely low due to the small area affected and anticipated short distance of movements.

3. Handling and harassment of juvenile steelhead could occur as Site # 1 and Site # 5 are dewatered. Although most fish are anticipated to volitionally move in response to equipment noise and visual stimulus of the activities prior to salvage efforts, NMFS estimates that up to 25 steelhead are likely to be present and affected by the channel dewatering. Of those 25 fish, approximately 19 are expected to volitionally move out of the area being dewatered and six steelhead will remain in the dewatered work area and could potentially be handled. Up to five percent (calculated to be 1.25, rounded up to two fish) of steelhead remaining in the work area could be stranded and die.

4. The reconstruction of the road will involve placing approximately 2,300 cubic yards of material in the floodplain below the OHWM and will result in a loss of approximately 0.2 acres of floodplain in addition to what the road originally occupied. Riprap and barb placement along Challis Creek will cause a reduction in the amount of cover/shelter, riparian vegetation, and pool habitat that may develop in the future as the system recovers from the debris flow. Downstream erosion from bank hardening could also occur. The impacts to critical habitat will maintain the degraded conditions and will not improve the long-term conservation value of the action area. The project, as described, is not expected to shrink the extent of the snowmelt-dominated habitat available to salmon due to future climate change effects on riverine hydrographs.

The affected area is mostly impacted by the debris flow and unlikely to support high densities of fish at this time. In addition, adverse effects to individual fish will primarily be temporary and minor with only small behavioral changes likely from exposure to turbidity and stream dewatering. NMFS has identified that the most significant direct effect to individuals from this proposed action will be injury and death that result from dewatering and the associated fish salvage. However, it is believed that most exposed fish will volitionally move out of the small area that will be dewatered due to noise, visual disturbances from construction activities, and the controlled dewatering strategy. As described above, the handling of fish is not expected to kill more than two juvenile steelhead. The expected one-time loss of two juvenile steelhead from salvage efforts is too small to influence the productivity, spatial structure, or genetic diversity of the East Fork Salmon River Snake River Basin steelhead population. Because the effects will not be substantial enough to negatively influence VSP criteria at the population scale, the viability of the MPG and DPS is also not expected to be reduced due to potential salvage efforts. Together, these conditions and the lack of known cumulative effects result in what is likely a very small proportion of the total number of Snake River Basin steelhead individuals being adversely affected by the action.

Although the number of fish affected by each stressor cannot be calculated, the number of fish affected is expected to be too small and the type of effects too minor to produce any observable effect on the VSP parameters of any of the listed species. Additionally, turbidity impacts to the steelhead population will be spread amongst at least 2- to 3-year classes with potentially more year classes present for steelhead. This further reduces the likelihood of any appreciable population level impacts on the VSP parameters. The action will also not appreciably reduce abundance/productivity, or spatial structure/diversity of the Snake River Basin steelhead DPS.

2.7 Conclusion

After reviewing the current status of the listed species and their designated critical habitat, the environmental baseline within the action area, the effects of the proposed action, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of Snake River Basin steelhead. NMFS has also determined that the action is not likely to destroy or adversely modify Snake River spring/summer Chinook salmon designated critical habitat.

2.8 Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). "Incidental take" is defined by regulation as 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(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this ITS.

2.8.1 Amount or Extent of Take

In this Opinion, NMFS determined that incidental take would occur as follows:

Sublethal effects from turbidity plumes will occur on multiple days and potentially during different years. The number of individual fish or populations present at any given time cannot be accurately determined. In addition, there is no way for personnel to quantify how many fish are affected at a given site, how long they are affected, or what their ultimate fate is (i.e., cannot determine injury levels or changes in predation). These uncertainties make it impossible to quantitatively identify the amount of take (turbidity) that will occur as a result of implementing the proposed action. Because circumstances causing take are likely to arise, but cannot be quantitatively evaluated in the field, the extent of incidental take is described, pursuant to 50 CFR 402.14[I].

In the above analysis, NMFS estimated that sediment plumes will have short-term adverse effects to ESA-listed steelhead up to 1,500 feet downstream. None of the exposed fish will die from the low intensity turbidity plumes. NMFS expects exposed juvenile steelhead to volitionally seek adjacent, less turbid habitats, thus avoiding prolonged direct sediment exposure. Fish movements are expected to be of short duration (minutes to hours). If juvenile steelhead fail or are unable to move out of sediment plumes they are likely to experience an intermittent range of sublethal effects ranging from: (1) Minor physiological stress and increased rates of coughing and respiration; (2) moderate physiological stress; (3) moderate habitat degradation; to (4) short-term indicators of major physiological stress. All habitat-related take associated with project generated turbidity is expected to be sublethal and last less than 90 minutes. No sediment-related mortality is expected due to the anticipated effectiveness of the design measures, including real-time adaptive management. NMFS will consider the extent of take exceeded if turbidity readings, taken approximately 600 feet downstream of sediment inputs and at 15-minute intervals, exceed the IDEQ standard of 50 NTUs over background for three consecutive readings (90 minutes); or if an individual reading indicates an increase larger than 100 NTUs over background.

Capture, handling, and harassment related take (from project dewatering) will occur to juvenile Snake River Basin steelhead during the fish salvage operation. Because salvage personnel will handle and be able to identify each fish removed from the dewatered work area the number of fish ‘harmed’ can be monitored in the field. For this reason we have estimated that no more than 25 juvenile steelhead will be exposed to site dewatering. Nineteen of these fish are expected to leave the work area during dewatering activities. It is expected that no more than six juvenile of the 25 steelhead will be handled and no more than two will be killed. This is the amount of salvage-related take exempted from take prohibitions for the capture, handling, and potential electrofishing of the dewatered work area. NMFS will consider the amount of take exceeded if more than 6 juvenile steelhead are handled or two killed as a result of fish handling. If any of these levels are exceeded, the SCNF shall immediately contact NMFS to reinitiate consultation.

2.8.2 Effect of the Take

In the opinion, NMFS determined that the amount or extent of incidental take, coupled with other effects of the proposed action is not likely to result in jeopardy to the species or destruction or adverse modification of their critical habitat.

2.8.3 Reasonable and Prudent Measures

"Reasonable and prudent measures" are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02). 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 impact of incidental take of listed species due to completion of the proposed action.

The SCNF and the COE have the continuing duty to regulate the activities covered in this ITS 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) will lapse if the SCNF or COE fails to exercise their discretion to require adherence to terms and conditions of the ITS, or to exercise that discretion as necessary to retain the oversight to ensure compliance with these terms and conditions. Similarly, if any contractor/cooperator fails to act in accordance with the terms and conditions of the ITS, protective coverage will 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 SCNF and COE (for those measures relevant to the CWA section 404 permit) shall minimize incidental take by:

1. Minimize the potential for incidental take resulting from turbidity exposure.

2. Minimize the potential for incidental take resulting from fish salvage.

3. Ensure completion of a monitoring and reporting program to confirm that the terms and conditions in this ITS are effective in avoiding and minimizing incidental take from permitted activities and ensure incidental take is not exceeded.

To be exempt from the prohibitions of section 9 of the ESA, the SCNF, the COE, and their contractors/cooperators, 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.

2.8.4 Terms and Conditions

The terms and conditions described below are non-discretionary, and the SCNF, the COE, or any applicant/contractor must comply with them in order to implement the RPMs (50 CFR 402.14). The SCNF, the COE, or any applicant/contractor have a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

1. To implement RPM 1, the SCNF and COE (where relevant to the CWA 404 permit) shall:

    a. Ensure project implementation, including all design criteria/BMPs, adhere to the proposed action as described within the BA and this Opinion.

    b. To reduce the area of ground disturbance and its potential for delivering sediment to the stream, flag work areas to minimize footprint of impacts caused by construction equipment.

    c. Ensure that construction activities are immediately ceased when turbidity levels exceed 50 NTUs over background at 600 feet downstream from sediment inputs, for 90 consecutive minutes; work can commence once these numbers fall below 50 NTUs. At that time, additional BMPs should be considered to ensure levels of this magnitude do not recur.

    d. Ensure that dewatered areas will be rewatered in a slow controlled fashion to limit the intensity, duration, and extent of the turbidity plumes produced.

    e. The SCNF shall reduce overland sediment delivery to the stream by installing sediment control devices in areas where overland sediment inputs could occur. Standard erosion control practices (i.e., silt fences, coir logs, weed free straw bales, etc.) will be applied to ensure that the action agency meets State water quality standards.

2. To implement RPM #2 (monitoring and reporting), the SCNF and the COE (as applicable to the CWA permit) shall ensure that:

a. When removing fish from work areas being dewatered, a fish biologist will determine how to best remove ESA-listed fish, with least harm to the fish, before dewatering begins. This will involve either passive movement of fish out of the project reach through slow dewatering, or actively removing the fish from the project reach. Should active removal be warranted, a fish biologist will clear the area of fish before the site is dewatered using one or more of a variety of methods including seining or dipping, depending on specific site conditions. A fish biologist will conduct or supervise the following activities: (1) Slowly remove approximately 80% of the streamflow from the work area to allow some fish to leave the work area volitionally; (2) install blocknets; capture fish through seining and dipping; continue to slowly dewater the stream reach; and (3) collect any remaining fish in cold-water buckets and relocate to the stream.

b. Use aerators or replace the water in the buckets at least every 15 minutes with cold clear water. If block nets are set, inspect them regularly for fish and remove any living to an area far enough away to avoid additional impingement risk or exposure to turbidity preferably upstream of the project area if possible. All of these activities will be completed on the same day.

c. Qualified fisheries biologist(s) conducting work area isolation shall have demonstrated experience conducting work area isolation and fish handling.

d. Handle ESA-listed fish with extreme care, keeping fish in water to the maximum extent possible during seining, electrofishing, and transfer procedures to prevent the added stress of out-of-water handling.

e. Ensure that holding conditions for any captured fish provide the lowest level of stress to captured individuals by maintaining local stream conditions (temperature, dissolved oxygen, etc.) in holding vessels, minimizing holding time and avoiding any predation in holding vessels.

f. Release all transported fish to a safe location as quickly as possible. Fish release upstream of the project site is preferred as sediment impacts would not likely affect individuals upstream of the crossing. Place buckets into the water and slowly invert to allow captured fish to move into the selected release sites.

g. The SCNF shall maintain oversight of all project activities and ensure that project is implemented as described.

3. To implement RPM #3 (monitoring and reporting), the SCNF and the COE (as applicable to the CWA permit) shall ensure that:

   a. A project status/completion report is completed and submitted to NMFS within 6 weeks of project completion for activities in each of the three years activities are completed in 2016, 2017, and 2018 (or 2019 if project work is started in 2017). At a minimum, the following information shall be included in the report:

i. Project name.

ii. Contact person(s).

iii. Starting and ending dates for work completed.

iv. Photo documentation before, during, and after project completion.

   1. Include general views and close-ups showing details of the project and project area, including pre- and post-construction.

   2. Label each photo with date, time, project name, photographer's name, and the subject.

v. A summary of pollution and erosion control inspection results, including a description of any erosion control failure, contaminant release, and efforts to correct such incidences.

vi. Dates when Site #1 and Site #5 are dewatered and any fish capture and release information.

   1. Supervisory fish biologist – name and contact information.

   2. Methods of dewatering and take minimization.

   3. Stream conditions (i.e., river stage/flows, background turbidity) before, during, and directly after completion of dewatering.

   4. For each dewatering site, provide an accounting of all fish including ESA-listed fish captured and handled by species.

   5. The report will indicate the method of capture, location, and final disposition of the handled fish at time of release. It will also include any incidence of observed injury or mortality.

vii. Results of turbidity monitoring.

b. Turbidity monitoring shall be completed to the following standards:

   i. With an appropriate and regularly calibrated turbidimeter.

   ii. Background turbidity levels will be collected at an undisturbed area approximately 50 feet upstream from inwater disturbance prior to expected plumes.

iii. Turbidity samples will be taken every 15 minutes and approximately 600 feet downstream from the point of discharge during sediment plumes. To minimize impacts of turbidity on exposed ESA-listed steelhead, the Federal grant recipient will immediately cease construction activities when levels exceed 50 NTUs over background for 90 consecutive minutes until these numbers fall below 50 NTUs. At that time, additional BMPs may be implemented to reduce turbidity levels as quickly as possible.

c. The report will provide the information requested above and confirm the project's design criteria and this Opinion's terms and conditions were successfully implemented.

Submit post-project report to:

NOAA
National Marine Fisheries Service
NMFS Tracking Number: 2016-5445
800 Park Boulevard
Plaza IV, Suite 220
Boise, Idaho 83712-7743

d. NOTICE: If a sick, injured or dead specimen of a threatened or endangered species is found in the project area and it appears that it may be as a result of the proposed action, the finder must notify NMFS through the contact person identified in the transmittal letter for this Opinion, or through NMFS Law Enforcement at (206) 526-6133, and follow any instructions. If the proposed action may worsen the fish's condition before NMFS can be contacted, the finder should attempt to move the fish to a suitable location near the capture site while keeping the fish in the water and reducing its stress as much as possible. Do not disturb the fish after it has been moved. If the fish is dead, or dies while being captured or moved, report the following information: (1) NMFS consultation number; (2) the date, time, and location of discovery; (3) a brief description of circumstances and any information that may show the cause of death; and (4) photographs of the fish and where it was found. NMFS also suggests that the finder coordinate with local biologists to recover any tags or other relevant research information. If the specimen is not needed by local biologists for tag recovery or by NMFS for analysis, the specimen should be returned to the water in which it was found, or otherwise discarded.

2.9 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. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02). The following recommendations are discretionary measures that NMFS believes are consistent with this obligation and therefore should be carried out by the SCNF:

1. After the completion of construction, the SCNF should plant riparian vegetation along the river bank and other disturbed areas and will include only native trees, shrubs, and herbaceous vegetation.

2. To mitigate the effects of climate change on ESA-listed salmonids, follow recommendations by the ISAB (2007) to plan now for future climate conditions by implementing protective tributary, mainstem, and estuarine habitat measures; as well as protective hydropower mitigation measures. In particular, implement measures to protect or restore riparian buffers, wetlands, and floodplains; remove stream barriers; and to ensure late summer and fall tributary streamflows.

3. The SCNF should continue to work with the County to try to find a more suitable location for this road outside of any riparian zone to reduce the potential for repeated failure of this road system.

Please notify NMFS if the SCNF carries out these recommendations so that we will be kept informed of actions that minimize or avoid adverse effects and those that benefit listed species or their designated critical habitats.

2.10 Reinitiation of Consultation

This concludes formal consultation for the SCNF's Challis Creek Road Repair project. As 50 CFR 402.16 states, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental taking specified in the ITS is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT ESSENTIAL FISH HABITAT CONSULTATION

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. The MSA (section 3) defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration 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 on EFH may result from actions occurring within EFH or outside of it and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH.

This analysis is based, in part, on the EFH assessment provided by the SCNF and descriptions of EFH for Pacific coast salmon (PFMC 1999) contained in the fishery management plans developed by the Pacific Fishery Management Council (PFMC) and approved by the Secretary of Commerce.

3.1 Essential Fish Habitat Affected by the Project

The proposed action and action area for this consultation are described in the Introduction to this document. The action area includes areas designated as unoccupied EFH for spawning, rearing, and migration life-history stages of Chinook salmon.

The proposed action and action area for this consultation are described in Section 1.4 of this Opinion. The reconstruction of the road would involve placing approximately 2,300 cubic yards of material in the floodplain below the OHWM and would result in a loss of approximately 0.2 acres of floodplain in addition to what the road originally occupied.

The PFMC has identified five habitat areas of particular concern (HAPC), which warrant additional focus for conservation efforts due to their high ecological importance. Three of the five HAPC are applicable to freshwater and include: (1) Complex channels and floodplain habitats; (2) thermal refugia; and (3) spawning habitat. This reach of Challis Creek does not include spawning habitat, and the project will not affect access to thermal refugia. However, as proposed, this project has the potential to affect the complex channels and floodplain habitats HAPC.

3.2 Adverse Effects on Essential Fish Habitat

The proposed action and action area are described in the BA and this Opinion. The action area includes habitat which has been designated as unoccupied EFH for various life stages of Chinook salmon. The effects of the proposed action on fish habitat is described in the habitat effects section of the Opinion. To summarize the conclusions in the Opinion, the following adverse effects to EFH will occur:

1. Multiple turbidity plumeswill produce brief and temporary water quality related impacts. Individual pulses are not expected to persist more than 90 minutes and will typically be less than 50 NTUs over background. Individual plumes are expected to temporarily affect narrow, short segments of EFH.

2. The reconstruction of the road will involve placing approximately 2,300 cubic yards of material in the floodplain below the OHWM and will result in a loss of approximately 0.2 acres of floodplain in addition to what the road originally occupied.

3. The use of riprap will preclude the future development of new undercut banks and off-channel rearing habitats, and cover/shelter by fixing the channel in its current location.

3.3 Essential Fish Habitat Conservation Recommendations

NMFS believes that the following Conservation Recommendations are necessary to avoid, mitigate, or offset the impact that the proposed action has on EFH. These Conservation Recommendations are a non-identical set of the ESA Terms and Conditions.

1. Project implementation, including all design criteria/BMPs, should adhere to the proposed action as described within the BA and the above Opinion.

2. To reduce the area of ground disturbance and its potential for delivering sediment to the stream, flag work areas to minimize footprint of impacts caused by construction equipment.

3. Dewatered areas should be rewatered in a slow, controlled fashion to limit the intensity, duration, and extent of the turbidity plumes produced.

4. Ongoing construction practices should be modified when observed turbidity levels approach or exceed 50 NTUs over background when measured approximately 600 feet downstream of the source. All practicable means should be used to monitor the actual turbidity plume itself rather than areas proximal to the visible plume.

5. After the completion of construction, the SCNF should plant riparian vegetation along the river bank and other disturbed areas and will include only native trees, shrubs, and herbaceous vegetation

NMFS expects that full implementation of these EFH Conservation Recommendations would protect, by avoiding or minimizing the adverse effects described in Section 3.2 above, approximately 0.2 acres of designated EFH for Pacific coast salmon.

3.4 Statutory Response Requirement

As required by section 305(b)(4)(B) of the MSA, the SCNF and the COE must provide a detailed response in writing to NMFS within 30 days after receiving an EFH Conservation Recommendation. Such a response must be provided at least 10 days prior to final approval of the action if the response is inconsistent with any of NMFS’ EFH Conservation

Recommendations unless NMFS and the Federal agency have agreed to use alternative timeframes for the Federal agency response. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the Conservation Recommendations, the Federal agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the action and the measures needed to avoid, minimize, mitigate, or offset such effects (50 CFR 600.920(k)(1)).

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, we ask that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

3.5 Supplemental Consultation

The SCNF or the COE 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(l)).

4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

The 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.

4.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended users of this opinion are the SCNF and COE. Other interested users of this opinion could include Custer County and contractors assisting with the project. Individual copies were provided to the SCNF and COE. This consultation will be posted on on the Publice Consultation Tracking System web site (https://pcts.nmfs.noaa.gov/pcts-web/homepage.ptcs). The format and naming adheres to conventional standards for style.

4.2 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.

4.3 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 NMFS ESA Consultation Handbook, ESA regulations, 50 CFR 402.01 et seq., and the MSA implementing regulations regarding EFH, 50 CFR 600.

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the References section. The analyses in this opinion and 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 West Coast Region ESA quality control and assurance processes.

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APPENDIX A

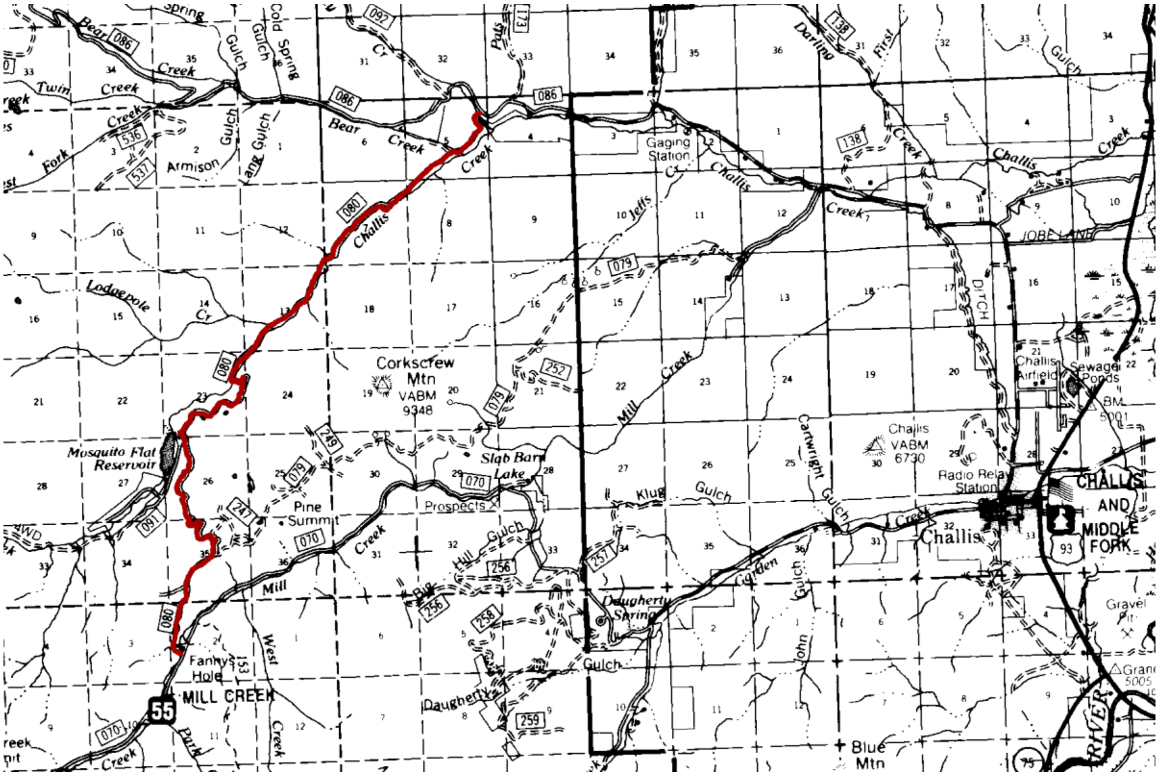


Figure A-1. The Challis Creek Road (Forest Road #40-080) (shown in red).

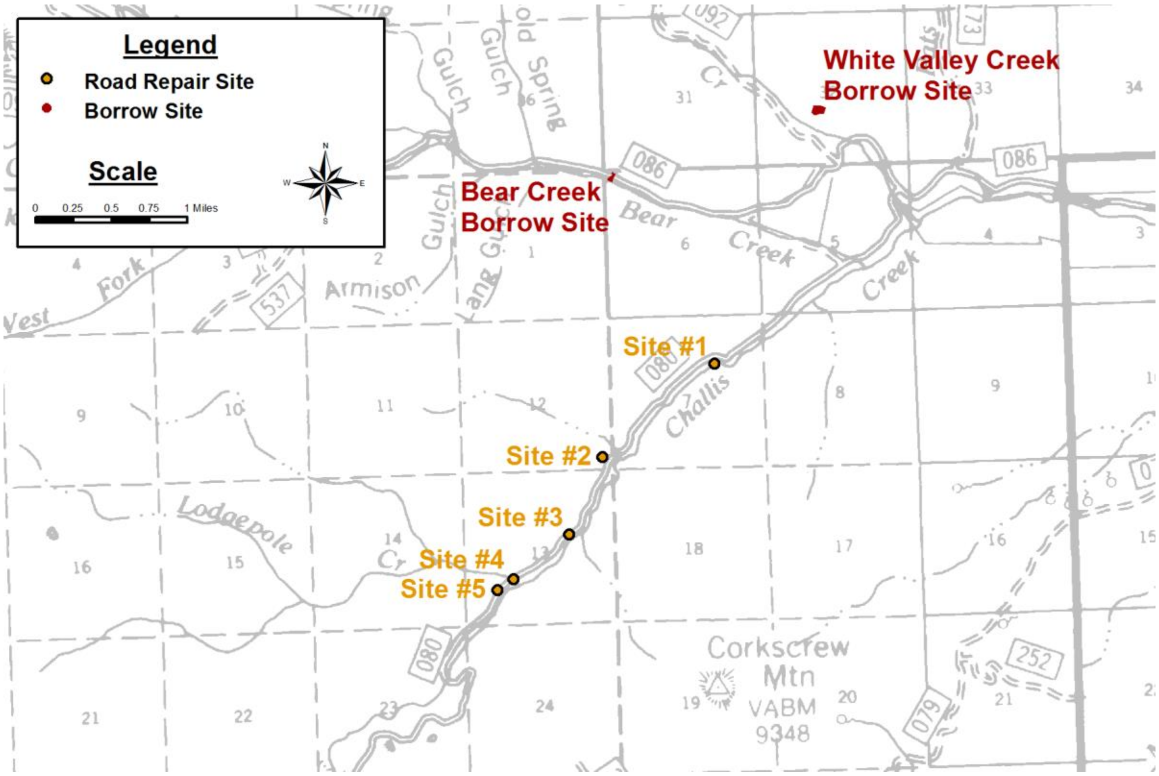


Figure A-2. The five sites where debris flows have impacted the Challis Creek Road.

Figure A-3. The debris flow at Site #1 where it left the unnamed tributary and entered Challis Creek (photograph taken on August 18, 2014).

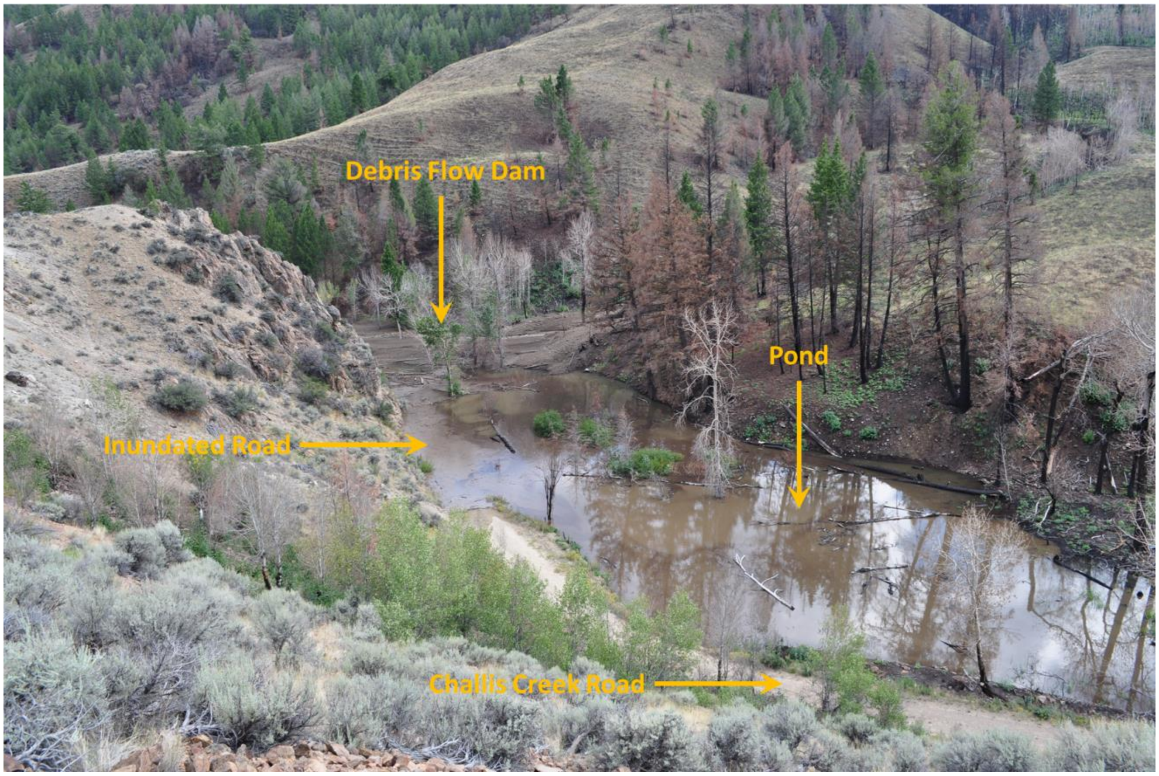


Figure A-4. The debris flow dam, pond, and inundated section of the Challis Creek Road at Site #1 (photograph taken on August 18, 2014).

Figure A-5. The upper section of the obliterated road at Site #1. The road was located along the base of the small cliff where the stream is now flowing (photograph taken on August 18, 2014).

Figure A-6. **The lower section of the obliterated road at Site #1. The road was located along the toe of the slope where the stream is now flowing (photograph taken on August 18, 2014).**

Figure A-7. **The lower section of the obliterated road at Site #1. The road was located along the toe of the slope where the stream is now flowing (photograph taken on August 18, 2014).**

Figure A-8. Site #2 (photograph taken on November 12, 2015).

Figure A-9. Site #3 (photograph taken on November 12, 2015).

Figure A-10. Site #4 (photograph taken on November 12, 2015).

Figure A-11. Site #5 (photograph taken on November 12, 2015).

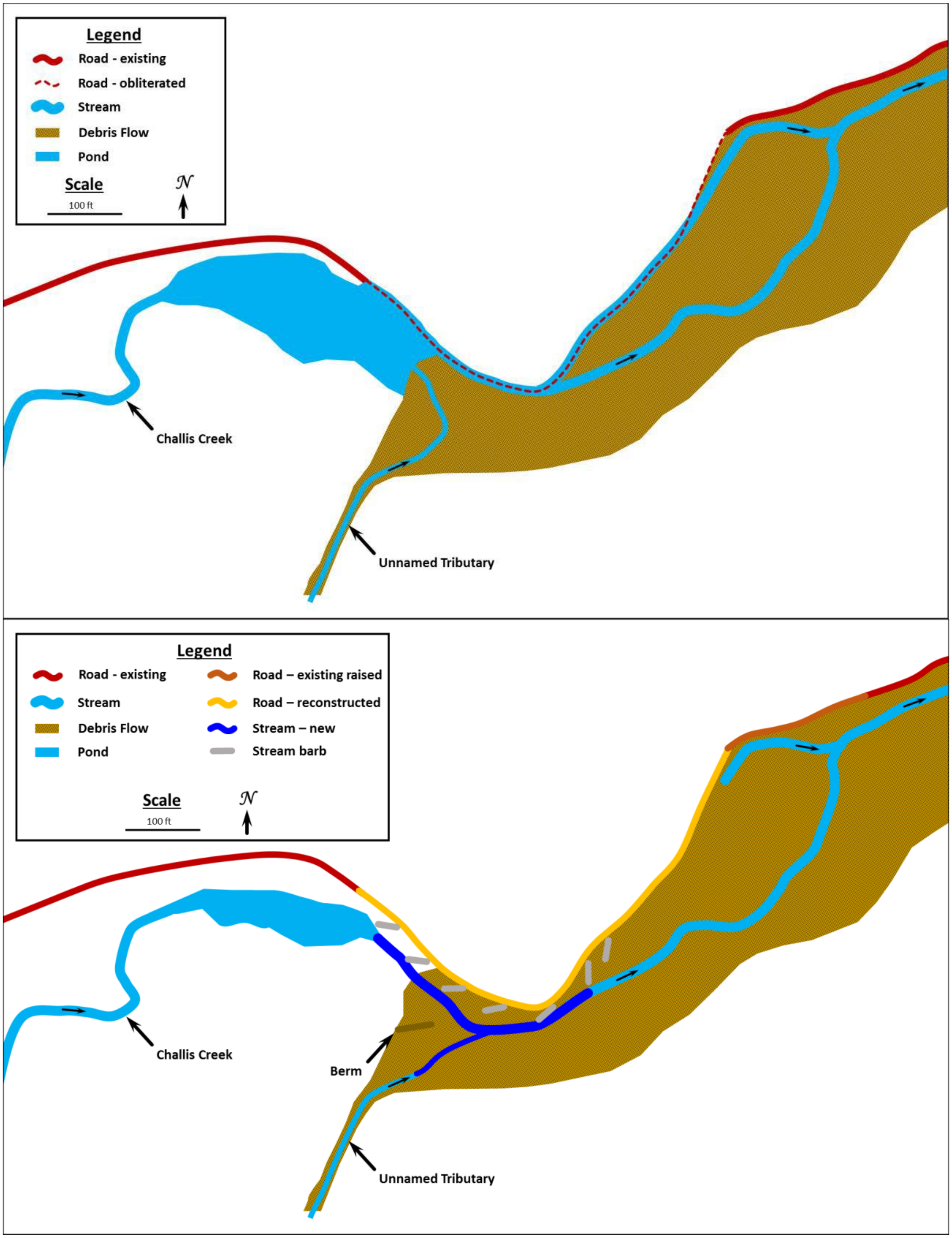


Figure A-12. A comparison of Site #1 before (top) and after (bottom) project implementation.

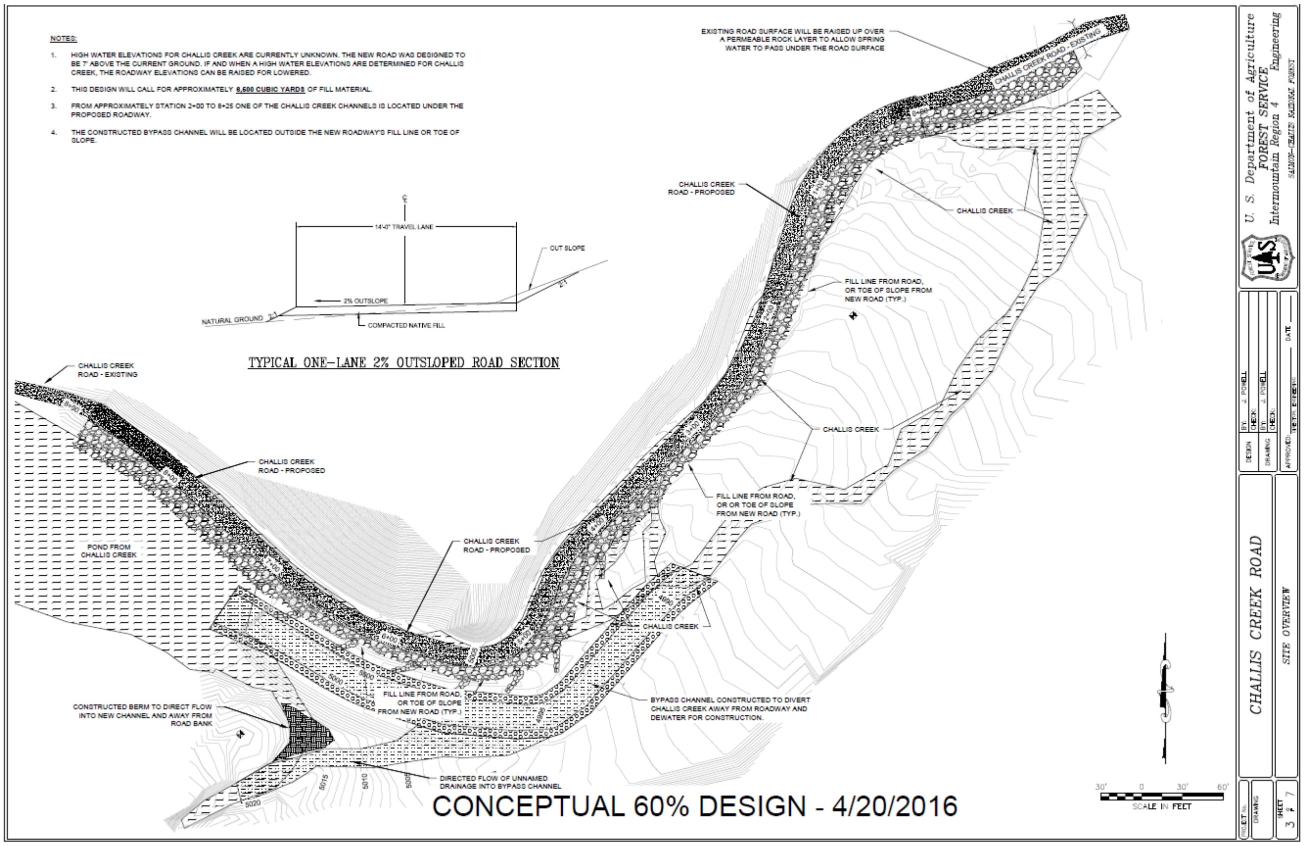
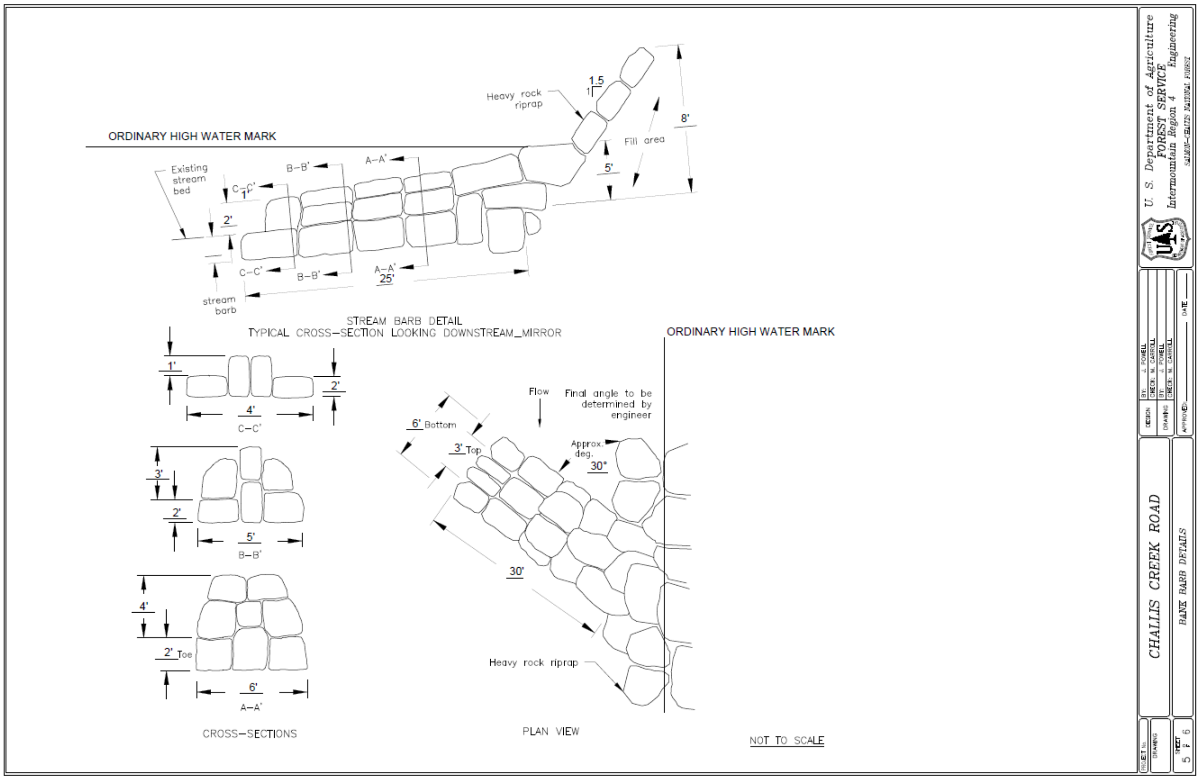
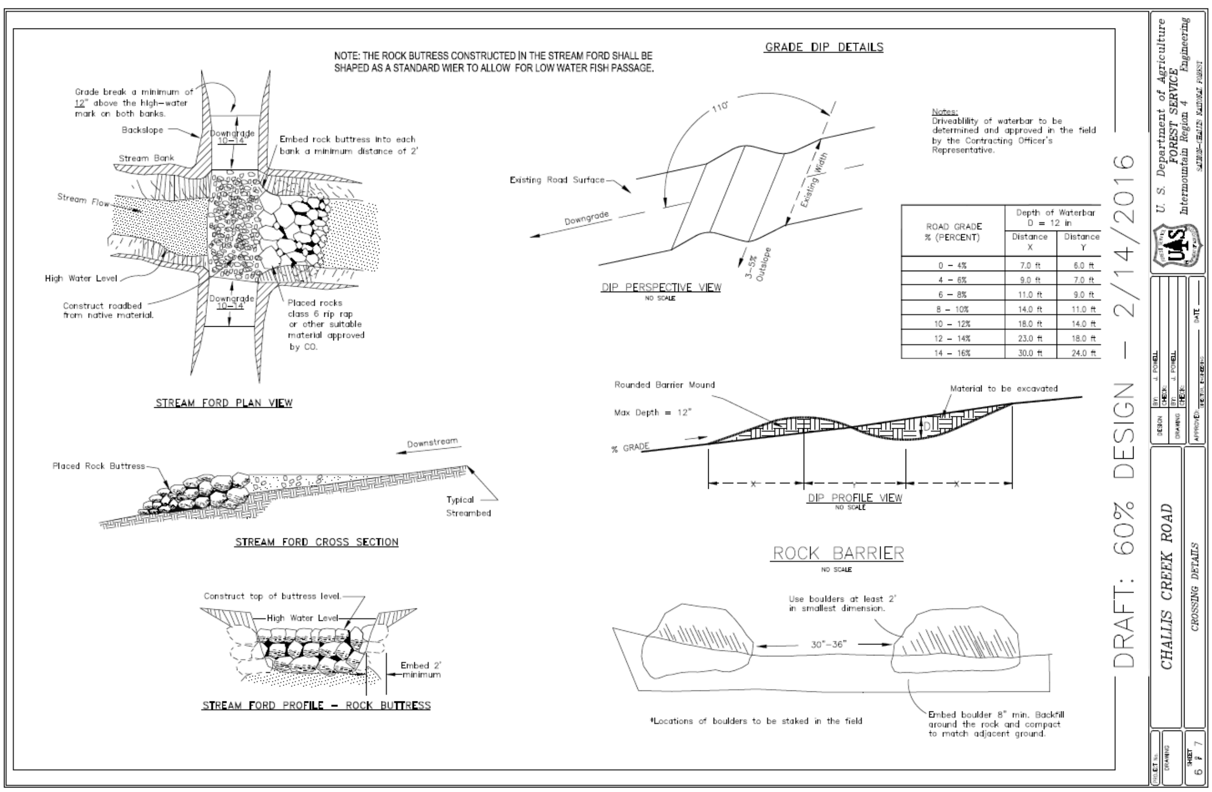


Figure A-13. Conceptual Design of Barbs at Site #1.





ROAD GRADE % (PERCENT)	Depth of Waterbar D = 12 in Distance X	Distance Y
0 – 4%	7.0 ft	6.0 ft
4 – 6%	9.0 ft	7.0 ft
6 – 8%	11.0 ft	9.0 ft
8 – 10%	14.0 ft	11.0 ft
10 – 12%	18.0 ft	14.0 ft
12 – 14%	23.0 ft	18.0 ft
14 – 16%	30.0 ft	24.0 ft

Figure A-14. Stream Ford Design. Stream Barb Detailed Cross Section

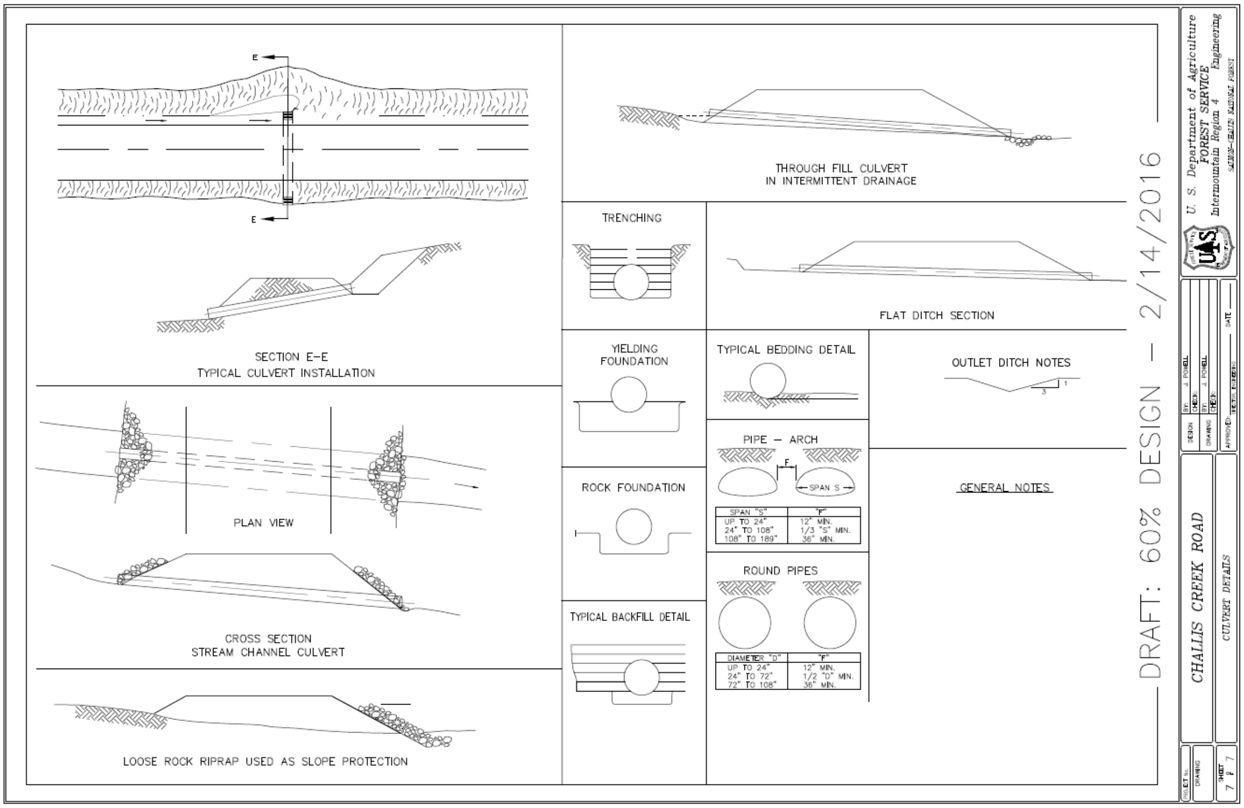


Figure A-15. Typical Culvert Installation.