



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

Refer to NMFS No: 2011/05232

April 20, 2012

Joe Kraayenbrink, District Manager  
Bureau of Land Management  
Idaho Falls District  
1405 Hollipark Drive  
Idaho Falls, Idaho 83401

RE: Endangered Species Act Section 7(a)(2) Biological Opinion and “Not Likely to Adversely Affect” Determination, Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the BLM Actions in the Canyon to Big Timber Watershed Assessment Area HUC # 1706020401 - Texas Creek; 1706020402 - Eighteenmile Creek; 1706020403 - Hawley Creek; 1706020404 - Upper Lemhi River; 1706020405 - Timber Creek (11 Actions)

Dear Mr. Kraayenbrink:

The enclosed document contains a biological opinion (Opinion) prepared by the National Marine Fisheries Service (NMFS) pursuant to section 7(a)(2) of the Endangered Species Act (ESA) on the effects of the Bureau of Land Management Salmon Field Office’s (BLM) authorization of 22 livestock grazing permits, multiple range improvement projects, and two vegetative treatment actions. The BLM proposes the actions under its authority found in the Federal Land Policy and Management Act of 1976, as amended in October 2001, and in accordance with CFR 4130.2(a).

The BLM determined the proposed action would have “no effect” on Snake River sockeye salmon and designated critical habitat for Snake River sockeye salmon. The regulations implementing section 7 of the ESA do not require NMFS to review or concur with “no effect” determinations; therefore, NMFS will not address effects to these species or sockeye salmon designated critical habitat in the attached Opinion.

The BLM made individual determinations for each allotment and the related range improvement actions. The BLM’s biological assessment (BA) concluded that two grazing permits would be “likely to adversely affect” Snake River Basin steelhead but “not likely to adversely affect” Snake River spring/summer Chinook salmon and designated critical habitats for Snake River spring/summer Chinook salmon and Snake River Basin steelhead. The BLM’s BA also concluded that all the remaining proposed actions would either have “no effect”<sup>1</sup> or would be “not likely to adversely affect” Snake River spring/summer Chinook salmon, Snake River Basin

---

<sup>1</sup> The allotments receiving “No Effect” determinations were Bull Creek, Dump, Purcell Creek, Spring Canyon, and Leadore. The regulations implementing section 7 of the ESA do not require NMFS to review or concur with “no effect” determinations; therefore NMFS will not discuss these allotments further in the attached Opinion.



steelhead, and designated critical habitats for Snake River spring/summer Chinook salmon and Snake River Basin steelhead. In this Opinion, NMFS concludes that the actions, as proposed, are not likely to jeopardize Snake River Basin steelhead. NMFS also concurs with the BLM's "not likely to adversely affect" determinations.

As required by section 7 of the ESA, NMFS provides an incidental take statement with the Opinion. The incidental take statement describes reasonable and prudent measures 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 BLM and any person who performs the action must comply with to carry out the reasonable and prudent measures. 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 likely effects on Essential Fish Habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA). Because the conservation measures included in the proposed action were sufficient to avoid adverse effects to EFH no conservation recommendations are necessary.

If you have questions regarding this consultation, please contact Chad Fealko, Fisheries Biologist, Salmon Field Office, 208-756-5105.

Sincerely,

  
for William W. Stelle, Jr.  
Regional Administrator

Enclosure

cc: L. Price - BLM  
R. Holder - USFWS  
T. Curet - IDFG  
Y. Tuell - SBT  
M. Lopez - NPT

bcc: F/NWR - CHRON File  
ISHO - File copy, Read File  
SIBO – Lind, Fealko (electronic and hard copy)

Fealko:Lind:CBT\_Opinion.docx:blw:1/10/12:[F/NWR/2011/05232]

NMFS No.: F/NWR/2011/05232

cc Addresses:

Linda Price, Salmon Field Manager  
Bureau of Land Management  
1206 South Challis Street  
Salmon, Idaho 83467

Russ Holder  
U.S. Fish and Wildlife Service  
Snake River Basin Office, Room 368  
1387 South Vinnell Way  
Boise, Idaho 83709

Tom Curet, Acting Regional Supervisor  
Idaho Department of Fish and Game  
Salmon Region  
P.O. Box 1336  
Salmon, Idaho 83467

Yvette Tuell  
Shoshone-Bannock Tribes  
Fort Hall Indian Reservation  
Fisheries Department  
P.O. Box 306  
Fort Hall, Idaho 83203

Mike Lopez, Staff Attorney  
Nez Perce Tribe  
Office of Legal Counsel  
P.O. Box 365  
Lapwai, Idaho 83540

**Endangered Species Act Section 7(a)(2) Biological Opinion and “Not Likely to Adversely Affect” Determination, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation**

BLM Actions in the Canyon to Big Timber Watershed Assessment Area  
 1706020401 - Texas Creek; 1706020402 - Eighteenmile Creek; 1706020403 - Hawley Creek;  
 1706020404 - Upper Lemhi River; 1706020405 - Timber Creek, Lemhi County, Idaho

Action Agency: Bureau of Land Management

NMFS Tracking Numbers: 2011/05232

Affected Species and 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 ( <i>Oncorhynchus mykiss</i> )	Threatened	Species –Yes Critical Habitat - No	No	No
Snake River spring/summer Chinook ( <i>O. tshawytscha</i> )	Threatened	No	No	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	No	No

Consultation

Conducted By: National Marine Fisheries Service  
 Northwest Region

Issued by:

  
 for William W. Stelle, Jr.  
 Regional Administrator

Date: April 20, 2012

## TABLE OF CONTENTS

1. INTRODUCTION .....	1
1.1. Background .....	1
1.2. Consultation History .....	1
1.3. Proposed Action .....	5
1.3.1. Portions of the Proposed Action common to all allotments .....	6
1.3.1.1. Other Permit Terms and Conditions .....	7
1.3.1.2. Grazing Monitoring and Adaptive Management Strategy .....	7
1.3.1.3. Fence and Water Developments.....	9
1.3.2. Jakes Canyon Allotment .....	10
1.3.2.1. Vegetation Manipulation Projects.....	11
1.3.2.2. Crossing Permits .....	11
1.3.2.3. Interdependent/Interrelated Actions.....	12
1.3.3. Leadville Allotment .....	14
1.3.3.1. Crossing Permits .....	15
1.3.3.2. Range Improvement Projects - Rocky Canyon Fence Relocation.....	15
1.3.3.3. Interdependent/Interrelated Actions.....	15
1.3.4. Freestrip Allotment.....	17
1.3.4.1. Crossing Permits .....	18
1.3.4.2. Interdependent/Interrelated Actions.....	18
1.3.5. Center Ridge Allotment.....	20
1.3.5.1. Crossing Permits .....	21
1.3.5.2. Range Improvement Projects - Poison Spring Exclosure, Pipeline and Trough..	21
1.3.6. Chamberlain Creek Allotment.....	23
1.3.6.1. Range Improvement Projects .....	24
1.3.6.2. Crossing Permit.....	25
1.3.6.3. Interdependent/Interrelated Actions.....	25
1.3.7. Powderhorn Allotment.....	27
1.3.7.1. Crossing Permits .....	28
1.3.7.2. Range Improvement Projects .....	28
1.3.7.3. Interdependent/Interrelated Actions.....	29
1.3.8. Hawley Creek Allotment.....	31
1.3.8.1. Crossing Permits .....	32
1.3.8.2. Interdependent/Interrelated Actions.....	33
1.3.9. Tex Creek Allotment .....	35
1.3.9.1. Range Improvement Projects -Tex Creek Ponds Exclosure .....	36
1.3.9.2. Crossing Permits .....	36
1.3.9.3. Interdependent/Interrelated Actions.....	36
1.3.10. Leadore Hill Allotment.....	38
1.3.10.1. Crossing Permits .....	38
1.3.10.2. Interdependent/Interrelated Actions.....	39
1.3.11. Timber Creek Allotment.....	41
1.3.11.1. Vegetation Manipulation Projects.....	42
1.3.11.2. Crossing Permits .....	43
1.3.11.3. Interdependent/Interrelated Actions.....	43

1.3.12. Nez Perce Allotment.....	45
1.3.12.1. Crossing Permits.....	46
1.3.12.2. Interdependent/Interrelated Actions.....	46
1.4. Action Area.....	48
2. ENDANGERED SPECIES ACT.....	49
2.1. Biological Opinion.....	49
2.2. Rangewide Status of the Species and Critical Habitat.....	51
2.2.1. Status of the Species.....	51
2.2.1.1. Status of Snake River Basin Steelhead.....	51
2.3. Environmental Baseline.....	54
2.4. Effects of the Action on the Species and its Designated Critical Habitat.....	61
2.4.1. Jakes Canyon Allotment.....	61
2.4.2. Leadville Allotment.....	65
2.4.3. Effects to Critical Habitat.....	67
2.5. Cumulative Effects.....	67
2.6. Integration and Synthesis.....	67
2.7. Conclusion.....	69
2.8. Incidental Take Statement.....	69
2.8.1. Amount or Extent of Take.....	70
2.8.2. Reasonable and Prudent Measures and Terms and Conditions.....	70
2.8.2.1. Terms and Conditions.....	71
2.9. Conservation Recommendations.....	74
2.10. Reinitiation of Consultation.....	75
2.11. “Not Likely to Adversely Affect” Determinations.....	75
2.11.1. Effects to Individuals.....	75
2.11.2. Effects to Critical Habitat.....	76
2.11.2.1. Common Effects to Critical Habitat from All Actions.....	76
2.11.2.2. Jakes Canyon Allotment.....	81
2.11.2.3. Leadville Allotment.....	83
2.11.2.4. Freestrip Allotment.....	85
2.11.2.5. Center Ridge Allotment.....	86
2.11.2.6. Chamberlain Creek Allotment.....	88
2.11.2.7. Powderhorn Allotment.....	91
2.11.2.8. Hawley Creek Allotment.....	93
2.11.2.9. Tex Creek Allotment.....	94
2.11.2.10. Leadore Hill Allotment.....	96
2.11.2.11. Timber Creek Allotment.....	98
2.11.2.12. Nez Perce Allotment.....	101
2.11.3. Not Likely to Adversely Affect Conclusions.....	102
3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT ...	103
3.1. Supplemental Consultation.....	103
4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW .	103
4.1. Utility.....	103
4.2. Integrity.....	104
4.3. Objectivity.....	104
5. LITERATURE CITED.....	105

## TABLES

Table 1. Action Agency Effects Determination and Running Totals for Authorized Take on Federal Lands Grazing Allotments in the Lemhi River Basin.....	4
Table 2. Current Non-Grazing Consultations with Likely to Adversely Affect Determinations in the Lemhi River Basin (as of December 2011). Take is either ongoing or has not yet occurred.....	5
Table 3. Jakes Canyon Allotment Permit (2012-2022). .....	10
Table 4. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Jakes Canyon Allotment. ....	11
Table 5. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Leadville Allotment. ....	15
Table 6. Freestrip Allotment Grazing Permit 2012-2022. ....	17
Table 7. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Freestrip Allotment. ....	18
Table 8. Center Ridge Allotment Grazing Permit 2012-2022. ....	20
Table 9. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Center Ridge Allotment. ....	20
Table 10. Chamberlain Creek Allotment Grazing Permit (2012-2022). ....	23
Table 11. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Chamberlain Creek Allotment. ....	24
Table 12. Powderhorn Allotment Grazing Permits 2012-2022 .....	27
Table 13. DMAs, monitoring objectives, and proposed annual use indicators, for the Powderhorn Allotment.....	28
Table 14. Hawley Creek Allotment Grazing Permits 2012-2022.....	31
Table 15. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Hawley Creek Allotment. ....	32
Table 16. Tex Creek Allotment Grazing Permits 2012-2022.....	35
Table 17. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Tex Creek Allotment.....	36
Table 18. Leadore Hill Allotment Grazing Permit 2012-2022.....	38
Table 19. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Leadore Hill Allotment. ....	39
Table 20. Timber Creek Allotment Grazing Permits 2012-2022 .....	41
Table 21. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Timber Creek Allotment. ....	42
Table 22. Nez Perce Allotment Grazing Permits 2012-2022 .....	45
Table 23. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Nez Perce Allotment. ....	46
Table 24. Federal Register notices for final rules that list threatened and endangered species, designate critical habitats, or apply protective regulations to listed species considered in this consultation. ....	49
Table 25. Current condition of the six grazing focus indicators for all Allotments/DMAs in the CBT Area. ....	57

## FIGURES

Figure 1. Jakes Canyon Allotment Map (adopted from the BA).....	13
Figure 2. Leadville Allotment Map (adopted from the BA).....	16
Figure 3. Freestrip Allotment Map (adopted from BA).....	19
Figure 4. Center Ridge Allotment Map (adopted from the BA).....	22
Figure 5. Chamberlain Creek Allotment Map (adopted from BA).....	26
Figure 6. Powderhorn Allotment map (adopted from BA).....	30
Figure 7. Hawley Creek Allotment Map (adopted from BA).....	34
Figure 8. Tex Creek Allotment Map (adopted from BA). ....	37
Figure 9. Leadore Hill Allotment Map (adopted from BA).....	40
Figure 10. Timber Creek Allotment Map (adopted from BA).....	44
Figure 11. Nez Perce Allotment Map (adopted from BA).....	47

## ACRONYMS

AUMs	Animal Unit Months
BA	Biological Assessment
BLM	Bureau of Land Management
CBT	Canyon Creek to Big Timber Creek Watershed
cfs	Cubic feet per second
DBH	Diameter at Breast Height
DMA <sub>s</sub>	Designated Monitoring Areas
DPS	Distinct Population Segment
DQA	Data Quality Act
EFH	Essential Fish Habitat
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
ICBTRT	Interior Columbia Basin Technical Recovery Team
IDEQ	Idaho Department of Environmental Quality's
IDFG	Idaho Department of Fish and Game
IP	Interagency Protocol
ISAB	Independent Scientific Advisory Board
ITS	Incidental Take Statement
LGD	Lower Granite Dam
MIM	Multiple Indicator Monitoring
MPG	Major Population Group
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NMFS	National Marine Fisheries Service
Opinion	Biological Opinion
PCE	Primary Constituent Elements
PFC	Proper Functioning Condition
PIBO	PACFISH/INFISH Biological Opinion
PIT	Passive Integrated Transponder
PNC	Potential Natural Community
RHCA	Riparian Habitat Conservation Area
RMO <sub>s</sub>	Riparian Management Objectives
RPA	Reasonable and Prudent Alternative
RPM <sub>s</sub>	Reasonable and Prudent Measures
SCNF	Salmon-Challis National Forest
USFWS	U.S. Fish and Wildlife Service
VSP	Viable Salmonid Population
WSA	Wilderness Study Area

## 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 biological opinion (Opinion) was prepared by the National Marine Fisheries Service (NMFS) in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531, *et seq.*), and implementing regulations at 50 CFR 402.

NMFS 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. The Opinion and EFH conservation recommendations are both in compliance with section 515 of the Treasury and General Government Appropriations Act of 2001 (Public Law 106-5444) (“Data Quality Act”) and underwent pre-dissemination review.

### 1.2. Consultation History

Bureau of Land Management (BLM) regulations (43 CFR subpart 4180) require BLM to demonstrate rangeland conditions are meeting or trending toward the eight Idaho Standards for Rangeland Health (USDI 1997) prior to reissuing grazing permits. The BLM typically assesses these standards by completing a watershed-scale assessment. In this case, the BLM defined the assessment area as the Canyon Creek to Big Timber Creek Watershed (CBT) Area, a portion of the Lemhi River section 7 Watershed. The CBT Area contains 16 BLM managed livestock allotments. NMFS reviewed a copy of the BLM’s completed CBT Watershed Assessment Report in November 2010 (BLM 2010). In addition to evaluating rangeland conditions, the assessment contained resource specialists’ recommended actions to address resource issues identified during the assessment.

During 2011, NMFS reviewed three draft biological assessments (BAs) which evaluated the proposed grazing permit renewals and other rangeland improvement projects identified in the CBT watershed assessment. The final BA (BLM 2011) was developed according to the September 30, 2009, *Interagency Protocol for Endangered Species Act Section 7 Consultation for Livestock Grazing in the Salmon and Challis Field Offices* (IP). During 2011, the Salmon-Challis Level 1 Team (Level 1 Team) discussed the draft BAs at the January 26, February 23, May 25, and August 24 meetings. The BLM’s final BA adopted a monitoring program jointly developed by Level 1 and 2 staff after the issue was informally elevated to state level managers of the BLM, U.S. Fish and Wildlife Service (USFWS), and NMFS. The adopted monitoring program was determined to be consistent with the IP and is considered a principal component of the proposed action. The monitoring proposal now ensures in-season and end-of-season grazing use indicators and reasonable adaptive management processes are applied on the subject Allotments. The Level 1 Team provided “preliminary agreement” with

the BLM effects determinations on August 24, 2011. Preliminary agreement included the stipulation that suggested edits from NMFS and the USFWS be adequately incorporated into the final BA.

On September 19, 2011, NMFS received a final BA, dated September 16, 2011, and consultation was initiated at that time. NMFS shared a draft Opinion with BLM staff on December 19, 2011. The BLM provided NMFS comments on the draft Opinion's terms and conditions during a face-to-face meeting in Salmon, Idaho. Following this meeting, NMFS staff edited the draft Opinion's term and conditions to read more clearly. On February 16, 2012, the BLM amended the CBT proposed action by submitting a letter with an allotment by allotment attachment. The amendments reflect the following: (1) Internal changes in how grazing permits present the numbers of animals and date ranges grazing is authorized; (2) changes to permit terms and conditions; (3) reductions in livestock numbers on some allotments; and (4) elimination of the Eighteenmile Creek habitat improvement project. The BLM's amendment also indicated that the Jakes Canyon Allotment permit has already been modified to allow successful adoption of NMFS' draft ESA terms and conditions. The following Opinion describes all the permits as amended, and the effects sections now discuss how the adoption of the draft ESA terms and conditions reduces the effect of take that would have occurred under the original proposed action.

The September 16, 2011, BA assessed the proposed reissuance of 22 separate grazing permits on 11 individual allotments. Each permit has a 10-year term. The BA also considered: (1) Construction of two water developments, three enclosures, and a new fence; (2) four fence relocations; (3) two native plant seedings; (4) removal of conifer encroachment from big sagebrush and aspen communities; and (5) thinning of conifers near a wildland-urban interface. The BA provided an individual effect determination for all actions occurring in each allotment boundary. For efficiency, and because the BLM is completing one National Environmental Policy Act (NEPA) decision, NMFS is issuing one response document for the entire CBT Analysis Area. In their assessment, the BLM determined that two grazing allotments (Jakes Canyon and Leadville) would be "likely to adversely affect" steelhead due to redd trampling risk. Section 2.1 through 2.10 of this Opinion will primarily focus on the potential effects to steelhead on these two Allotments. However, the environmental baseline (Section 2.3) discusses baseline conditions across the CBT area to better inform the reader of current anadromous fish distribution and limiting factors across the action area.

NMFS concurs with the BLM's determination that all the other allotments and associated actions would be "not likely to adversely affect" Snake River spring/summer Chinook salmon, Snake River Basin steelhead, and their designated critical habitats. Rationale for NMFS concurrence is presented in Section 2.11. This Opinion is based on information provided in the September 16, 2011, BA and other sources of information. A complete record of this consultation is on file at the Idaho State Habitat Office in Boise, Idaho.

The September 16, 2011, BA determined five proposed grazing permits, for five separate allotments, would have "No Effect" on ESA-listed resources. The allotments receiving "no effect" determinations were Bull Creek, Dump, Purcell Creek, Spring Canyon, and Leadore. The

regulations implementing section 7 of the ESA do not require NMFS to review or concur with “no effect” determinations; therefore, NMFS will not discuss these allotments further in this Opinion.

At present, NMFS is aware of 39 Federal allotments in the Lemhi River basin; 17 administered by the Salmon-Challis National Forest (SCNF) and 22 administered by the BLM. Independent section 7 consultation is currently underway or already completed for each of these allotments. Because all of these allotments occur within one section 7 watershed and incidental take from each allotment will affect the same populations of ESA-listed Chinook salmon and steelhead, NMFS will consider the total take authorized for the SCNF and BLM Federal lands grazing programs in our jeopardy determination for this consultation. Table 1 provides the current consultation status of all “may affect” Federal allotments in the basin. NMFS will update this table with each subsequent consultation in an effort to understand the total amount of take for each Lemhi River population resulting from Federal lands grazing. As future consultations are completed, if the total take associated with Lemhi basin allotments results in a jeopardy determination, consultation on all allotments within the subbasin will need to be reinitiated.

**Table 1. Action Agency Effects Determination and Running Totals for Authorized Take on Federal Lands Grazing Allotments in the Lemhi River Basin<sup>2</sup>.**

Allotment	NMFS Tracking #	Action Agency Species Effect Determination		Action Agency Critical Habitat Determination		Annual Amount of Take Authorized <sup>a</sup>	
		Chinook	Steelhead	Chinook	Steelhead	Chinook	Steelhead
<b>Salmon-Challis National Forest</b>							
Grizzly Hill	2010/05813	NLAA	NLAA	NLAA	NE	0	0
Hawley Creek	2010/01662	NE	NE	NLAA <sup>b</sup>	NE	0	0
Swan Basin	2010/01701	NLAA	NLAA	NLAA	NLAA	0	0
Timber Creek	2011/01267	NE	NE	NLAA	NE	0	0
Upper Hayden	2010/00852	LAA	LAA	NLAA	NLAA	0 - 2	0 - 2 <sup>d</sup>
Cove Creek	2010/03063	NLAA	NE	NLAA	NE	0	0
<b>SCNF Take Subtotals:</b>						<b>0 - 2</b>	<b>0 - 2</b>
<b>Bureau of Land Management</b>							
Center Ridge <sup>c</sup>	2011/05232	NLAA	NLAA	NLAA	NLAA		
Chamberlain <sup>c</sup> Creek	2011/05232	NLAA	NLAA	NLAA	NLAA		
Freestrip <sup>c</sup>	2011/05232	NLAA	NLAA	NLAA	NLAA		
Grouse Creek	2011/01270	NLAA	NLAA	NLAA <sup>b</sup>	NLAA	0	0
Hawley Creek <sup>c</sup>	2011/05232	NLAA	NLAA	NLAA	NLAA		
Leadore Hill <sup>c</sup>	2011/05232	NLAA	NLAA	NLAA	NLAA		
Leadville <sup>c</sup>	2011/05232	NLAA	LAA	NLAA	NLAA		0-1
Muleshoe	2011/01269	NLAA	NLAA	NLAA <sup>b</sup>	NLAA	0	0
Roostercomb	2011/01271	NLAA	NLAA	NLAA	NLAA	0	0
Ryegrass	2011/01273	NLAA	NLAA	NLAA	NLAA	0	0
South Hayden/ Little Sawmill	SRB99-036	NLAA	NLAA	NLAA			
Timber Creek <sup>c</sup>	2011/05232	NLAA	NLAA	NLAA	NLAA		
Jake's Canyon <sup>c</sup>	2011/05232	NLAA	LAA	NLAA	NLAA		0-1
Powderhorn <sup>c</sup>	2011/05232	NLAA	NLAA	NLAA	NLAA		
Nez Perce <sup>c</sup>	2011/05232	NLAA	NLAA	NLAA	NLAA		
Tex Creek <sup>c</sup>	2011/05232	NLAA	NLAA	NLAA	NLAA		
Geertson Creek	2011/00765	NE	NE	NLAA	NE	0	0
<b>BLM Take Subtotals:</b>						<b>0</b>	<b>0-2</b>
<b>Lemhi Basin Totals:</b>						<b>0 - 2</b>	<b>0 - 4</b>

<sup>a</sup> Please see individual consultation for detailed discussion regarding the allotment-specific take calculations.

<sup>b</sup> NMFS did not concur with this determination and issued a biological opinion for this Allotment.

<sup>c</sup> Allotment is the subject of this consultation.

<sup>d</sup> Although up to two fewer adults were estimated be lost from the population every other year, the Opinion applied an extent of take, based on annual bank alteration levels.

Key: LAA – Likely to Adversely Affect; NLAA – Not Likely to Adversely Affect; NE – No Effect.

NMFS also reviewed the consultation record for take of steelhead and Chinook salmon in the Lemhi River basin in years 2012 and beyond (Table 2). NMFS is not aware of any additional “likely to adversely affect” actions scheduled for completion in 2011 or 2012. Table 2 identifies

<sup>2</sup> NMFS has not included allotments for which we are aware of a “No Effect” determination being made by the action agency (5 BLM and 11 SCNF allotments).

ongoing or programmatic actions that may occur in the Lemhi River subbasin. Although some take will occur wherever projects are completed under these consultations, it is not possible for NMFS to know how frequently or if any projects will be completed under these consultations in the Lemhi River subbasin at this time. Therefore, the estimated take of up to two adult Snake River spring/summer Chinook and/or two Snake River Basin steelhead is the only authorized take of adult fish for projects in the Lemhi River subbasin at this time.

**Table 2. Current Non-Grazing Consultations with Likely to Adversely Affect Determinations in the Lemhi River Basin (as of December 2011). Take is either ongoing or has not yet occurred.**

Project	Action Agency	NMFS Tracking #	Take Authorized	
			Chinook	Steelhead
SCNF Wilderness & Non-wilderness Weed Treatment	SCNF	2004/00499 2009/03999	Extent of Take Only	Extent of Take Only
BLM Travel Plan for the Salmon Field Office (North Half)	BLM Salmon Field Office	2011/ 00211	Extent of Take Only	Extent of Take Only

### 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. 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. NMFS has described any interrelated or interdependent actions associated each allotment in the section describing the proposed action for that allotment.

The proposed actions are: (1) BLM authorization of 17 individual 10-year term grazing permits on 11 allotments; (2) construction of two water developments (pipeline and trough systems), three exclosures, and a new fence; (3) aeration site preparation and native plant seeding of two rangeland areas; (4) removal of conifers from mountain big sagebrush communities; and (5) thinning of conifers near a wildland-urban interface. Section 1.3.1 presents components that are common to all action categories for efficiency. Individual actions are organized according to allotment boundaries. Specific details for each action are presented in detail below (Sections 1.3.2 through 1.3.12), in the following format:

- Grazing Allotment
  - The grazing permit(s) that would be authorized for the next ten years, including mandatory “Other Terms and Conditions” (see format below).
  - Proposed Riparian Management Objectives (RMOs), Designated Monitoring Areas (DMAs), annual indicators, and 2011 actual use (where available).

- Additional actions proposed within the allotment boundary (e.g., water developments, fence projects, vegetation treatments, etc.).
- Map of the allotment displaying pasture boundaries, monitoring sites, streams, and range improvements.

1.3.1. Portions of the Proposed Action common to all allotments

All permits will be displayed using the following format, which includes the mandatory permit Terms and Conditions described in 43 CFR 4130.3.

Permit	Maximum Number/Kind	Maximum Grazing Period	% Public Land	Maximum Active Preference (AUMs)	Suspended AUMs	Total Preference
--------	---------------------	------------------------	---------------	----------------------------------	----------------	------------------

- **Permit:** Letters will be used to show individual permits on the allotment. Each letter represents a different permit.
- **Maximum Number/Kind:** The maximum number and kind of livestock allowed on the allotment. ‘Cattle’ refers to a bull or a cow and her calf (as long as the calf is under the age of 6 months at the time of entering public land).
- **Maximum Grazing Period:** The total time period that cattle can be on the allotment. Other Terms and Conditions on the permit may decrease the grazing period but will not increase it.
- **% Public Land:** The percentage of public land use [is] determined by the proportion of livestock forage available on public lands within the allotment, compared to the total amount available from both public lands and those owned or controlled by the permittee or lessee (CFR 4130.3-2). This number will decrease as Maximum Active Preference decreases if there are non-BLM managed lands within the allotment.
- **Maximum Active Preference:** The number of animal unit months (AUMs) that the permittee can use on the allotment. This number cannot be exceeded and Active Use will remain at or below this number.
- **Suspended AUMs:** AUMs that have been suspended from the permit and can no longer be used without a BLM decision that makes them Active.
- **Total Preference:** The total of the Maximum Active Preference and Suspended AUMs on the Permit.

- Applicant Status: Permittees that have requested to have applicant status are part of the permit renewal process involving ESA consultation are identified in each allotment section below.

#### *1.3.1.1. Other Permit Terms and Conditions*

In addition to mandatory permit Terms and Conditions presented under each allotment section, the following “Other Terms and Conditions” will be added to all grazing permits:

- As provided in Title 43 of the Code of Federal Regulations (43 CFR) 4130.3-2(d), permittees are hereby required to submit a certified actual grazing use report within 15 days after completion of annual grazing use. Failure to comply could result in penalties as described at 43 CFR 4170.1-1(a).
- Exclosures in the allotment cannot be grazed by livestock at any time.
- All range improvements will be maintained prior to turn-out, and all water developments and associated pipelines will be drained and winterized.
- Supplemental feeding is authorized and is limited to salt, mineral, and/or energy/protein in block, granular, or liquid form. If used, these supplements must be placed at least 1/4 mile away from any stream and 500 feet away from any spring.

#### *1.3.1.2. Grazing Monitoring and Adaptive Management Strategy*

The following bullets summarize the grazing monitoring and adaptive management strategy proposed in the final BA. This strategy is considered to be an integral part of the proposed actions being evaluated in this Opinion.

- A DMA will be established for each pasture where grazing “may affect” ESA-listed fish or critical habitat.
- The RMOs will be established for DMAs on a stream in each pasture where grazing “may affect” ESA-listed fish/critical habitat.
- In-season grazing use indicators (e.g., residual stubble height, woody browse, and/or streambank alteration, as appropriate) and end-of-season grazing use indicators will be established for all DMAs on streams where grazing “may affect” listed fish/critical habitat. Grazing use indicators will be developed in accordance with the Multiple Indicator Monitoring (MIM) protocol (Burton et al. 2010).
- Implementation monitoring will be conducted at least once during grazing and at the end of season on all DMAs on streams where grazing “may affect” ESA-listed fish/critical habitat.

- In-season grazing use indicators are intended to move livestock before habitat conditions become degraded (i.e., limiting effects to insignificant/discountable levels).
- In-season use indicators will be used by the BLM/permittees as a tool to help ensure end-of-season use indicators are met. End-of-season use indicators are intended to ensure that grazing does not prevent the attainment of the RMOs.
- If in-season grazing use indicator values are reached or exceeded during the season, livestock grazing will be evaluated and adjusted as necessary to help ensure end-of-season use indicators are met. Adjustments may be in the form of movement to another pasture, movement to another area of the pasture well away from the stream, use of riders or temporary electric fences to prevent livestock access to the stream, or other measures developed on a site-specific basis. Evaluation of the need to move based on hydric herbaceous vegetation stubble height will consider season of use and species present. If indicators are not met at the end of the season the BLM will first determine why the end-of-season use indicators were not met. Then, BLM will apply adaptive management as necessary, in coordination with the Level 1 Team where ESA-listed fish/critical habitat are potentially affected. If grazing use indicators are not met or effectiveness monitoring shows a negative change in condition, BLM will meet with the permittee to discuss the monitoring results and determine appropriate changes to livestock grazing management.
- A one-time exceedance of an annual use indicator does not automatically mean that adverse effects have occurred. If an exceedance occurs, the BLM will first determine why the indicator was not met, and secondly determine if any effects not previously considered occurred as a result of the exceedance. If such exceedances occur, the BLM will evaluate the need to modify either the resource objectives or the allotment administration through the identified adaptive management process. Allotment modifications would be designed to result in maintenance or achievement of appropriate RMOs. Should exceedances result in effects not considered in this consultation, the BLM will pursue reinitiation of consultation.
- PACFISH/INFISH Biological Opinion (PIBO) implementation and effectiveness monitoring will be conducted in accordance with regional direction provided by the Deputy Team. In accordance with current direction, effectiveness monitoring will be done every 5 years on DMAs meeting RMOs. In addition, the BLM proposes to conduct effectiveness monitoring every 3 years on DMAs not meeting RMOs.
- Annually, results will be presented by the BLM to the Level 1 Team where the allotments have not met established grazing use indicators or RMOs to determine why the indicators were not met, and if changes to either the grazing prescription, the management indicators, or RMOs need to be made. If the BLM is unable to complete the required monitoring due to other workloads or budgetary issues, the BLM will inform NMFS and/or the USFWS of what sites were not evaluated and why. The BLM

will transmit a copy of the monitoring summary to NMFS and the USFWS following the annual meeting and request a written response documenting that the BLM has met their requirements.

### *1.3.1.3. Fence and Water Developments*

The following project descriptions are common to all proposed fence construction, fence relocations, and water developments proposed by the BLM.

- Equipment use – Equipment will be allowed to leave existing routes to complete the project work, except within the 18-Mile Wilderness Study Area (WSA). No new routes will be designated for access after the project is constructed, although permittees could apply for a conditional permit to leave designated routes in order to perform routine project maintenance using a motorized vehicle. Brush mowing, using a brush hog or similar equipment, will be allowed along proposed fence lines to help with fence construction; the disturbance width will be no more than eight feet. Blading with equipment will not occur.
- Barbed wire fence – All newly constructed barbed wire fences will be 3-strand wire fences with metal T-posts spaced roughly 16 feet apart, with wood posts for braces, corners, and gates. The wire placement and types of wire used will follow the stipulations for barbed wire fencing from the Lemhi Resource Management Plan (Lemhi RMP) to allow wildlife passage and migration through the area. The bottom wire will be smooth wire placed 18 inches above ground. The middle and top wires will be barbed wire, placed 26- and 38-inches above the ground, respectively. Wood or wire stays will be used between T-posts and on the barbed wire gates to provide stability and visibility. Most posts will be driven into the ground by hand or by using a power take-off tractor or similar equipment. New fence will be flagged to ensure the fence wire is visible to wildlife for a period of up to 2 years. If an additional wire is needed for the fence to prevent livestock from crossing a barbed wire, it would be added, but the top and bottom wire will remain at the heights described above.
- Wood fence – All newly constructed wood fences will use approximately 20-foot long rails with jack or wood post supports every 10 feet. Three poles will be placed on the front of the fence, and if jacks are used, an additional pole will be placed on the back for support. No wire will be added to newly constructed jack and pole fence, except to tie into adjacent fences.
- Water Development – All new pipelines will involve installing flexible polyethylene pipeline, water troughs, and water collectors/headboxes. All excavation will be conducted using a crawler-tractor equipped with a ripper shank, and would be confined to the pipeline route, water source, and trough locations. At each water trough location, troughs holding up to 2,000 gallons will be installed. All troughs will be equipped with a float valve and small animal escape ramps.

- Reclamation – Areas of project-related soil disturbance will be broadcast seeded with a native seed mix.

These project design features and the other conservation measures previously described in Section 1.3.1 and in the consultation initiation package as parts of the proposed action are intended to reduce or avoid adverse effects on listed species and their habitats. NMFS regards these conservation measures as integral components of the proposed action and expects that all proposed project activities will be completed consistent with those measures. We have completed our effects analysis accordingly. Any deviation from these conservation measures will be beyond the scope of this consultation. Further consultation will be required to determine what effect the modified action may have on listed species or designated critical habitats.

### 1.3.2. Jakes Canyon Allotment

The BLM proposes to issue one permit authorizing grazing for a 10 year term. The permittee will be authorized to annually graze up to 40 cow/calf pairs on two pastures (Figure 1 and Table 3). Approximately 550 acres of BLM land occurs in the two pastures with about 30 acres of SCNF lands fenced in the Allotment. Most of the Jakes Canyon Allotment is upland habitat in the North Pasture. The South, or Riparian Pasture, is a small area containing approximately one-quarter mile of Canyon Creek. Canyon Creek is occupied by Snake River Basin steelhead, Snake River spring/summer Chinook salmon, and designated critical habitat for both species.

**Table 3. Jakes Canyon Allotment Permit (2012-2022).**

Permit	Maximum Number/Kind	Maximum Grazing Period	% Public Land	Maximum Active Preference (AUMs)	Suspended AUMs	Total Preference
A	40 Cattle	5/20-7/15	100% <sup>3</sup>	31	31	62

### **Other Terms and Conditions.**

- Livestock grazing of the South Pasture will be limited to a total of 9 AUMs and will not occur after July 1.
- If an adult steelhead or steelhead redd is found in the Allotment, livestock will not be allowed in the South Pasture after May 31 for that year.<sup>4</sup>
- In 2 out of 3 years, grazing of the North Pasture will not occur before July 1.

<sup>3</sup> % of public land calculation only accounts for land base within the Allotment boundary for which the permittee has demonstrated a controlling interest. In this case, the permittee has no controlling interest in the 30 acres of SCNF lands co-fenced in the Allotment and the AUMs available on those lands are not acknowledged by the BLM's permit.

<sup>4</sup> This permit term and condition was added in response to NMFS' December 19, 2011, draft Opinion's term and condition. Frequency and timing of surveys are outlined in this Opinion's terms and conditions (section 2.8.2.1).

After seeding, the Allotment will not be grazed until bluebunch wheatgrass is established. Bluebunch wheatgrass will be considered established when the plants are well-rooted (not easily pulled out of the ground by hand) and/or are producing reproductive stems. The seeding may require two or more growing seasons for establishment.

**Riparian Management Objectives and Monitoring.** The BLM established a DMA on the short segment of Canyon Creek in the Allotment in 2011. There is a photo-series and associated proper functioning condition (PFC) assessment for this stream reach from 2009. While cattle are in the pasture, regular use supervision ensures compliance with the permitted season of use. Annual use indicators (Table 4) will be used to limit the extent of bank stability impacts from grazing.

**Table 4. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Jakes Canyon Allotment.**

Stream	Pasture	DMA	RMO	Grazing Use Indicator	
				In-Season	End-of-season
Canyon	Riparian	CN-02	90% bank stability	<15% bank alteration	<15% bank alteration
			Late seral greenline successional status	4" key hydric species Greenline stubble	6" key hydric species Greenline stubble

Stream	Pasture	DMA	2011 Grazing Use Indicator Monitoring Results		
			Mid-Use-Season	Post-Grazing	End-of-season
Canyon	Riparian	CN-02	6.5"	7.6"	14.3"
			10% bank alteration	11% bank alteration	8%

#### *1.3.2.1. Vegetation Manipulation Projects*

Mechanical vegetation treatment will be applied on up to 225 upland acres outside of the riparian habitat conservation area (RHCA). Treatment will involve a single-drum pasture aerator pulled by a rubber-tired tractor or track-mounted dozer. Aeration is designed to break up the soil surface to improve infiltration while also breaking down the older shrub overstory, yet leaving some native plants to recolonize the treated area. After aeration, a mix of native forbs will be seeded with bluebunch wheatgrass. The entire Allotment, both treated and untreated acres, will be rested from livestock grazing for 2 years following seeding.

#### *1.3.2.2. Crossing Permits*

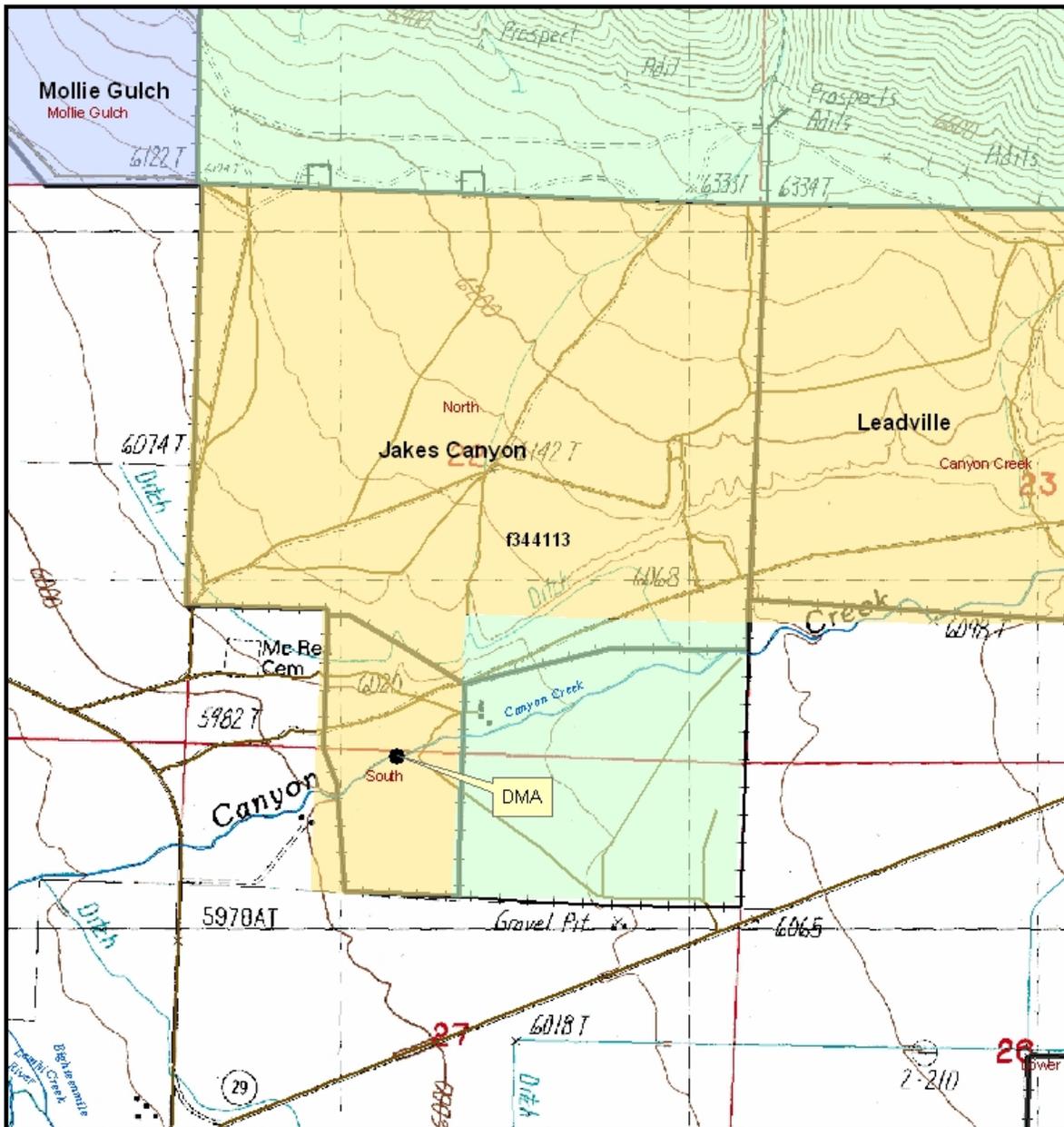
No crossing permits are proposed for this Allotment.

### *1.3.2.3. Interdependent/Interrelated Actions*

Interdependent actions are actions that have “no independent utility apart from the action under consideration” (50 CFR§402.02). Interrelated actions are actions that “are part of a larger action and depend on the larger action for their justification” (50 CFR§402.02). Existing Allotment fences result in approximately 30 acres of SCNF land being fenced in with the BLM lands. Livestock turned out on the BLM lands can easily access SCNF lands since no fences delineate the boundary. In addition, the SCNF is unlikely to turn livestock out in such a small parcel. Thus, grazing on the SCNF’s 30 acres contained in the Allotment is interrelated to the proposed action because it would not likely occur without the proposed Federal action.

Figure 1. Jakes Canyon Allotment Map (adopted from the BA).

**Map - Canyon Creek, Jakes Canyon Allotment**



**Legend**

- |                  |       |                    |
|------------------|-------|--------------------|
| PRIVATE          | USFS  | GRAZING ALLOTMENTS |
| BLM              | STATE | GRAZING PASTURES   |
| <b>LINE_FEAT</b> |       |                    |
| + + FENCE        |       |                    |



### 1.3.3. Leadville Allotment

The BLM proposes to issue one permit authorizing grazing for a 10 year term. The permittee will be authorized to annually graze approximately up to 500 cow/calf pairs on three pastures (Figure 2 and Table 4). Approximately 6,500 acres of BLM land occur in the three pastures with about 900 acres of private and state lands fenced in the Allotment. Non-BLM lands are primarily upland habitat but do contain a 1 mile segment of lower Hawley Creek and a quarter mile segment of lower Eighteenmile Creek. The Lower Pasture was aerated and seeded in 2010 and will be rested for at least 2 years to help make significant progress towards Standard 4 (Native Plant Communities) from the Idaho Standards for Rangeland Health.

A 2.5 mile segment of Canyon Creek occurs in the Canyon Creek Pasture and a 1 mile segment of lower Hawley Creek occurs in the Upper Pasture. Canyon Creek is occupied by Snake River Basin steelhead and accessible but currently unoccupied by Snake River spring/summer Chinook salmon. Canyon Creek is designated critical habitat for both species. In the Allotment, Hawley Creek only flows for a short time in the spring. Summer irrigation withdrawals completely dewater Hawley Creek and the channel lacks any riparian vegetation. Although the channel bed is entirely comprised of sagebrush and other upland species, Hawley Creek was likely historically accessible to Snake River spring/summer Chinook salmon, making it designated critical habitat. Downstream irrigation structures on Hawley Creek are barriers to upstream fish migration, and prevent anadromous fish from passing through or occurring in the segment within the Allotment.

**Table 4. Leadville Allotment Permit (2012-2022).**

Permit	Maximum Number/Kind	Maximum Grazing Period	% Public Land	Maximum Active Preference (AUMs)	Suspended AUMs	Total Preference
A	500 Cattle	5/1-9/30	96%	528	398	926

#### Other Terms and Conditions.

- Livestock grazing will only occur in the Canyon Creek Pasture from May 1 to May 31, with a maximum of 115 AUMs.
- The Lower Pasture will not be grazed, except for trailing, until at least 2013 to allow establishment of the Leadville seeding.

**Riparian Management Objectives and Monitoring.** The BLM has one DMA established on Canyon Creek in the Allotment. There is also a photo-series and associated PFC assessment from 2009 and earlier photos, dating back to the early 1990's. The BLM will continue to monitor grazing implementation on the Allotment via annual use indicators (Table 5).

**Table 5. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Leadville Allotment.**

Stream	Pasture	DMA	RMO	Grazing Use Indicator			
				In-Season	End-of-season	2011 in-season	2011 End-of-season
Canyon	Riparian	CN-01	90% bank stability	<15% bank alteration	<15% bank alteration	12%	6%

*1.3.3.1. Crossing Permits*

Livestock crossing will be restricted to a maximum of 500 cattle at one time and cattle would not be left on the Allotment overnight. A maximum of 2,300 cattle would be allowed to cross the Allotment in a year. Cattle crossing the Allotment will only use the Lower Pasture. Cattle will only be authorized to cross the Allotment between May 15 and December 1.

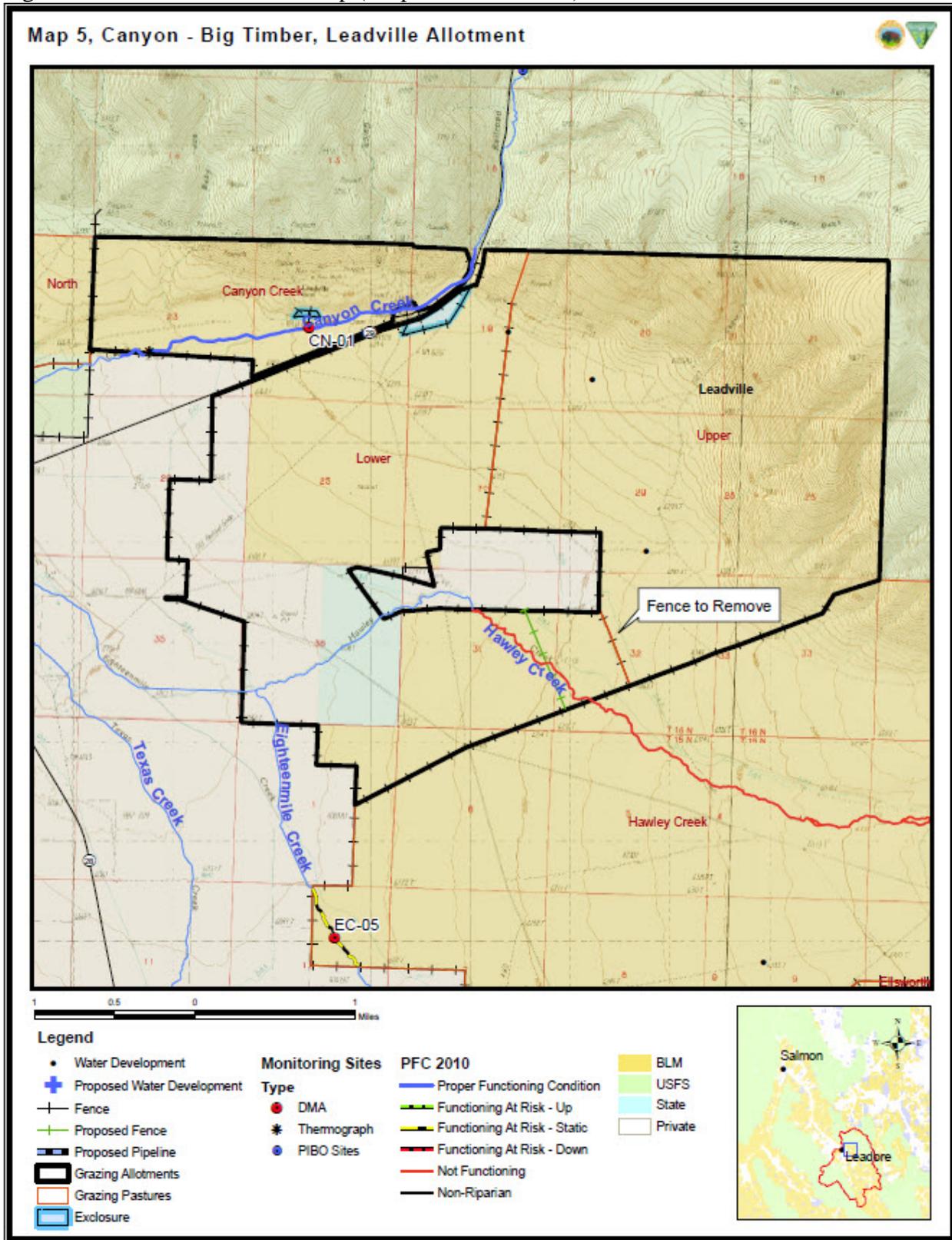
*1.3.3.2. Range Improvement Projects - Rocky Canyon Fence Relocation*

The Rocky Canyon Fence separates the Upper and Lower pastures. The southern portion of the Rocky Canyon Fence will be relocated approximately 0.5 miles to the west to allow cattle in the southern portion of the Upper Pasture access to water. The new fence will be approximately 0.75 miles in length, and will allow livestock to access Hawley Creek from both the Upper and Lower pastures. The existing pasture division fence (0.5 mi) will be removed.

*1.3.3.3. Interdependent/Interrelated Actions*

The Allotment contains about 900 acres of non-Federal land co-fenced with the BLM-managed land, all in the Lower Pasture. Federally authorized livestock can access this private land when they are on the Lower Pasture. Non-Federal lands in this pasture include a 1/2 mile segment of lower Hawley Creek and a 1/4 mile segment of Eighteenmile Creek. The lack of boundary fencing between properties makes it unlikely that livestock could graze the non-BLM lands without trespassing on Federal lands. Thus, grazing that occurs on the 900 acres of non-BLM lands in the Allotment boundary is interrelated to the proposed Federal action.

Figure 2. Leadville Allotment Map (adopted from the BA).



#### 1.3.4. Freestrip Allotment

The BLM proposes to issue one permit authorizing grazing for a 10 year term. The permittee will be authorized to annually graze up to 550 cow/calf pairs on four pastures (Figure 3 and Table 6) from June 1 through October 31. Approximately 3,700 acres of BLM land occur in the four pastures with about 1,400 acres of private and state lands fenced in the Allotment. The proposed action would adopt a Maximum Active Preference of 475 AUMs, which is currently enforced as a permit term and condition. Livestock use in the Freestrip and Bell Field Pastures, the majority of the Allotment and only pastures with riparian areas, will be limited to June 1 through July 15 to enhance riparian conditions. The Freestrip Pasture will be rested 1 of every 4 years.

Canyon Creek is the only perennial fish bearing stream on the Allotment. Downstream fish passage barriers prevent juvenile ESA-listed fish from accessing the Allotment and there is no known documentation of spring/summer Chinook salmon or steelhead spawning in the Allotment. This reach of Canyon Creek is not designated critical habitat for either species due to its small size and lack of intrinsic potential habitat (the closest is more than 3 miles downstream). Chippie and Whiskey Springs Creek are intermittent, non-fish bearing streams in the Allotment. Chippie Creek flows into an excavated pond on private lands within the Allotment boundary and does not influence habitat in Canyon Creek. Whiskey Springs Creek only reaches Canyon Creek during spring runoff events and a small impoundment associated with the historic railroad bed serves as small sediment retention basin.

**Table 6. Freestrip Allotment Grazing Permit 2012-2022.**

Permit	Maximum Number/Kind	Maximum Grazing Period	% Public Land	Maximum Active Use (AUMs)	Suspended AUMs	Total Preference
A	550 Cattle	6/1-10/31	79%	475	563	1,038

#### **Other Terms and Conditions.**

- The Freestrip Pasture will not be grazed more than 3 years out of four.
- Use in Freestrip and Bell Field pastures will only occur between June 1 and July 15.
- Livestock grazing in the Bell Field Pasture will not exceed 35 AUMs in a grazing period.

**Riparian Management Objectives and Monitoring.** The BLM has one DMA established on the Freestrip Pasture on Chippie Creek and the USFS/PIBO has established one on upper Canyon Creek, in the Bell Field Pasture (CN-03, Figure 3). There are multiple photo-series and associated PFC assessments in the Allotment. Both DMAs will be used to monitor in-season and end of season grazing use to meet or move toward the identified RMOs (Table 7).

**Table 7. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Freestrip Allotment.**

Stream	Pasture	DMA	RMO	Grazing Use Indicator			
				In-Season	End-of-season	2011 in-season	2011 end of season
Canyon	Bell Field	CN-03	90% bank stability	<15% bank alteration	<10% bank alteration	31%	9%
			Late seral greenline successional status	4" key hydric species Greenline stubble	6" key hydric species Greenline stubble	8.1"	19.7"
Chippie	Freestrip	CH-01	90% bank stability	<15% bank alteration	<10% bank alteration	71%	14%
			Late seral greenline successional status	4" key hydric species Greenline stubble	6" key hydric species Greenline stubble	4.9"	10"

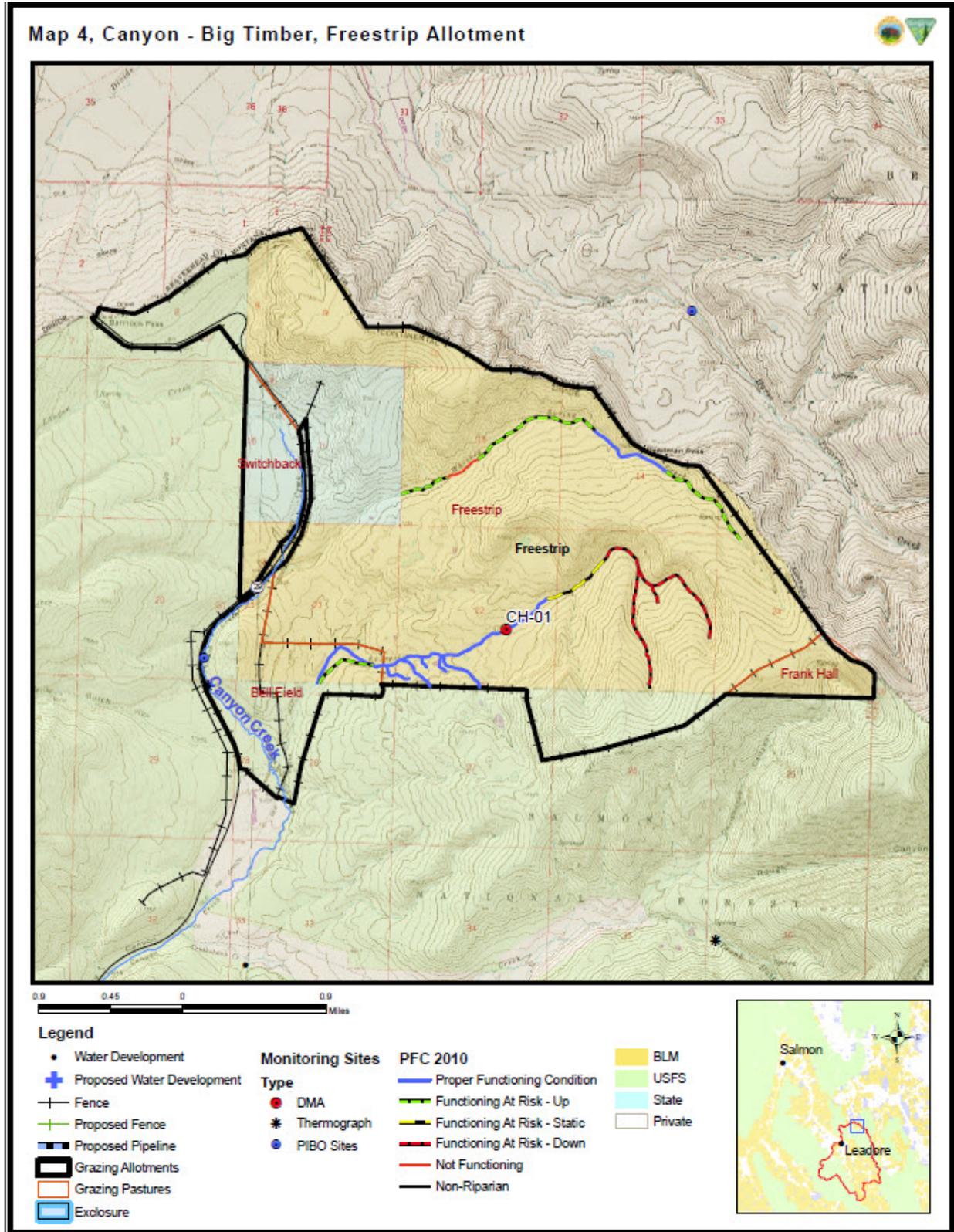
*1.3.4.1. Crossing Permits*

None authorized for this Allotment.

*1.3.4.2. Interdependent/Interrelated Actions*

The BLM's BA indicated that there are no known interrelated or interdependent actions associated with this Allotment. Although State lands are present in the Allotment boundary (Figure 3), the size of the parcel and existing road access suggest livestock could graze the State parcel independent of the Federal action. For this reason NMFS agrees with the BLM's determination.

Figure 3. Freestrip Allotment Map (adopted from BA).



### 1.3.5. Center Ridge Allotment

The BLM proposes to issue one permit authorizing grazing for a 10 year term. The permittee, who has applicant status, will be authorized to annually graze up to 500 cow/calf pairs on five pastures (Figure 4 and Table 8) between May 24 and November 1. Approximately 16,000 acres of BLM land occur in the five pastures with about 850 acres of private and state lands fenced in the Allotment.

The Allotment contains less than 1 mile of Eighteenmile Creek, which is currently in “Proper Functioning Condition.” To maintain riparian habitat in the Allotment, the A Pasture will not be grazed after July 15 and Poison Spring will be excluded from grazing to improve riparian habitat. Eighteenmile Creek is unoccupied designated critical habitat for spring/summer Chinook salmon.

**Table 8. Center Ridge Allotment Grazing Permit 2012-2022.**

Permit	Maximum Number/Kind	Maximum Grazing Period	% Public Land	Maximum Active Preference (AUMs)	Suspended AUMs	Total Preference
A	Sheep	NA	NA	0	166	166
B <sup>1</sup>	407 Cattle	5/24-11/1	98%	1,947	1,584	3,531

<sup>1</sup> Permittee has Applicant Status

#### Other Terms and Conditions.

- Livestock grazing of the B Pasture will not occur after July 15.

**Riparian Management Objectives and Monitoring.** There is one monitoring DMA on the Allotment, located on Eighteenmile Creek, in the A Pasture (Figure 4). Livestock use this pasture early in the season and are off by July 15. The DMA and associated MIM data were established in 2010 and provide the first quantitative data set for the segment to document long term trend. Annual use indicators will include bank alteration and stubble height (Table 9).

**Table 9. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Center Ridge Allotment.**

Stream	Pasture	DMA	RMO	Grazing Use Indicator			
				In-Season	End-of-season	2011 In-season	2011 End-of-season
18mile	A	EC-06	90% bank stability	<20% bank alteration	<10% bank alteration	12%	13%
			Late seral greenline successional status	4” key hydric species Greenline stubble	6” key hydric species Greenline stubble	9”	6”

#### *1.3.5.1. Crossing Permits*

No crossing permits are proposed for this Allotment.

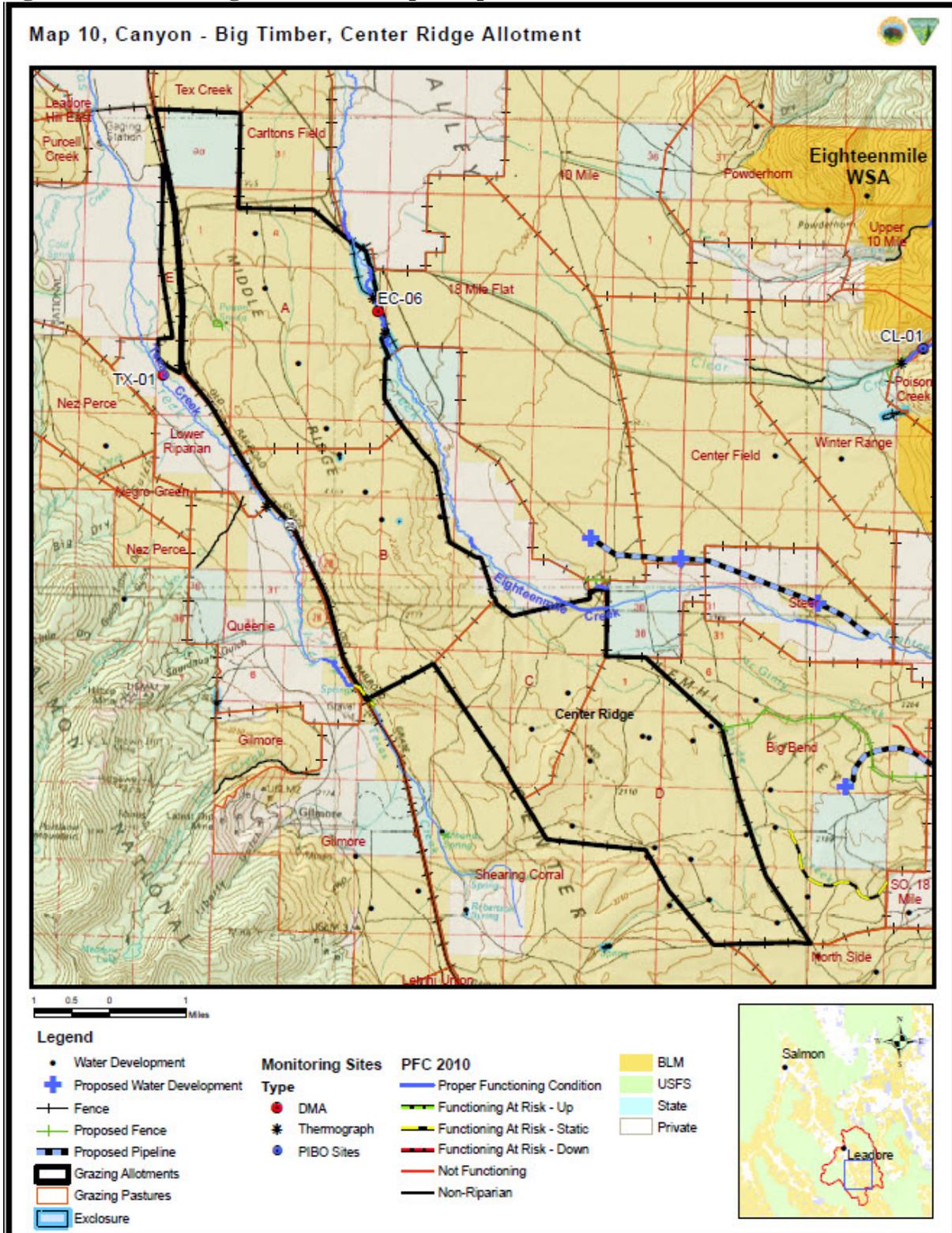
#### *1.3.5.2. Range Improvement Projects - Poison Spring Exclosure, Pipeline and Trough*

An exclosure fence will be constructed around the existing spring complex and pond. The exclosure fence will encompass approximately 4.5 acres and will be constructed using wooden jacks and poles. The existing jack and pole fence, downslope of the pond, will be removed. The pipeline and trough are currently located in conjunction with an isolated upland spring approximately 2 miles away from Texas Creek. The pipeline and trough will be relocated outside of the newly constructed spring exclosure and will have “No Effect” on ESA-listed fish species, or any designated critical habitat or EFH.

#### *1.3.5.3. Interdependent/Interrelated Actions*

The BLM’s BA indicated there were no interrelated or interdependent actions. Although State lands are present in the Allotment boundary (Figure 4), the size of the parcel (almost an entire section) and existing road access suggest livestock could graze the State parcel independent of the Federal action. Grazing on the approximate 160 acres of private lands, which occurs in multiple parcels, is believed to be interrelated to the Federal action. These parcels are too small and lack boundary fences to realistically be grazed in absence of the proposed Federal action. Because livestock can move freely between Federal and private lands, grazing of these isolated private parcels is considered interrelated to the proposed action and effects are considered in Section 2.11.

Figure 4. Center Ridge Allotment Map (adopted from the BA).



### 1.3.6. Chamberlain Creek Allotment

The BLM proposes to issue one permit authorizing grazing for a 10 year term. The permittee will be authorized to annually graze up to 410 cow/calf pairs on four pastures (Figure 5 and Table 10). Approximately 16,000 acres of BLM land occur in the four pastures with about 3,200 acres of private and state lands fenced in the Allotment. The state and private lands in the Allotment contain naturally intermittent tributaries of Divide and McGinty Creeks. The BLM determined that current livestock use was a significant factor in the Allotment’s failure to meet standards 2, 3, and 8 of Idaho Standards for Rangeland Health (BLM 2010). To make significant progress towards these standards the BLM proposes to reduce the Active Preference on the Allotment and create a new pasture by constructing a fence and pipeline and then limiting grazing to the upland pasture, Big Bend, after August 15. In addition, riparian areas along McGinty Creek will not be grazed after June 30 to further improve condition, and the 18 mile Pasture will be limited to a maximum of 35 cattle. The Proposed Active Preference of 1,081 AUMs, is an 8.5% reduction from the current permit.

The Allotment contains a 4 mile headwater reach of Eighteenmile Creek. ESA-listed fish do not occupy Eighteenmile Creek but the stream does intermittently connect to the Lemhi River where habitat-related effects may occur. Eighteenmile Creek is also considered designated critical habitat for spring/summer Chinook salmon.

**Table 10. Chamberlain Creek Allotment Grazing Permit (2012-2022).**

Permit	Maximum Number/Kind	Maximum Grazing Period	% Public Land	Maximum Active Preference (AUMs)	Suspended AUMs	Total Preference
A	410 Cattle	6/1-9/30	66%	1,081	1,493	2,580

#### **Other Terms and Conditions.**

- Only the Big Bend Pasture can be grazed after August 15.
- If in-season monitoring on any key area finds more than 15% bank alteration or less than 4-inches of stubble height, livestock will be removed from the pasture with the key area for the rest of the season.
- The McGinty Creek Pasture will not be grazed after June 30 (This pasture is part of the new proposed action which portions out the segment of the intermittent stream channel in the Big Bend Pasture on the adjacent southern ridge).

**Riparian Management Objectives and Monitoring.** There are two monitoring DMAs on the Allotment, one on Eighteenmile Creek in the 18 mile WSA Pasture, and one on Pass Creek, in the North 18 mile Pasture. In the past, livestock have used the 18 mile Pasture in a very limited capacity with less than 10% of the herd at any one time, but use occurred in the hot season (August to September). Pass Creek was also used for 3 to 4 weeks in the August to September

period. The proposed action will authorize grazing in these pastures only until August 15 to preclude any bull trout spawning conflicts and to allow for riparian plant regrowth. The DMA in the 18 mile Pasture and associated MIM data were established in 2010 and provide the first quantitative data set for the segment to document long term trend. A DMA was also established on Pass Creek in the North 18 mile Pasture in 2010. Annual use indicators will include bank alteration and stubble height (Table 11).

**Table 11. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Chamberlain Creek Allotment.**

Stream	Pasture	DMA	RMO	Grazing Use Indicator			
				In-Season	End-of-season	In-Season	End-of-season
18-Mile	18 mile Cr	EC-01	90% bank stability	<15% bank alteration	<10% bank alteration	31%	11%
			Late seral greenline successional status	4" key hydric species Greenline stubble	6" key hydric species Greenline stubble	8.1"	5.9"
Pass	North 18 mile	PA-01	90% bank stability	<15% bank alteration	<10% bank alteration	28%	16%
			Late seral greenline successional status	4" key hydric species Greenline stubble	6" key hydric species Greenline stubble	4.7"	3.8"

*1.3.6.1. Range Improvement Projects*

**McGinty Creek Division Fence.** A 3.3 mile barbed wire division fence will be constructed to separate the Big Bend Pasture into two new pastures, the Big Bend and McGinty Creek Pastures. Approximately 2.75 miles of the new fence will parallel an existing two-track road on the ridge south of McGinty Creek. The remainder of the fence will run off of the ridge through the sagebrush to the west, and will tie in with the division fence between the Chamberlain Creek and Spring Canyon Allotments. The new fence will allow the McGinty Creek Pasture to be managed as a riparian pasture and the Big Bend Pasture to be managed as an upland pasture.

**McGinty Creek Pipeline.** The proposed pipeline would extend northwest approximately 1.25 miles from the stream, then turn southwest, extending another mile to a trough. A hydro-screen water collector or headbox will be installed at the point of diversion in McGinty Creek on private land. The landowner will transfer 0.02 cubic feet per second (cfs), from water right #74-15907, to the BLM for the pipeline project. The existing water right is for a total of 0.04 cfs. No new diversion from McGinty Creek will occur. Additionally, the system would be floated and is expected to use less water than the existing diversion system. The landowner will also grant the BLM an easement for the distance the pipeline crosses private land (approximately 0.75 mile).

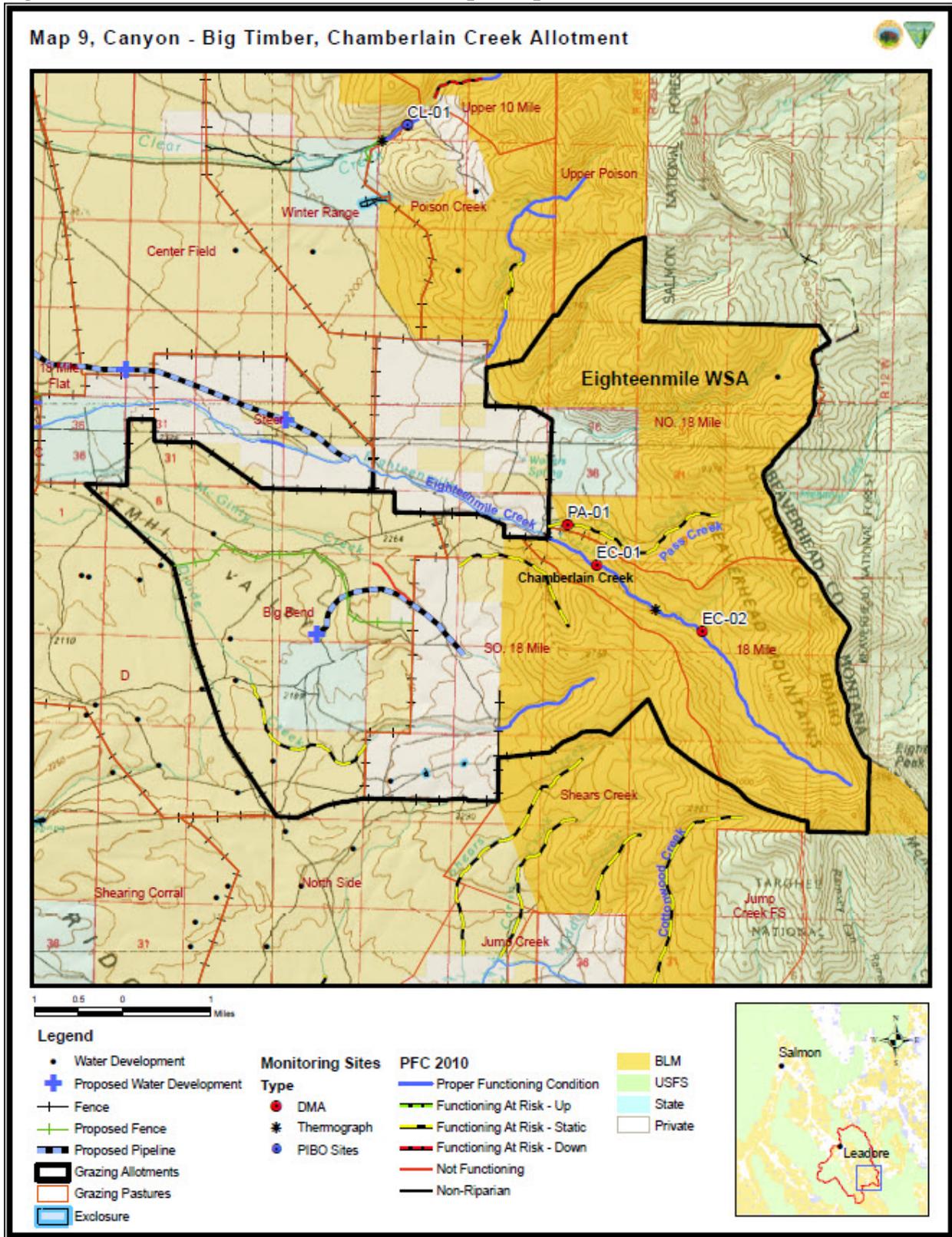
#### *1.3.6.2. Crossing Permit*

No crossing permits are proposed for this Allotment.

#### *1.3.6.3. Interdependent/Interrelated Actions*

The BLM's BA indicated no interdependent or interrelated actions exist. Although approximately 3,200 acres of State and private land occur within the Allotment boundary, the parcels are large blocks of land, and most are contiguous (Figure 5). In addition, extensive boundary fencing exists along the majority of the private parcels. These conditions make it reasonable to assume the private lands, and likely the State lands, could be grazed independent of the proposed Federal action. As such NMFS does not consider grazing on these lands interrelated or interdependent actions.

Figure 5. Chamberlain Creek Allotment Map (adopted from BA).



### 1.3.7. Powderhorn Allotment

The BLM proposes to issue two permits authorizing grazing for a 10 year term. The permittees will be authorized to annually graze a combined total of up to 982 cow/calf pairs on eight pastures (Figure 6 and Table 12). Approximately 33,000 acres of BLM land occur in the four pastures with about 3,500 acres of private and state lands fenced in the Allotment. The BLM determined that current livestock use was a significant factor in the Allotment’s failure to meet standards 2, 3, and 8 of the Idaho Standards for Rangeland Health (BLM 2010). To make significant progress towards these standards the BLM proposes to reduce the Active Preference on the Allotment by 30%, not graze the Clear Creek Pasture after August 15, and limit use of the Clear Creek drainage to a maximum of 3 weeks. In addition, fence adjustments will be made to protect bull trout spawning areas in Clear Creek and riparian habitat along Eighteenmile Creek.

The Allotment contains approximately 3 miles of Clear Creek and 3 miles of Eighteenmile Creek. Anadromous ESA-listed fish do not occupy either stream but Eighteenmile Creek is intermittently connected to the Lemhi River where habitat related effects may occur. Although historical accessibility is unknown both streams are considered spring/summer Chinook salmon critical habitat.

**Table 12. Powderhorn Allotment Grazing Permits 2012-2022.**

Permit	Maximum Number/Kind	Maximum Grazing Period	% Public Land	Maximum Active Preference (AUMs)	Suspended AUMs	Total Preference
A	782 Cattle	4/15-12/12	82%	2,954	4,212	7,277
B	200 Cattle	4/15-12/12	100%	563	831	1,394

### Other Terms and Conditions

#### Permits A and B

- The Clear Creek Pasture will be grazed for a maximum of 3 weeks and no grazing will occur after August 15 in the Pasture.
- If in-season monitoring on any key area in the Clear Creek Pasture finds more than 15% bank alteration or less than 6-inches of stubble height, livestock will be removed from the pasture for the rest of the season. The Clear Creek Pasture consists of the previous pasture delineations of Upper Tenmile and Poison/Upper Poison Creek Pastures.

**Riparian Management Objectives and Monitoring.** There are two monitoring DMAs on the Allotment. Both are located on Clear Creek, with one in the Clear Creek Pasture, and one in the Winter Range Pasture. The DMAs and associated MIM data were established in 2010 and provide the only quantitative data set for Clear Creek. Annual use indicators will include bank alteration and stubble height (Table 13).

Tenmile Creek is a perennial stream originating from artesian springs on private land at the mouth of the canyon. Tenmile Creek does not support anadromous fish due to extensive downstream barriers. Its entire flow (about 2 cfs to 4 cfs with little seasonal fluctuation) is captured in an irrigation ditch year-round and conveyed onto private lands. Upstream of the diversion, the stream appears to lose much of its volume as it flows across the sage-steppe flat. As a result of these conditions, Tenmile Creek does not appear to directly influence downstream habitats and the BLM does not propose to monitor the stream with the previously described protocols.

**Table 13. DMAs, monitoring objectives, and proposed annual use indicators, for the Powderhorn Allotment.**

Stream	Pasture	DMA	RMO	Grazing Use Indicator			
				In-Season	End-of-season	In-Season	End-of-season
Clear	Clear	CL-01 <sup>1</sup>	90% bank stability	<15% bank alteration	<10% bank alteration	Not grazed	7%
			Late seral greenline successional status	6" key hydric species Greenline stubble	6" key hydric species Greenline stubble	Not grazed	14.5"

<sup>1</sup>With the proposed fence change, both CL-01 and CL-02 (Figure 6) would be in the same pasture. CL-01 was chosen to capture grazing use more representative for the pasture.

#### 1.3.7.1. Crossing Permits

Cattle will only be authorized to cross the Allotment between May 15 and October 15. Crossing permits will be restricted to a maximum of 350 cattle at one time and cattle will not be authorized to overnight on the Allotment. A maximum of 700 cattle will be allowed to cross the Allotment in a year. Cattle crossing the Allotment will not use the Clear Creek Pasture.

#### 1.3.7.2. Range Improvement Projects

**18 Mile Pipeline.** The BLM proposes to transfer an existing stockwater right, held by the BLM, of 0.02 cubic feet per second (74-14421) from an open ditch system into a newly constructed pipeline. The pipeline will extend approximately 4 miles to the west from Eighteenmile Creek. Three troughs will be placed on the Allotment, in the Steer Pasture, the Center Field Pasture, and the 18 Mile Flat Pasture. An existing two-track road provides access to most of the pipeline route. The new system will be fitted with self-regulating floats and will use less water than the existing open ditch system. The BLM will obtain an easement from the private landowner for approximately 7,500 feet of the pipeline crossing private land.

**18 Mile Flat Fence Relocation.** With the addition of the trough in the 18 Mile Flat Pasture, as described above, an existing water gap in the 18 Mile Flat Pasture will become unnecessary. The

current fence (approximately 0.3 miles) on the south side of the 18 Mile Flat Pasture will be removed and a new 0.3 mile barbed wire fence will be constructed north of the existing fence. The new fence will prevent cattle from accessing Eighteenmile Creek from the Allotment. An existing cattleguard will also be relocated to where the new fence will cross the road.

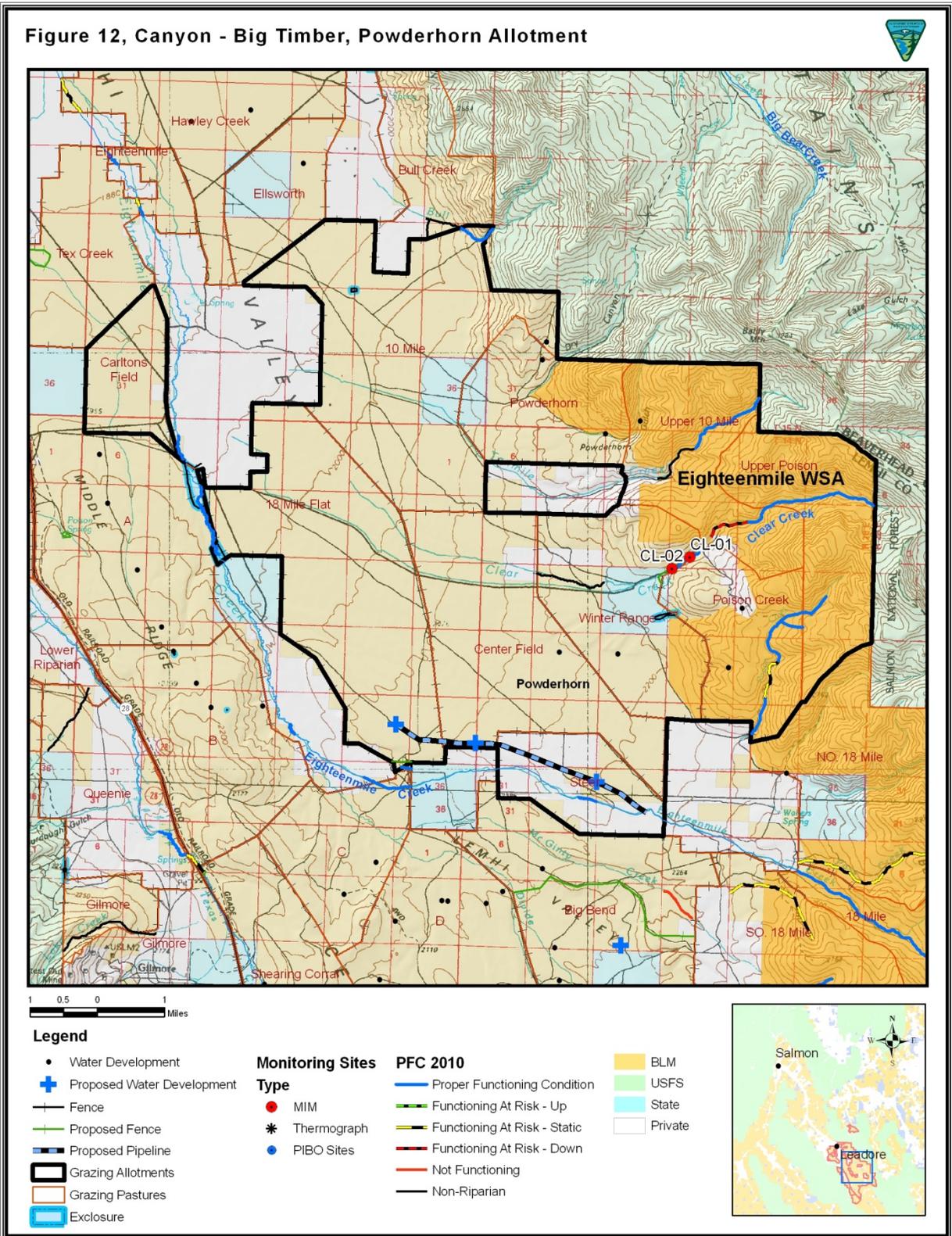
**Clear Creek Division Fence.** A large spring complex at the mouth of Clear Creek Canyon provides approximately half of the flow to Clear Creek. Cattle have access to this complex when grazing the Winter Pasture (used during the winter months). BLM proposes to construct a 0.5 mile fence, placing the spring complex in the Clear Creek Pasture, which is used early in the year. The new fence will include 0.1 mile of barbed wire and 0.4 miles of wooden jack and/or post and pole. The new fence will eliminate cattle access to Clear Creek during the winter.

#### *1.3.7.3. Interdependent/Interrelated Actions*

The Allotment contains about 3,500 acres of non-Federal land co-fenced with the BLM-managed land. Non-Federal land occurs in the Steer, Upper Tenmile, Center Field, and Tenmile Pastures (Figure 6). Federally authorized livestock can access non-Federal land when they are on these pastures. Non-Federal lands include approximately 2.6 miles of upper Eighteenmile Creek (Steer Pasture), 1/4 mile of Clear Creek (Center Field Pasture), 1/3 mile of upper Tenmile Creek (Upper Tenmile Pasture), and 0.6 miles of lower Tenmile Creek (Tenmile Pasture).

Eighteenmile Creek (Steer Pasture) is the only stream occurring on private lands that is designated as critical habitat in the Allotment. Only 450 of the Steer Pasture's 1,800 acres are managed by the BLM. The BLM-managed lands account for just 58 of the Pasture's 370 available AUMs, or 16%. Considering the small proportion of AUMs provided by the public lands in the Steer pasture, private land grazing there would likely occur at the same intensity with or without the Federal action. As such, private land grazing on the Steer Pasture is not interrelated/interdependent. Elsewhere on the Allotment, the remaining state/private parcels are likely too small and isolated to be grazed independently of the proposed action and impacts of grazing those lands are considered in the effects discussion (Section 2.11).

Figure 6. Powderhorn Allotment map (adopted from BA).



1.3.8. Hawley Creek Allotment.

The BLM proposes to issue two permits authorizing grazing for a 10 year term. The permittees will be authorized to annually graze up to 616 cow/calf pairs on two pastures (Figure 7 and Table 14). Approximately 7,300 acres of BLM land occur in the two pastures with about 100 acres of State lands fenced in the Allotment. The BLM determined that current private irrigation practices and not livestock use was a significant factor in the Allotment’s failure to meet standards 2, 3, 7, and 8 of Idaho Standards for Rangeland Health (BLM 2010). Because grazing was not determined to be the factor for departure from the standards the BLM proposes to reissue the permits with the same Active Preference (468 AUMs) as the existing permits. In addition, fence adjustments will be made to protect bull trout spawning areas in Clear Creek and riparian habitat along Eighteenmile Creek.

The Allotment, including State lands, contains approximately 1 mile of Eighteenmile Creek and a 4.3 mile segment of Hawley Creek. Barriers and irrigation practices prevent anadromous fish from occupying either stream. Both streams are considered designated critical habitat for Chinook salmon. About 1.3 miles of the Hawley Creek segment, from the SCNF boundary downstream to a private irrigation diversion, is in proper functioning condition. The diversion dewateres the channel during the irrigation season and downstream of the diversion the channel lacks any riparian area and is occupied almost entirely by sage brush and other upland species. Both streams have potential to seasonally influence habitat conditions downstream in the Lemhi River where habitat related effects to ESA-listed fish/habitats may occur.

**Table 14. Hawley Creek Allotment Grazing Permits 2012-2022.**

Permit	Maximum Number/ Kind	Maximum Grazing Period	% Public Land	Maximum Active Preference	Suspended AUMs	Total Preference
A	316 Cattle	6/1-10/1	100%	30	0	30
B	300 Cattle	5/15-6/30	100%	438	164	602
	300 Cattle	9/15-10/31	100%			

**Other Terms and Conditions**

**Permit A:**

- Cattle will not be left on the Allotment overnight; they will be actively trailed across the Allotment.
- Trailing will only occur in the Hawley Creek Pasture.
- The two corrals at the mouth of the Hawley Creek Canyon (located outside of the RHCA and uphill from the Hawley Creek Road) can be used for 2 days to sort cattle.

**Permit B:**

- Livestock grazing in the Eighteenmile Creek Pasture will not occur after June 30.
- The two corrals at the mouth of the Hawley Creek Canyon can be used for 2 days to sort cattle.

**Riparian Management Objectives and Monitoring.** There are two monitoring DMAs in the Allotment, both located on Eighteenmile Creek, but one in each pasture. The EC-05 DMA and associated MIM data were established in 2009 and provide the first quantitative data set for the Eighteenmile Creek segment in the Hawley Creek Pasture. Annual use indicators will include bank alteration and stubble height (Table 15).

**Table 15. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Hawley Creek Allotment.**

Stream	Pasture	DMA	RMO	Grazing Use Indicator			
				In-Season	End-of-season	2011 In-season	2011 End-of-season
18mile	Hawley	EC-05	90% bank stability	<15% bank alteration	<15% bank alteration	12%	7%
			Late seral greenline successional status	4" key hydric species Greenline stubble	6" key hydric species Greenline stubble	5.4"	4.6"
18mile	18 Mile	EC-08	90% bank stability	<20% bank alteration	<10% bank alteration	Not used	0%
			Late seral greenline successional status	4" key hydric species Greenline stubble	6" key hydric species Greenline stubble	Not used	20.4"

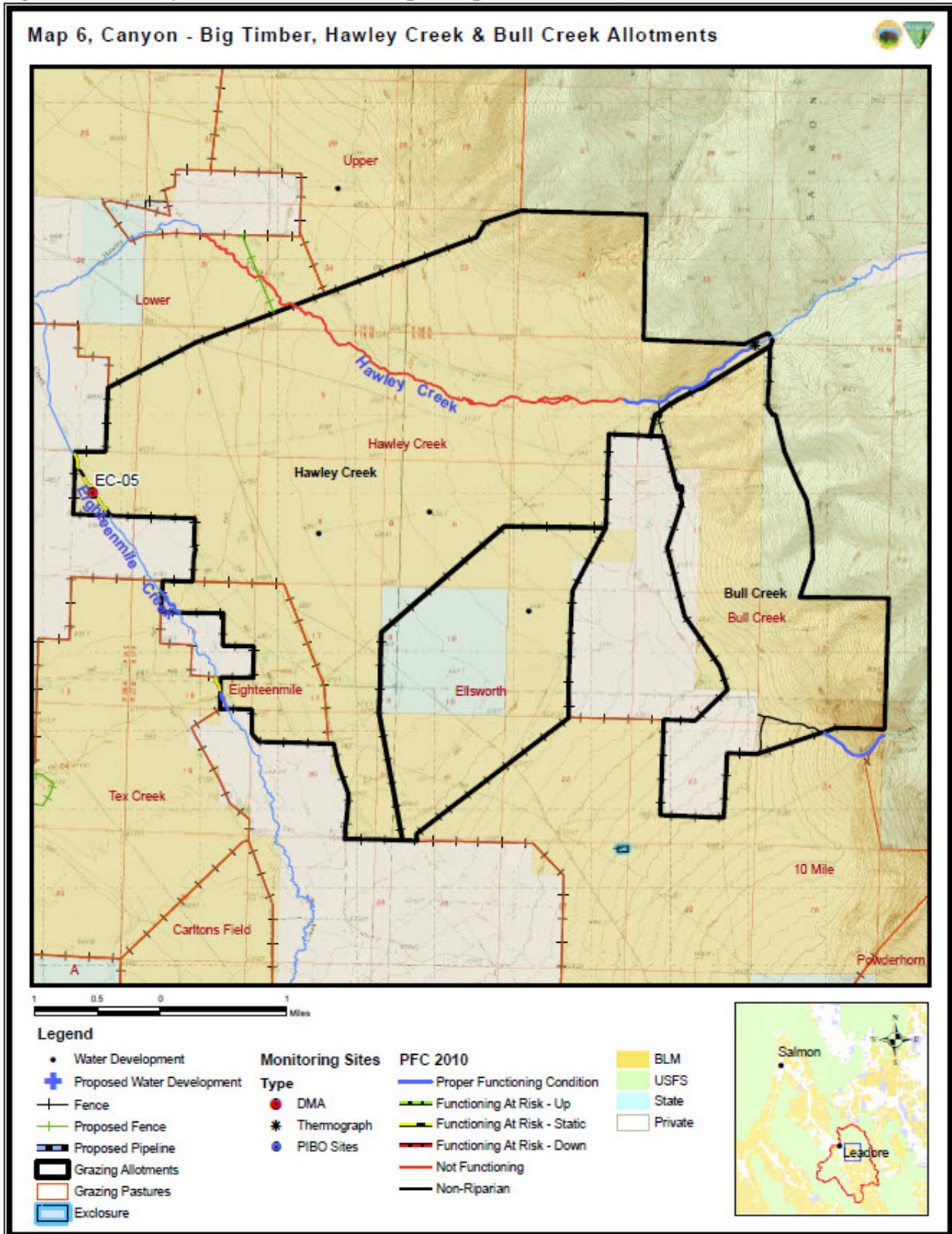
*1.3.8.1. Crossing Permits*

For cattle not associated with the Hawley Creek Allotment, livestock crossing will be restricted to a maximum of 350 cattle at one time and cattle will not be left on the Allotment overnight. A maximum of 1,800 cattle will be allowed to cross the Allotment in a year. Cattle crossing the Allotment will be authorized only in the Hawley Creek Pasture, and would have access to the two corrals at the mouth of Hawley Creek Canyon to sort cattle.

### *1.3.8.2. Interdependent/Interrelated Actions*

Although the BLM's BA indicated there were no interdependent or interrelated actions, NMFS considers any grazing that occurs on the 100 acres of State land within the Allotment interdependent to the Federal action. No fences delineate the State/Federal boundary (Figure 6) and the State parcels are too small and isolated to be grazed independent of the Federal action. Effects of the interdependent actions are considered in Section 2.11.

Figure 7. Hawley Creek Allotment Map (adopted from BA).



### 1.3.9. Tex Creek Allotment

The BLM proposes to issue two permits authorizing grazing for a 10 year term. The permittees will be authorized to annually graze up to 175 cow/calf pairs on one pasture from May 12 through August 15 (Figure 8 and Table 16). Approximately 2,700 acres of BLM land occur in the pasture with about 30 acres of private lands fenced in the Allotment. The BLM determined that current livestock use was a significant factor in the Allotment's failure to meet Standard 2 (related to upland habitat not influencing stream habitat) but not Standard 7 of Idaho Standards for Rangeland Health (BLM 2010). To make progress toward meeting Standard 2 the BLM proposes to construct the Tex Creek Pond Exclosure (45 acres).

The Allotment contains two separate segments of Eighteenmile Creek totaling approximately 1/4 mile. Both these sections occur on BLM-managed land and there are no private or state owned stream segments in the Allotment. Barriers and irrigation practices prevent anadromous fish from occupying Eighteenmile Creek. Eighteenmile Creek is designated critical habitat for spring/summer Chinook salmon and is also connected to the Lemhi River. Grazing has potential to seasonally influence spring/summer Chinook salmon critical habitat in Eighteenmile Creek and ESA-listed fish and critical habitats in the Lemhi River.

**Table 16. Tex Creek Allotment Grazing Permits 2012-2022.**

Permit	Maximum Number/Kind	Maximum Grazing Period	% Public Land	Maximum Active Preference	Suspended AUMs	Total Preference
A	150 Cattle	5/12-7/15	100%	224	174	398
B	25 Cattle	5/12-7/15	100%	38	49	87

#### **Other Terms and Conditions**

- Livestock will not graze the Allotment after June 15 until the Tex Creek Pond Exclosure is constructed.

**Riparian Management Objectives and Monitoring.** A new DMA (EC-07) was established on the Tex Creek Allotment segment of Eighteen Mile Creek in 2011. This DMA will be used to monitor in-season and post-season indicators (Table 17).

**Table 17. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Tex Creek Allotment.**

Stream	Pasture	DMA	RMO	Grazing Use Indicator			
				In-Season	End-of-season	2011 in-season	2011 End-of-season
18mile	Tex Creek	EC-07	90% bank stability	<20% bank alteration	<15% bank alteration	12%	1%
			Late seral greenline successional status	4" key hydric species Greenline stubble	6" key hydric species Greenline stubble	5.5"	16"

*1.3.9.1. Range Improvement Projects -Tex Creek Ponds Exclosure*

The Allotment includes a 50 acre natural pond complex, which is sub-irrigated by an irrigation ditch on adjacent private lands. The ponds currently receive heavy livestock use and do not meet Standard 2 (Riparian Vegetation). The BLM proposes to construct an exclosure fence to improve riparian habitat around the pond complex. A small water gap will be left on the north side of the largest pond. The exclosure will be approximately 45 acres and consist of approximately 1.36 miles of barbed wire fence and 400 feet of jack and pole fence.

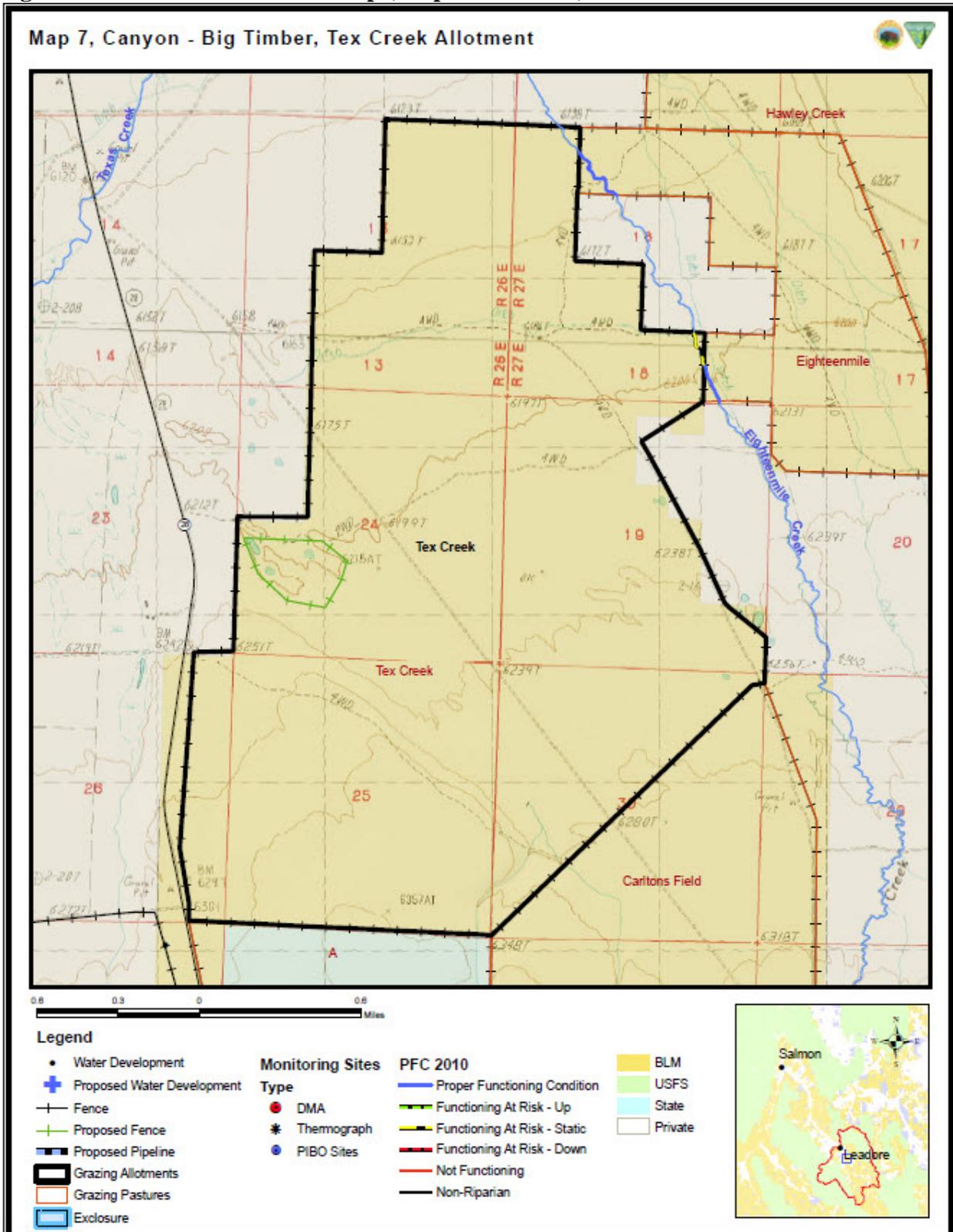
*1.3.9.2. Crossing Permits*

No crossing permits are proposed for this Allotment.

*1.3.9.3. Interdependent/Interrelated Actions*

NMFS identified the grazing on 30 acres of private lands within the Allotment as an interrelated action. Private lands are too small and too scattered across the Allotment to be meaningfully grazed in the absence of the proposed action. Effects of the interrelated actions are considered in Section 2.11.

Figure 8. Tex Creek Allotment Map (adopted from BA).



### 1.3.10. Leadore Hill Allotment

The BLM proposes to issue one permit authorizing grazing for a 10 year term. The permittee will be authorized to annually graze up to 85 cow/calf pairs on two pastures (Figure 9 and Table 18). Approximately 1,500 acres of BLM land occur in the two pastures with about 75 acres of private lands fenced in the Allotment. The BLM determined that standards 2 and 3 of the Idaho Standards for Rangeland Health are not currently being met (BLM 2010). However, the BLM also determined current grazing management was not a significant contributing factor for departure from the standards. As such, the BLM proposes to reissue the permits with the same Active Preference (114 AUMs<sup>5</sup>) as the existing permit authorized. Livestock use will be authorized from May 15 through June 30, 30 days less than currently permitted.

The Allotment contains approximately 1/2 mile reach of Little Timber Creek and one, 2 mile reach of Big Timber Creek, which makes up the western boundary of the Upper Pasture. Downstream fish passage barriers and irrigation practices prevent anadromous fish from occupying either segment. Both streams were likely historically accessible and are considered critical habitat for spring/summer Chinook salmon.

**Table 18. Leadore Hill Allotment Grazing Permit 2012-2022.**

Permit	Maximum Number/Kind	Maximum Grazing Period	% Public Land	Maximum Active Preference	Suspended AUMs	Total Preference
A	85 Cattle	5/15-6/30	91%	114	18	132

**Riparian Management Objectives and Monitoring.** A new allotment DMA was established on Little Timber Creek in 2011. The Little Timber Creek and Big Timber Creek DMAs are the sites used to manage for ESA-listed resources (Table 19). DMA will be the monitoring site used to manage for ESA-listed resources.

#### 1.3.10.1. Crossing Permits

Livestock crossing will be restricted to a maximum of 1,200 cattle at one time and cattle will not be left on the Allotment overnight. A maximum of 5,000 cattle will be allowed to cross the Allotment in a year. Cattle crossing the Allotment will only use the Upper Pasture (using the bridge at the Carey Act Dam).

---

<sup>5</sup> The original permit authorized 93 AUMs for cattle and 21 AUMs for potential sheep utilization. The proposed action has converted sheep use to cattle use, thus there is no increase in proposed AUMs.

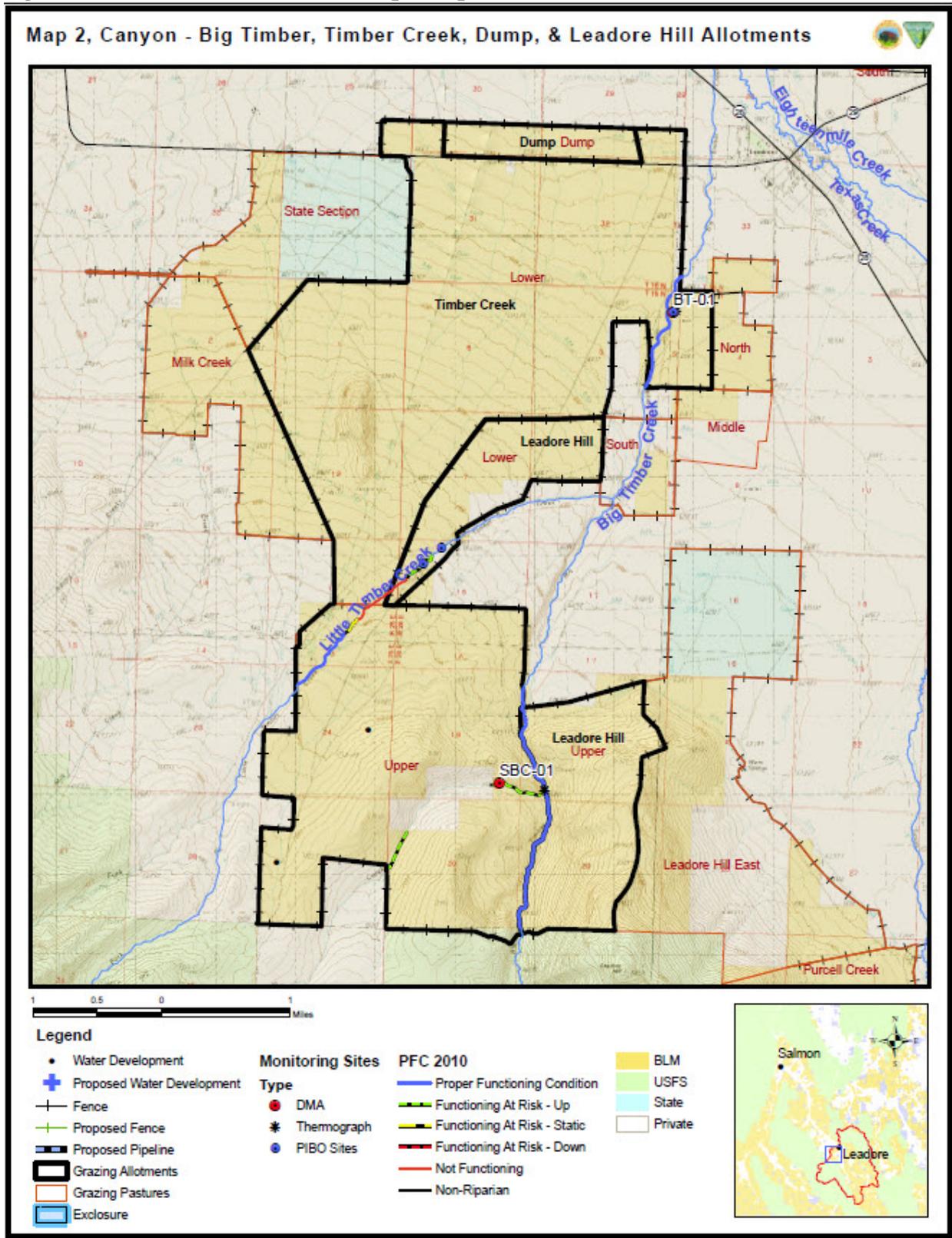
**Table 19. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Leadore Hill Allotment.**

Stream	Pasture	DMA	RMO	Grazing Use Indicator			
				In-Season	End-of-season	2011 in-season	2011 End-of-season
Little Timber	Lower	LT-01	90% bank stability	<15% bank alteration	<15% bank alteration	3%	2%
			Late seral greenline successional status	4" key hydric species Greenline stubble	6" key hydric species Greenline stubble	7.4"	13.4"
Big Timber	Upper	TC-02	90% bank stability	<20% bank alteration	<10% bank alteration	N/A	8%
			Late seral greenline successional status	4" key hydric species Greenline stubble	6" key hydric species Greenline stubble	N/A	10.5"

*1.3.10.2. Interdependent/Interrelated Actions*

NMFS identified grazing on 75 acres of private lands as an interrelated action. Private lands are co-fenced with the Federal lands and are too small to be grazed independent of the Federal action (without unreasonable levels of management or new fence construction) Effects of the interrelated actions are considered in Section 2.11..

Figure 9. Leadore Hill Allotment Map (adopted from BA).



### 1.3.11. Timber Creek Allotment

The BLM proposes to issue four permits authorizing grazing for a 10 year term. The permittees, one of which has applicant status, will be authorized to annually graze 448 cow/calf pairs and five horses on two pastures (Figure 10 and Table 20). Approximately 7,000 acres of BLM land occur in the two pastures with about 340 acres of private and state lands fenced in the Allotment. The BLM determined that standards 2, 3, and 8 of the Idaho Standards for Rangeland Health are not currently being met (BLM 2010). The BLM also determined current grazing management was not a significant contributing factor for departure from the standards. As such, the BLM proposes to reissue the permits with the same Active Preference (670 AUMs) as was established in the Lemhi Resource Management Plan<sup>6</sup>. Excluding trailing activities, livestock use will be authorized from May 16 through June 30, 30 days less than the currently permitted.

The Upper Pasture contains approximately 0.8 miles of Little Timber Creek, a 1.6 mile segment of Swan Basin Creek (approximately 0.7 miles BLM and 0.9 miles private), and approximately 2 miles of Big Timber Creek (which is the eastern pasture boundary)<sup>7</sup>. The Lower Pasture contains approximately 0.2 miles of Little Timber Creek and approximately 1 mile of Big Timber Creek. Downstream fish passage barriers and irrigation practices prevent anadromous fish from occupying any segment but all allotment streams (i.e., Big Timber, Little Timber, and Swan Basin Creeks) are designated critical habitat for spring/summer Chinook salmon.

**Table 20. Timber Creek Allotment Grazing Permits 2012-2022.**

Permit	Maximum Number/Kind	Maximum Grazing Period	% Public Land	Maximum Active Preference	Suspended AUMs	Total AUMs
A	100 Cattle	5/6-6/15	100%	134	52	186
B	75 Cattle	5/6-6/30	100%	138	17	155
C <sup>1</sup>	268 Cattle	5/6-6/15	100%	398	163	561
	245 Cattle	8/15-9/30	100%			
	5 Horse	5/6-10/31	100%			
D	Sheep	NA	NA	0	239	239

<sup>1</sup> Permittee has applicant status.

### Other Terms and Conditions

#### Permit C

- After June 15 cattle will not be left on the Allotment overnight; they will be actively trailed across the Allotment.

<sup>6</sup> Previous Active Preference also included 239 sheep AUMs. No sheep AUMs are currently proposed.

<sup>7</sup> This segment of Big Timber Creek is the same segment discussed in the Leadore Hill Allotment discussion above. As stated previously, livestock use along this segment is almost nonexistent due to extensive riparian vegetation

**Riparian Management Objectives and Monitoring.** There are currently two DMAs established on the Allotment: (1) BT-01 in the Lower Pasture, on Big Timber Creek; and (2) SBC-01 in the Upper Pasture, on Swan Basin Creek. The DMA and associated MIM data on Swan Basin Creek provide quantitative data sets to document long term trend. Annual use indicators will include bank alteration and stubble height (Table 21).

**Table 21. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Timber Creek Allotment.**

Stream	Pasture	DMA	RMO	Grazing Use Indicator			
				In-Season	End-of-season	2011 in-season	2011 End-of-season
Big Timber	Lower	BT-01	90% bank stability	<20% bank alteration	<10% bank alteration	5%	2%
			Late seral greenline successional status	4" key hydric species Greenline stubble	6" key hydric species Greenline stubble	6.3"	10"
Swan Basin	Upper	SBC-01	90% bank stability	<20% bank alteration	<10% bank alteration	14%	9%
			Late seral greenline successional status	4" key hydric species Greenline stubble	6" key hydric species Greenline stubble	6"	11.8"

*1.3.11.1. Vegetation Manipulation Projects*

**Swan Basin Douglas-fir in Mountain Big Sagebrush Communities.** The BLM proposes to remove Douglas-fir trees that are encroaching into approximately 506 acres of mountain big sagebrush communities. Treated trees will be smaller than 10 inches diameter at breast height (DBH). Tree removal would be scattered treatments on the south side of Swan Basin Creek, in the upper pasture. Treatments are not proposed in the RHCA. The work would be conducted by the use of chainsaws, and material lopped and scattered, or large tracked machinery would grind Douglas-fir in to small material.

**Swan Basin Aspen Restoration.** The BLM proposes to remove Douglas-fir and juniper trees encroaching on existing aspen stands at the confluence of Swan Basin and Timber Creeks. A total of 160 acres are proposed for treatment, including approximately 8 acres of RHCA. Treatments would remove juniper and Douglas-fir up to 12 inches DBH with the use of chainsaws, or large tracked mastication machinery. Slash would then be piled or let lay and burned. No fir or juniper trees will be cut that have the ability to be recruited to the stream channel as woody debris. Work will be limited to trees occurring at least one site-potential tree height from the existing or possible future channel locations to preserve potential large woody debris recruitment. Treated material will be piled in stacks approximately 10 feet<sup>2</sup> and burned during cooler months. Stacks will be located more than one site-potential tree height from any stream.

If machinery is used, Swan Basin Creek would need to be crossed twice (once going in and once returning). Crossings would occur at an existing two-track road which has a low-flow ford across the stream channel. Swan Basin Creek is a relatively small stream (base flow of about 1 cfs to 2 cfs and approximately 5 feet wide) with no ESA-listed fish. Forging would occur after high water to reduce sedimentation. No fuel or other petroleum products would be stored on site, and minimal fuel would be in the vehicles as they cross the stream to minimize a potential spill. The following prevention measures will be employed to ensure any spill of oil or oil products does not enter waters of the United States: (1) A spill prevention and containment plan will be prepared prior to the transportation of any fuel to the project; (2) leaks of motor oil and hydraulic fluids from heavy equipment will be monitored and controlled to prevent water contamination; (3) maintenance activities involving the changing or loss of oil, fuel or other liquids will be conducted in such a manner as to retain the fluids for removal from the project site for recycling or disposal in a licensed depository for those materials; and (4) storage of fuel and petroleum products and the refueling of equipment will take place outside of RHCAs, and more than 300 feet from fish-bearing streams. The BLM personnel will be on site during the equipment crossings to ensure mitigations are appropriately implemented.

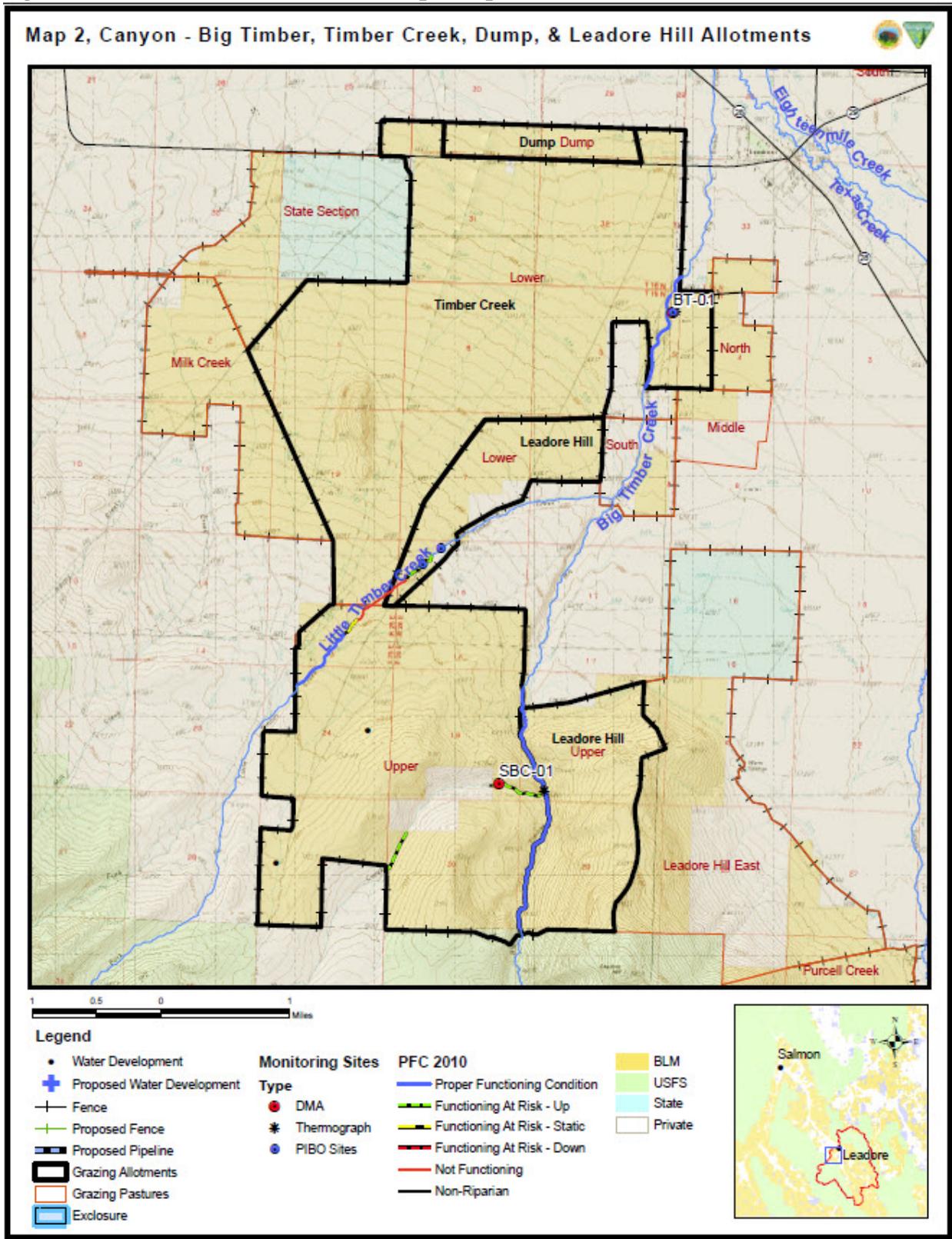
#### *1.3.11.2. Crossing Permits*

Livestock crossing is restricted to a maximum of 1,200 cattle at one time and cattle will not be left on the Allotment overnight. A maximum of 5,000 cattle will be allowed to cross the Allotment in a year. Crossing of Big Timber Creek will take place on the Carey Act Dam and does not require fording the stream. Crossing of Little Timber Creek will occur on an established road ford that does not have appropriate spawning substrate.

#### *1.3.11.3. Interdependent/Interrelated Actions*

The BLM's BA indicated there were no interrelated/interdependent actions. However, no boundary fences exist between the Federal and private lands. This results in the need for substantial management effort and/or fences in order to graze the private lands without trespassing on the adjacent Federal lands. Because livestock are free to move back and forth between properties and it appears unreasonable to expect private land grazing independent of the Federal action, NMFS considers grazing of the private lands (see Figure 9) to be interrelated. Effects of grazing the Allotment include the potential effects associated with livestock use of the private land in the Upper Pasture (Section 2.11).

Figure 10. Timber Creek Allotment Map (adopted from BA).



### 1.3.12. Nez Perce Allotment

The BLM proposes to issue two permits authorizing grazing for a 10 year term. The permittees, one of which has applicant status, will be authorized to annually graze up to 864 cow/calf pairs on six pastures (Figure 11 and Table 22). Approximately 4,000 acres of BLM land occur in the six pastures with about 3,500 acres of private and State lands fenced in the Allotment. The BLM determined that standards 2, 3, 7, and 8, of the Idaho Standards for Rangeland Health, are not currently being met (BLM 2010). The BLM also determined current grazing management was not a significant contributing factor for departure from the standards. Regardless, the BLM proposes to reissue the permits with a Maximum Active Preference of 466 AUMs, approximately 52% less than was established in the Lemhi Resource Management Plan.

Approximately 7 miles of Texas Creek occur within the Allotment boundary, all in the Lower Riparian and Queenie Pastures. Land ownership is blocky here and BLM managed lands contain six individual stream segments of Texas Creek, totaling just 1 mile of stream in the Allotment. BLM-managed land in the two riparian pastures provides approximately 20% of the total AUMs available (private and Federal). Grazing of the Federally managed riparian portions is incidental to private land grazing and is likely permitted only to avoid construction of fences to otherwise preclude potential livestock trespass on the scattered Federal lands. A complete passage barrier 10 miles downstream of the Allotment prevents anadromous fish from occurring in the Allotment. Texas Creek was likely historically accessible and is designated as critical habitat for spring/summer Chinook salmon and steelhead.

**Table 22. Nez Perce Allotment Grazing Permits 2012-2022.**

Permit	Maximum Number/Kind	Maximum Grazing Period	% Public Land	Maximum Active Preference	Suspended AUMs	Total Preference
A	142 Cattle	5/20-10/1	11%	69	194	263
B <sup>1</sup>	722 Cattle	5/20-10/1	15%	397	1,123	1,520

<sup>1</sup>Permittee has applicant status

#### Other Terms and Conditions.

- None.

**Riparian Management Objectives and Monitoring.** There is currently one DMA established on the Allotment in the Lower Riparian Pasture on Texas Creek. BLM established a DMA in the Queenie Pasture (upper riparian pasture) in 2011. The DMA in the Lower Riparian Pasture has a MIM data set from 2010. BLM will monitor annual use indicators including bank alteration and stubble height (Table 23). BLM administers the public land portions of the Allotment but does not have the ability to require standards on private land based on the current or the proposed permit/authorization.

**Table 23. DMAs, monitoring objectives, proposed annual use indicators, and 2011 use levels for the Nez Perce Allotment.**

Stream	Pasture	DMA	RMO	Grazing Use Indicator			
				In-Season	End-of-season	2011 in-season	2011 End-of-season
Texas	Lower	TX-01	90% bank stability	<15% bank alteration	<15% bank alteration	2%	27%
			Late seral greenline successional status	4" key hydric species Greenline stubble	6" key hydric species Greenline stubble	6.1"	6.6"
Texas	Queenie (Upper)	TX-02	90% bank stability	<15% bank alteration	<15% bank alteration	9%	1%
			Late seral greenline successional status	4" key hydric species Greenline stubble	6" key hydric species Greenline stubble	8.7"	16"

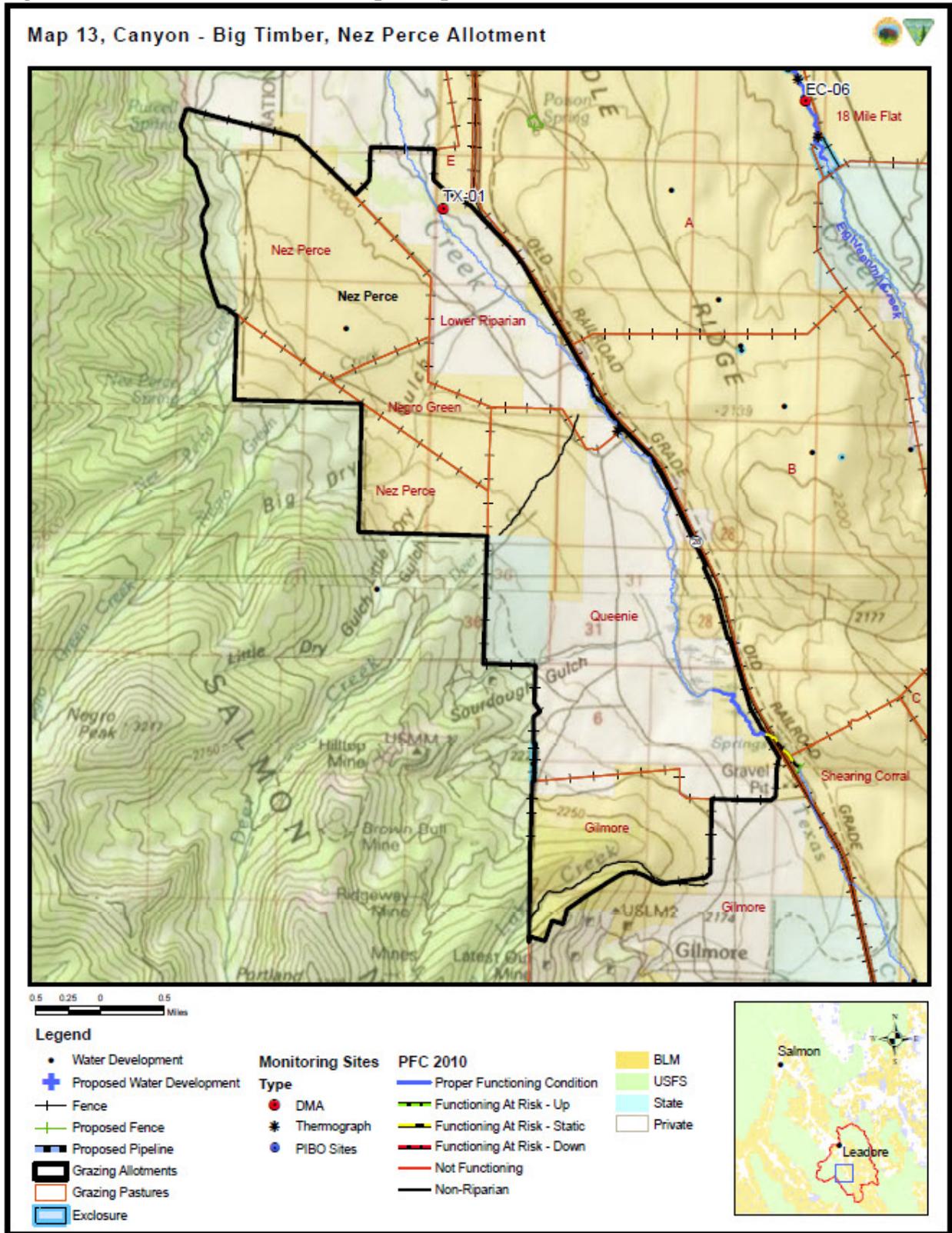
*1.3.12.1. Crossing Permits.*

No crossing permits would be authorized for this Allotment.

*1.3.12.2. Interdependent/Interrelated Actions*

The BLM-manages just 20% of the AUMs in the two riparian pastures. Non-Federal landowners in these two pastures would likely graze the same number of cattle regardless of the proposed action because of the large blocks of land with high forage value. Thus, grazing on the private and state lands in these pastures is not interrelated/interdependent to the Federal action and the BLM has no discretionary authority on activities on those lands. The impacts of grazing BLM-managed lands within the two riparian pastures, including impacts on the privately owned stream segments, are considered in the Section 2.11.

Figure 11. Nez Perce Allotment Map (adopted from BA).



#### 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). The CBT area includes the upper Lemhi River valley. For the purposes of this consultation, the action area includes all lands within the 16 Allotments managed by the BLM in the CBT area. These lands occur near and upstream of Leadore, Lemhi County, Idaho. Anthropogenic barriers currently prevent anadromous fish from occupying all stream reaches just upstream of Leadore. Although currently unoccupied, most of the streams above Leadore were historically accessible to Chinook salmon and are designated critical habitat for Chinook salmon. However, many streams or reaches of streams were likely not historically accessible to Chinook salmon and are not designated critical habitat. Throughout the following document and within each Allotment-specific section, we have presented an argument based on existing knowledge of each stream with respect to its status as Chinook salmon designated critical habitat.

The Nez Perce Allotment contains the only designated critical habitat for steelhead within any allotment. Small quantities of sediment and increased water temperatures from the proposed actions may extend downstream to the Lemhi River, where ESA-listed Snake River spring/summer Chinook salmon and Snake River Basin steelhead and their critical habitats do occur (Table 24), and are included in the action area. However, all effects to species and critical habitat outside allotment boundaries would be immeasurable and thus insignificant (rationale provided in Section 2.11 of this Opinion).

Two Allotments (i.e., Jakes Canyon and Leadville), occur in the Canyon Creek watershed, which is occupied by steelhead and potentially occupied by Chinook salmon. These Allotments present the greatest potential for direct effects to species and are the principle focus of this Opinion as they contain the only two “Likely to Adversely Affect” determinations. Although the Freestrip Allotment is also within the Canyon Creek watershed, downstream barriers and small stream size near the headwaters prevent anadromous fish from occupying streams within this Allotment.

For the two actions “Likely to Adversely Affect” steelhead (i.e., Jakes Canyon and Leadville Allotments), the action area includes all land and streams within the two Allotment boundaries, as well as Canyon Creek from the upstream end of the Leadville Allotment down to the Lemhi River. An additional description of each of the Jakes Canyon and Leadville Allotment’s action areas are provided in Section 2.11.

For the actions having a “Not Likely to Adversely Affect” determination, Section 2.11. also includes an action area description specific to each of the individual Allotments. Within those sections we have identified the allotment-specific action area boundary, streams within that boundary, known occupancy by anadromous fish, and critical habitat listing status for those streams.

**Table 24. Federal Register notices for final rules that list threatened and endangered species, designate critical habitats, or apply protective regulations to listed species considered in this consultation.**

Species	Listing Status	Critical Habitat	Protective Regulations
<b>Chinook salmon (<i>Oncorhynchus tshawytscha</i>)</b>			
Snake River spring/summer run	T 6/28/05; 70 FR 37160	10/25/99; 64 FR 57399	6/28/05; 70 FR 37160
<b>Steelhead (<i>O. mykiss</i>)</b>			
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.*

## 2. ENDANGERED SPECIES ACT

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with the USFWS, NMFS, or both, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitats. Section 7(b)(3) requires that at the conclusion of consultation, NMFS provide an opinion stating how the agencies' actions will affect listed species or their critical habitat. If incidental take is expected, section 7(b)(4) requires the provision of an Incidental Take Statement (ITS) specifying the impact of any incidental taking, and including reasonable and prudent measures (RPMs) to minimize such impacts.

### 2.1. Biological Opinion

Section 7(a)(2) of the ESA requires Federal agencies, in consultation with NMFS, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. The jeopardy analysis considers both survival and recovery of the species. The adverse modification analysis considers the impacts to the conservation value of the designated critical habitat. "To jeopardize the continued existence of a listed species" means 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).

This Opinion does not rely on the regulatory definition of 'destruction or adverse modification' of critical habitat at 50 CFR 402.02. Instead, NMFS has relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat<sup>8</sup>.

<sup>8</sup> Memorandum from William T. Hogarth to Regional Administrators, Office of Protected Resources, NMFS (Application of the "Destruction or Adverse Modification" Standard Under section 7(a)(2) of the Endangered Species Act) (November 7, 2005).

We will use the following approach to determine whether the proposed action described in Section 1.3 of this Opinion is likely to jeopardize listed species or destroy or adversely modify critical habitat:

- *Identify the rangewide status of the species and critical habitat likely to be adversely affected by the proposed action.* This section describes the current status of each listed species and its critical habitat relative to the conditions needed for recovery. For listed salmon and steelhead, NMFS has developed specific guidance for analyzing the status of the listed species' component populations in a "viable salmonid populations" paper (Viable Salmonid Population [VSP]; McElhany et al. 2000). The VSP approach considers the abundance, productivity, spatial structure, and diversity of each population as part of the overall review of a species' status. For listed salmon and steelhead, the VSP criteria therefore encompass the species' "reproduction, numbers, or distribution" (50 CFR 402.02). In describing the range-wide status of listed species, we rely on viability assessments and criteria in technical recovery team documents and recovery plans, where available, that describe how VSP criteria are applied to specific populations, major population groups (MPGs), and species. We determine the range-wide status of critical habitat by examining the condition of its physical or biological features (also called "primary constituent elements" (PCEs) in some designations) - which were identified when the critical habitat was designated. Species and critical habitat status are discussed in Section 2.2 of this Opinion.
- *Describe the environmental baseline for the proposed action.* The environmental baseline includes the past and present impacts of Federal, state, or private actions and other human activities *in the action area*. It includes the anticipated impacts of proposed Federal projects that have already undergone formal or early section 7 consultation and the impacts of state or private actions that are contemporaneous with the consultation in process. The environmental baseline is discussed in Section 2.3 of this Opinion.
- *Analyze the effects of the proposed actions.* In this step, NMFS considers how the proposed action would affect the species' reproduction, numbers, and distribution or, in the case of salmon and steelhead, their VSP characteristics. NMFS also evaluates the proposed action's effects on critical habitat features. The effects of the action are described in Section 2.4 of this Opinion.
- *Describe any cumulative effects.* Cumulative effects, as defined in NMFS' implementing regulations (50 CFR 402.02), are the effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area. Future Federal actions that are unrelated to the proposed action are not considered because they require separate section 7 consultation. Cumulative effects are considered in Section 2.5 of this Opinion.
- *Integrate and synthesize the above factors to assess the risk that the proposed action poses to species and critical habitat.* In this step, NMFS adds the effects of the action (Section 2.4) to the environmental baseline (Section 2.3) and the cumulative effects (Section 2.5) to assess whether the action could reasonably be expected to:

(1) Appreciably reduce the likelihood of both survival and recovery of the 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). Integration and synthesis occurs in Section 2.6 of this Opinion.

- *Reach jeopardy and adverse modification conclusions.* Conclusions regarding jeopardy and the destruction or adverse modification of critical habitat are presented in Section 2.7 of this Opinion. These conclusions flow from the logic and rationale presented in the Integration and Synthesis Section (2.6) of this Opinion.
- *If necessary, define a reasonable and prudent alternative to the proposed action.* If, in completing the last step in the analysis, NMFS determines that the action under consultation is likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat, NMFS must identify a reasonable and prudent alternative (RPA) to the action in Section 2.8. The RPA must not be likely to jeopardize the continued existence of ESA-listed species nor adversely modify their designated critical habitat and it must meet other regulatory requirements.

## **2.2. Rangewide Status of the Species and Critical Habitat**

This section defines the biological requirements of each listed species that will be adversely affected by the proposed action. Listed species facing a high risk of extinction and critical habitats with degraded conservation value are more vulnerable to the aggregation of effects considered under the environmental baseline, the effects of the proposed action, and cumulative effects.

### 2.2.1. Status of the Species

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

#### *2.2.1.1. Status of Snake River Basin Steelhead*

The Snake River Basin steelhead, listed as threatened on August 18, 1997 (62 FR 43937), includes all natural-origin populations of steelhead in the Snake River Basin of southeast Washington, northeast Oregon, and Idaho. Although Snake River Basin steelhead were originally listed as a threatened ESU, they were reclassified as a threatened distinct population

segment (DPS) (January 5, 2006; 71 FR 834). On August 15, 2011, NMFS completed a 5-year review for the Snake River Basin steelhead DPS and concluded that the species should remain listed as threatened (76 FR 50448).

The Snake River historically supported more than 55% of total natural-origin production of steelhead in the Columbia River Basin. It now has approximately 63% of the basin's natural production potential. Construction of the Hells Canyon and Dworshak dam complexes on the Snake and Clearwater rivers, respectively, eliminated access to approximately 64.4% of the DPS' historical range (The Snake River Basin steelhead DPS is distributed throughout the remainder of the Snake River drainage system, including tributaries in southeast Washington, eastern Oregon and north/central Idaho) (Ford 2011). Snake River Basin steelhead migrate a substantial distance from the ocean (up to 930 miles) and use high elevation tributaries (typically 3,300 to 6,600 feet above sea level) for spawning and juvenile rearing. Snake River Basin steelhead are generally classified as summer run, based on their adult run timing pattern (adults enter the Columbia River from late June through October). After holding over the winter, summer steelhead spawn during the following spring (March to May). Managers classify up-river summer steelhead runs into two groups based primarily on ocean age and adult size upon return to the Columbia River. A-run steelhead are predominantly 1-ocean fish while B-run steelhead are larger, predominately 2-ocean fish.

With a few exceptions, more recent annual estimates of steelhead returns to specific production areas within the Snake River are not available. Annual return estimates are limited to counts of the aggregate returns over LGD. Returns to LGD remained at relatively low levels through the 1990s. The 2001 run size at LGD was substantially higher relative to the 1990s. The 2002 through 2006 return years declined annually but continued to remain higher than the 1990s return years. Total returns increased again between 2007 and 2010 with the 2009 run being the highest recorded run in the past 30 years. Although steelhead numbers have dramatically increased, wild steelhead have comprised only 10% to 26% of the total returns since 1994. Consequently, the large increase in fish numbers does not reflect a change in steelhead status based on historic levels. In addition, hatchery steelhead have been demonstrated to have lower fitness in natural environments (Araki et al. 2008) and to reduce fitness of the wild population when hatchery steelhead breed with natural steelhead (Araki et al. 2007; Araki et al. 2009). The long-term trend for this species indicates a decline and the natural origin abundance and productivity are still below their targets. Small population sizes of native fish spread out over a wide geographic area likely present high demographic and genetic risks. The recent 5 year (2006 to 2010) mean abundance is 48,743 natural returns (FPC 2011). This is a slight increase over the previous 5 year (2001 to 2005) mean abundance level of 38,357 fish counted at LGD. Predictions regarding the effects of climate change on salmonids may generate additional population variability, and thus could further increase the population's extinction risk (McLaughlin et al. 2002).

Significant factors in the declining populations include but are not limited to mortality associated with the many dams along the Columbia and Snake Rivers, losses from harvest, loss of access to more than 50% of their historic range, and degradation of spawning and rearing habitat. Possible genetic introgression from hatchery stocks is another threat to Snake River Basin steelhead since

wild fish comprise such a small proportion of the population. Additional information on the biology, status, and habitat elements for Snake River Basin steelhead are described in Busby et al. (1996).

The ICBTRT (2003) has identified six MPGs in this DPS for the Snake River Basin steelhead: (1) Clearwater River; (2) Grande Ronde River; (3) Hells Canyon; (4) Imnaha River; (5) Lower Snake River; and (6) Salmon River. Snake River Basin steelhead occupy habitat that is considerably warmer and drier (on an annual basis) than other steelhead DPSs. The ICBTRT (2003) noted that the DPS remains spatially well distributed in each of the six major geographic areas in the Snake River basin. Snake River Basin steelhead were blocked from portions of the upper Snake River beginning in the late 1800s and culminating with the construction of Hells Canyon Dam in the 1960s. Snake River Basin steelhead “B-run” population levels remain particularly depressed.

Steelhead in the action area belong to the Salmon River MPG. The Salmon River is the largest MPG and consists of 12 populations (including the Lemhi River) (Ford 2011). The area occupied by the Salmon River MPG makes up approximately 39% of the steelhead habitat in the DPS. Two of the MPG’s populations are categorized as Large, eight are Intermediate, and two are Basic sized. Lemhi River steelhead are an Intermediate sized, A-Run life history population. This A-run population was defined on the basis of the distance to other spawning aggregates in the Salmon River basin. The population was nearly extirpated from the Lemhi River by a water diversion dam for hydroelectric generation near the mouth (Bjornn 1978).

Currently the Salmon River MPG is not viable (Ford 2011). The ICBTRT (2007) criteria recommend that a minimum of six populations, which must include at least four Intermediate and one Large populations be at viable status for the MPG to also be considered viable. In addition, at least one of these six populations must be “Highly Viable,” and both A- and B-run life history strategies must be represented. Ford et al. (2010) provided the following recovery scenario for this MPG; “The scenario includes Chamberlain Creek, the Upper Middle Fork, and the South Fork populations, along with three additional populations at least two of which should be large or intermediate in size.” Although the Lemhi River population is not specifically identified in this scenario, all populations must be maintained or improved to achieve MPG viability; and the scenario posed does require one of the remaining three populations to be at least Intermediate. Being an Intermediate-sized population, the Lemhi could be used to achieve a viable MPG.

The abundance/productivity rating for the Lemhi River population was tentatively rated as a Moderate Risk, based on the DPS’s current status as threatened, and because of limited abundance information. The spatial structure/diversity for the Lemhi River population was rated as Moderate Risk. This rating was primarily due to the lack of genetic data. Survival improvements, leading to increased abundance and productivity are necessary for the population to achieve viable status. Therefore, any measurable decrease to the condition of these two factors may reduce the population’s potential to become viable in the future.

The Lemhi River population has an interim recovery target of 1,000 natural spawners. There are very limited data on adult returns to this population. The Idaho Department of Fish and Game

(IDFG) monitored passive integrated transponder (PIT) tag arrays in the Lemhi watershed in 2010 to quantify adult escapement. This is the only year for which data are available. For the 2010 return year, IDFG estimated 574 (range 502-645) natural/wild adult steelhead returned (Personal Communication, Mike Biggs, Fisheries Biologist, IDFG, March 14, 2011). There was an inadequate sample size to estimate returns to the upper river or individual tributaries. Steelhead are believed to spawn and/or rear in the mainstem Lemhi River, and in Hayden, Basin, Bear Valley, Wright, Wimpey, Kenney, Kirtley, lower Texas, Canyon, and Agency Creeks.

Climate change is likely to have negative implications for the conservation value of ESA-listed fish habitats in the Pacific Northwest (CIG 2004; Scheuerell and Williams 2005; Zabel et al. 2006; Independent Scientific Advisory Board [ISAB] 2007). Average annual Northwest air temperatures have increased by approximately 1°C since 1900, or about 50% more than the global average warming over the same period (ISAB 2007). The latest climate models project a warming of 0.1°C to 0.6°C per decade over the next century. According to the ISAB, these effects may have the following physical impacts within the next 40 or so years:

- Warmer air temperatures will result in a shift to more winter/spring rain and runoff, rather than snow that is stored until the spring/summer melt season.
- With a shift to more rain and less snow, the snowpacks will diminish in those areas that typically accumulate and store water until the spring freshet.
- With a smaller snowpack, these watersheds will see their runoff diminished and exhausted earlier in the season, resulting in lower streamflows in the June through September period.
- River flows in general and peak river flows are likely to increase during the winter due to more precipitation falling as rain rather than snow.
- Water temperatures will continue to rise, especially during the summer months when lower streamflow and warmer air temperatures will contribute to the warming regional waters.

These changes will not be spatially homogenous. Areas with elevations high enough to maintain temperatures well below freezing for most of the winter and early spring would be less affected. Low-lying areas that historically have received scant precipitation and contribute little to total streamflow are likely to be more affected. These long-term effects may include, but are not limited to, depletion of cold water habitat, variation in quality and quantity of tributary rearing habitat, alterations to migration patterns, accelerated embryo development, premature emergence of fry, and increased competition among species.

### **2.3. Environmental Baseline**

‘Environmental baseline’ includes the past and present impacts of all Federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed

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

NMFS describes the environmental baseline in terms of the biological requirements for habitat features and processes necessary to support all life stages of each listed species within the action area<sup>9</sup>. As previously mentioned, the principle streams in the action area are Canyon, Big Timber, Hawley, Eighteenmile, and Texas Creek. Several tributaries to these streams also occur in the action area. Private irrigation practices and associated structures currently prevent anadromous fish from accessing BLM-managed lands in the action area, with the exception of Canyon Creek and the lower 1.5 miles of Big Timber Creek.

All anadromous fish in Big Timber Creek occur at least a half mile downstream of BLM-managed lands (Lower Pasture - Timber Creek Allotment), with the most upstream pasture (Upper Pasture - Timber Creek Allotment) more than 2 miles upstream of anadromous distribution. An irrigation diversion stops upstream migration approximately 1.5 miles above Big Timber Creek's confluence with the Lemhi River. Juvenile spring/summer Chinook salmon, juvenile steelhead, and adult steelhead occur in this lower reach, but no spawning has been documented. Recent habitat improvement projects in Canyon Creek removed one barrier structure and added up to 7 cfs of flow through the lower reach during irrigation season. This quantity of flow is suspected to provide at least partial connectivity with the Lemhi River and adult and juvenile steelhead are considered likely to occur in the stream at this time. To date, only juvenile sized *O. mykiss* have been observed in Canyon Creek (Personal Communication, Mike Biggs, IDFG Biologist, October 2011). The large size of some *O. mykiss* indicate a resident population exists, but it is unknown what number of sampled fish are residents versus anadromous. The IDFG recently installed a PIT antenna in Canyon Creek. The antenna will record fish implanted with PIT tags, as they immigrate into or emigrate out of Canyon Creek, allowing at least a partial run estimate over time.

Historically, spring/summer Chinook salmon and steelhead likely occurred in several of the other action area streams (i.e., Hawley, Texas, Eighteenmile, and Big Timber Creeks) and may occur at some future point if existing irrigation practices and barriers are ever modified. Thus, for this action area, the biological requirements for spring/summer Chinook salmon are the habitat characteristics that support successful completion of spawning, rearing, and freshwater migration.

Additional Federal actions are being developed to address remaining fish passage and flow problems in the action area, with emphasis continuing on Big Timber and Canyon Creeks. Fences and grazing prescriptions greatly restrict spatial and temporal livestock access to Federally-managed perennial streams in the action area. The BLM visual observations, including photos, indicate vegetative and channel conditions are trending up across most of the

---

<sup>9</sup> Although unnecessary to describe the environmental baseline for "not likely to adversely affect" portions of this action, NMFS has included it in this Opinion for information purposes.

action area since the early 1990s. The majority of tributary streams are not fenced and livestock access can occur where vegetation and/or steep and rocky topography do not impair access. All known barrier culverts on BLM-managed lands have been addressed.

Idaho Department of Environmental Quality's (IDEQ) 2008 Lemhi River Integrated Report (IDEQ 2008) showed water quality limitations for sediment, cold water biota, and water temperature in Canyon, Eighteenmile, and Texas Creeks. Some impaired segments included public lands but the majority of the limitations were identified on private land.

The following sections provide watershed specific baseline information on the primary stream systems in the action area. In addition to the narrative descriptions, Table 25 provides available monitoring data for the six grazing focus indicators within each Allotment. The 2011 use monitoring data, presented in the proposed action tables, is incorporated by reference.

*Lemhi River* – The Lemhi River, within the action area, is a naturally functioning Rosgen C3 and C4 channel (Rosgen 1996), with a higher degree of sinuosity and lower gradient than the lower river sections (Trapani 2002). The majority of occupied and best habitat for anadromous fish in the Lemhi subbasin occurs in the reach between Hayden Creek and Big Timber Creek. Although no BLM-managed lands include the upper Lemhi River, the downstream end of the action area contains the upper extent of this Lemhi River reach. All of the current Chinook salmon production in the mainstem occurs downstream from the action area. Vegetation stabilizes streambanks in the upper Lemhi River and has been protected by multiple riparian fencing projects implemented over the past 20 plus years. Sediment levels are moderately high in the Lemhi River due to historic streambank and other erosion, primarily related to grazing and an altered hydrologic regime. Reductions in the peak flows and channelization have resulted in loss of fish habitat, including a loss of deep pools and meander scour bends. However, habitat conditions are believed to be improving due to extensive riparian enclosure fences completed in the past 20 years.

*Big Timber Creek* (Timber Creek and Leadore Hill Allotments) – There are 17 known, active diversions on Big Timber Creek and another five on its tributaries. All of the diversion structures are unscreened. During the irrigation season, typically March through November, Big Timber Creek passes about 6 cfs from the Big Timber 2 diversion downstream to the Lemhi River (approximately 1.5 miles). This flow is a result of recently implemented flow and habitat improvement projects and augments approximately 2 to 4 cfs of additional flow contributed by groundwater sources in the lower mile. The mean annual flow of Big Timber Creek, just upstream of the project area, is approximately 38.6 cfs. Stream gradient is generally low, ranging from 1% to 4% across mostly B-channel types (Rosgen 1996). Higher up in the watershed stream gradient is generally above 4%. Both forks of Little Timber Creek are also higher gradient systems. The IDFG recently installed a PIT tag antenna in lower Big Timber Creek to assess use of this segment by ESA-listed fish and have documented adult steelhead and juvenile Chinook salmon utilizing the lower 1.5 miles. Data updates are expected to be available annually.

**Table 25. Current condition of the six grazing focus indicators for all Allotments/DMA's in the CBT Area.**

Allotment (DMA Name)	Stream	Substrate		Greenline Vegetation	Greenline- Greenline Width	Temperature	Bank Stability
		SCNF % Fines at Depth	BLM % Surface Fines				
Jakes Canyon (Not yet established)	Canyon Creek	23% <sup>a</sup>	FAR (No Data)	FA Upward Trend	FA Static (12.4 feet)	FAR	FA (90%)
Leadville (CN-01)	Canyon Creek	23% <sup>a</sup>	FAR (40%)	FA Upward Trend	FA Upward Trend	FAR	FA (90%)
Leadville	Hawley Creek	Irrigation practices dewater Hawley Creek for most of the year. The channel is occupied by sagebrush and no data for grazing focus indicators is available or applicable.					
Freestrip (CN-03)	Canyon	23% <sup>a</sup>	FA	FA	FA Upward Trend	FAR <sup>b</sup> Upward Trend	FA (100%)
Freestrip (CH-01)	Chippie	N/A	FUR (40%)	FAR <i>Late-seral</i>	FAR Upward Trend (2.7 feet)	FAR <sup>b</sup> Upward Trend	FUR (42%)
Center Ridge (EC-06)	Eighteenmile	N/A	FUR (41%) <i>Upward Trend</i>	FA <i>PNC</i>	FA Upward Trend (9.8 feet)	FAR	FA (83%)
Chamberlain Creek (EC-01)	Eighteenmile	N/A	FA (3%)	FA <i>Late-seral</i>	FA (9.7 feet)	FAR	FA (84%)
Powderhorn (CL-01)	Clear	N/A	FA (22%)	FAR <i>Late-seral</i>	FA Upward Trend (10 feet)	FA	FUR (33%)
Powderhorn( CL-02)	Clear	N/A	FA (14%)	FAR <i>early seral</i> <sup>e</sup>	FA Upward Trend (10 feet)	FA	FA (93%)
Hawley Creek No DMA	Hawley	21%	FA	FUR Dry Channel	FUR Dry Channel	FAR	FAR <sup>d</sup> (>90%)
Hawley Creek (EC-05)	Eighteenmile	N/A	FA (14%)	FA <i>(early seral)</i>	FA (8 feet)	FAR	FA (85%)
Tex Creek (EC-05)	Eighteenmile	N/A	FA (14%) <sup>e</sup>	FAR <i>(early seral)</i>	FAR (~8 feet)	FAR	FAR (85%) <sup>e</sup>
Leadore Hill (LT-01)	Little Timber	22% <sup>f</sup>	FAR No data	FUR Dewatered Channel	FA	FAR	FA (83%)
Timber Creek (BT-01)	Big Timber	22% <sup>f</sup>	FAR (24%)	FAR <i>(early seral)</i>	FA (21 feet)	FAR	FAR (84%)
Timber Creek (SB-01)	Swan Basin	NA	FA (8%)	FA <i>(mid seral)</i>	FAR (5.4 feet)	FAR	FAR (84%)
Nez Perce (TX-01)	Texas	NA	FA (12%)	FAR <i>(mid seral)</i>	FA (14)	FAR	FA (91%)

FA= Functioning Appropriately, FAR = Functioning at Risk, FUR = Functioning at Unacceptable Risk

<sup>a</sup> Measured more than 5 miles upstream. <sup>b</sup> Not measured in allotment due to small size of streams and intermittent nature. Rating based on visually observed improving trend. <sup>c</sup> Data erroneously collected. BLM suspects actual rating is late-seral. <sup>d</sup> Measured on SCNF upstream of allotment. No data on BLM portion of stream. Appear FA above diversion and greatly impaired below the channel dewatering diversion. <sup>e</sup> A total of ¼ mile of Eighteenmile Creek, in two segments, present on allotment. No data collected from these segments but conditions are similar to EC-05 DMA, which is 1 mile downstream. <sup>f</sup> Measured at three sites each more than 5 miles upstream with one site on Big Timber Creek, one site on the North Fork Little Timber Creek and one site on the Middle Fork Little Timber Creek.

Below the Carey Act Dam, which is between the confluences of Little Timber and Swan Basin Creeks, the riparian area is narrow but robust, consisting of black cottonwood and willow. The riparian area upstream of the dam becomes much broader, exhibits beaver influence, is dominated almost exclusively by willow, and is considered at “potential natural community”(PNC). Upstream of BLM lands, Little Timber Creek is dewatered by irrigation diversions for most of the year, and where dewatered, the riparian area is “non-functional.” Upstream of these diversions, Little Timber Creek’s riparian area is “functioning appropriately,” having achieved “PNC” in most places. Overall, Swan Basin Creek riparian condition is “functioning at risk” with an upward trend. Riparian shrubs and grasses continue to expand and the channel is narrowing. A diversion, located upstream of the Timber Creek Allotment on private land, greatly reduces downstream stream volume. A series of springs and beaver dams begins approximately half way through the private land in the Big Timber Creek Allotment and extend downstream through BLM. Springs and beaver dams maintain PNC riparian vegetation from this point downstream. Riparian conditions are improving but “functioning at risk” upstream of the dam/spring complex due to the seasonal dewatering upstream.

On Big Timber Creek, upstream of BLM managed lands, the SCNF has a long-term fines-at-depth data record indicating percent fines are approximately 22% on average, slightly higher than the 20% or less objective. The BLM monitors surface fine data at select DMA locations and observed values are similar, being slightly elevated for the quartzite parent geology. Irrigation withdrawals appear to elevate peak summer stream temperatures, especially lower in the drainage where cumulative withdrawal impacts are most pronounced. Available data indicates water temperatures are right at anadromous thresholds.

*Canyon Creek* (Jakes Canyon, Leadville, and Freestrip Allotments) – Canyon Creek is relatively small with baseflow estimates of approximately 12 cfs. Topography is highly variable, with elevations ranging from 6,000 to more than 10,000 feet. The headwaters of Canyon Creek flow through a high gradient (6% to 8%), broad, open valley, resulting in A-type channels (Rosgen 1996). A few small beaver dams exist where the canyon widens, near the SCNF boundary. More extensive dams occur along the lower BLM section and are beginning to encroach on private holdings. These dams and associated ponds tend to trap sediment and prevent it from moving further downstream. Below the private land boundary and the confluence with Cruickshank Creek, Canyon Creek enters a narrow, flat-floored valley bottom with gradients between 3% and 6%. In this reach, dense stands of willows provide stream shading and streambank stability. This reach also receives very little grazing pressure, only being used while livestock are actively trailed to upstream SCNF lands. The streambanks are very stable (94%) and the stream has excellent cover. Below the SCNF segment, Canyon Creek is a low gradient (3%), C-channel type (Rosgen 1996) downstream to the Lemhi River confluence. Both the Jakes Canyon and Leadville Allotments occur in this lower reach. Recent BLM bank stability monitoring recorded 90% stable banks in this reach. The lowest one-half mile of Canyon Creek was recently rehabilitated, planted, and fenced to restore riparian vegetation and floodplain access compromised by private agricultural practices.

Although road density is relatively low for the watershed, Idaho State Highway 28, a large double lane graveled road, parallels Canyon Creek through the middle reach. Some sediment contributions are likely due to the road's proximity to the stream. Long-term fines-at-depth monitoring completed by the SCNF in the middle reach indicates substrate conditions are meeting objectives. However, lower in the drainage, BLM surface fine monitoring recently observed 40% fines, much higher than BLM expected with the highly stable banks and robust riparian vegetation present along the stream. The source of high surface fines observed in 2009 is unknown but may be influenced by the adjacent gravel road or from sediment release from upstream beaver dams during spring runoff.

Chippie Creek is a small (less than 1 cfs) perennial stream and Whiskey Springs Creek is an intermittent stream. Both are non-fish bearing tributaries to upper Canyon Creek on the Freestrip Allotment. Both streams historically received year-long grazing and although they are recovering, some impacts to stream conditions persist. Both streams are believed to be at mid-seral condition and bank stability remains well below objectives at approximately 42%. Although data only exists for Chippie Creek, the streams are similar in elevation and drainage area and receive similar grazing pressure. As such, data from Chippie Creek is assumed to be a suitable inference for conditions on Whiskey Spring. On Chippie Creek, a private pond downstream of BLM-managed lands intercepts all flow and sediment. On Whiskey Springs Creek, a small impoundment, which is a remnant of the now defunct railroad grade, is present just upstream of the Canyon Creek confluence. These impoundments effectively disconnect the streams from Canyon Creek and result in little to no potential for measurable effects to downstream habitats.

*Eighteenmile Creek* (Hawley Creek, Tex Creek, Powderhorn, Chamberlain Creek, and Center Ridge Allotments) - Eighteenmile Creek, along with Texas Creek, forms the upper Lemhi River where they converge near Leadore, Idaho. Physical barriers at irrigation diversions and road crossings, and irrigation withdrawals that seasonally dewater the channel, prevent anadromous fish from occurring in the watershed. Springs, seeps, and bogs are the principle source of surface water to the main channel as most tributaries go underground or are diverted prior to joining Eighteenmile Creek. Eighteenmile Creek itself is dewatered by irrigation diversions for most of the year just upstream of Leadore. Hawley, Pass, and Divide Creeks are the only tributaries believed to have historically connected with Eighteenmile Creek. Eighteenmile Creek's gradient is typically less than 1% along the valley bottom and over 5% in some headwater channels. The majority of mainstem Eighteenmile Creek is privately owned and principally managed for livestock production. Habitat conditions on private lands, particularly downstream of the Oxbow Ranch Road, are generally considered compromised, exhibiting high bank instability and reduced riparian vegetation (BLM 1999). Many BLM-managed parcels are fenced in with private lands making management complex across the different jurisdictions.

The BLM monitoring data is available for select DMA sites within the Eighteenmile Creek watershed (Table 25). Overall, riparian and streambank conditions are "functioning appropriately" where flow is perennial, while water temperature and substrate conditions are generally "functioning at risk" or "at unacceptable risk." Water temperature and substrate conditions are likely influenced by private land management practices in the watershed, including the extensive irrigation withdrawals and higher grazing utilization levels compared to

adjacent Federal lands. The BLM segments primarily exhibit intact streambanks and “functioning appropriately” riparian vegetation which provides support for this generalization. Photos provided in the BA also present visual evidence of the upward trend BLM reported observing since the early 1990s.

Clear Creek and Tenmile Creek are the largest tributaries upstream of Hawley Creek, and both occur in the Powderhorn Allotment. Clear Creek is completely dewatered for irrigation use from April through November, further limiting fish migration and retarding riparian development. Tenmile Creek is a perennial stream originating from artesian springs on private land at the canyon mouth. Its entire flow (base flow about 2-4 cfs with little seasonal fluctuation) is captured in an irrigation ditch year-round and conveyed onto the Oxbow Ranch. The stream contains resident rainbow/redband trout. Tenmile Creek loses much of its volume as it flows across the sage-steppe flat on BLM. The stream does not appear to directly influence downstream habitats.

*Hawley Creek* (Hawley Creek and Leadville Allotments) – Hawley Creek is the largest tributary of Eighteenmile Creek, and the first to flow into the stream above Leadore. Anthropogenic barriers and dewatering prevent anadromous fish from occurring in Hawley Creek. Approximately 4.8 miles of the stream occur in the action area. The upper 1.3 miles of this segment are in “proper functioning” condition and show little impacts from management activities (BLM 2011). A private irrigation diversion, present for at least the past 50 years, dewateres Hawley Creek, leaving the lower 3.5 miles barren of riparian vegetation and in a “non-functioning” condition. Sagebrush and bunchgrass occur throughout the channel downstream from the diversion. Long-term sediment monitoring by the SCNF and recent MIM monitoring by the BLM indicates substrate conditions are “functioning appropriately” upstream of the diversion. The BLM noted that flows have been restored to the dewatered reach from November through April, for the past 2 years, displacing some sagebrush and allowing some young willows to reestablish in several areas.

*Texas Creek* (Nez Perce Allotment) - Texas Creek and Eighteenmile Creek, form the upper Lemhi River where they converge near Leadore, Idaho. Anthropogenic barriers and irrigation withdrawals prevent anadromous fish from occurring in the watershed. Springs, seeps, and bogs are the principle source of surface water to the main channel as most tributaries go underground or are diverted prior to joining Texas Creek. Texas Creek itself is seasonally dewatered by irrigation diversions both above and below BLM-managed lands. A total of 7 miles of Texas Creek occur in the Allotment, but the BLM manages just 1 mile of Texas Creek in six short segments, all co-fenced with private lands. The remaining 6 miles of Texas Creek, in the Allotment, are privately owned. Downstream of the Allotment there are approximately 10 miles of privately owned stream before an anthropogenic barrier limits upstream fish passage.

Sediment data is sparse for Texas Creek. A 2010 BLM monitoring survey documented 12% surface fines at the Texas Creek DMA, indicating substrate conditions may be “functioning appropriately.” For riparian condition, approximately 0.5 mile of the BLM segments were rated as “properly functioning” with the other 0.5 mile rated “at risk.” These ratings are generally believed to reflect conditions on adjacent private lands but no data is available for those areas. Although all riparian age classes are present, mature vegetation is lacking along portions of the

stream. Overall, vegetation is in good condition with deep-rooted hydric species dominating the greenline and on an upward trend. Bank stability is high (91%), reflective of the quality riparian vegetation present.

## **2.4. Effects of the Action on the Species and its Designated Critical Habitat**

“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.

This Opinion focuses on effects to Snake River Basin steelhead. Adverse effects include potential for livestock to trample steelhead redds. Within the action area, the Jakes Canyon and Leadville Allotments are the only places steelhead may co-occur with BLM-authorized livestock. None of the other proposed actions (i.e., range improvements and vegetation treatments) overlap with anadromous fish distribution. All the other allotments include stream segments upstream of fish passage barriers, preventing direct impacts to steelhead. Snake River spring/summer Chinook salmon spawning does not overlap with any of the proposed grazing, making the risk for direct effects discountable from all the proposed actions. For this reason, these are the only two allotments discussed in this section of the Opinion. Rationale and conclusions regarding insignificant effects to Snake River spring/summer Chinook salmon, Snake River Basin steelhead, and their critical habitats are presented in Section 2.11.

### 2.4.1. Jakes Canyon Allotment

As previously described, the Jakes Canyon Allotment is a two pasture system containing 550 acres of BLM managed and about 30 acres of SCNF lands. All livestock on the Allotment are managed as one individual herd. Thus when established grazing use indicators or use periods are met on BLM lands, the entire herd is moved. This results in the same degree of impacts on BLM and any other lands within the Allotment boundary (e.g., 30 acres of SCNF in this case). SCNF lands within the Allotment boundary contain no stream reaches and there will be no additional impacts of the action due to interrelated grazing that occurs there. The South pasture is approximately 65 acres and contains approximately 0.3 miles of Canyon Creek, the only stream within the Allotment boundary, all on BLM managed lands. Proposed permit terms and conditions would limit use of the South pasture to 9 AUMs, with no use after July 1. Permit terms and conditions also require no livestock in the South Pasture after May 31 if an adult steelhead or steelhead redd is found in the Allotment during BLM redd surveys<sup>10</sup>.

Livestock grazing can affect ESA-listed fish directly and indirectly. When livestock trail along streams, or enter streams to cross or drink, they can disturb individual fish or trample redds

---

<sup>10</sup> Because the proposed action does not identify the frequency or timing of steelhead redd surveys, NMFS has added a term and condition (Section 2.8.2.1) to ensure surveys effectively identify redds prior to redd trampling occurring and at reasonable intervals during the grazing season.

(Ballard 1999; Ballard and Krueger 2005; Gregory and Gamett 2009), which can destroy eggs and embryos (Roberts and White 1992). In evaluating livestock trampling effects on cutthroat trout (*O. clarki-lewisi*) populations, Peterson et al. (2010) demonstrated that slow growing populations exposed to trampling rates as low as 25% could experience negative population growth.

Juvenile steelhead are the only anadromous fish that have been recently documented in Canyon Creek. However, its recent reconnection to the Lemhi River increases the likelihood that anadromous fish may spawn and rear there in the future. Steelhead spawning would typically begin near the third week of March and extend through the second week of June, with eggs incubating through the first week of July. Livestock can be turned out as early as May 20 and must be removed before July 1. This results in a maximum of 42 days of grazing overlap with steelhead incubation in a 0.3 mile reach of Canyon Creek. This is a large degree of overlap for a very small number of AUMs provided by the Allotment. In response to NMFS' December 19, 2011, draft Opinion, the BLM added a permit term and condition that requires livestock be off the Allotment before May 31 in any year an adult steelhead or steelhead redd is observed in the Allotment. This measure results in a maximum of 12 days of grazing overlap with potential steelhead incubation.

Riparian vegetation along this 0.3 mile reach of Canyon Creek is "functioning appropriately" and continues to improve under the current management. Thick riparian vegetation is expected to reduce livestock access to Canyon Creek although some access to the stream is likely as it is the only water source in the pasture. In addition, spring grazing regimes typically demonstrate reduced livestock use of riparian vegetation as livestock tend to avoid areas characterized by wet soil, cold temperatures, and immature forage (Platts and Nelson 1985; Kovalchik and Elmore 1991). In these cases, spring grazing cattle typically concentrate foraging effort in uplands rather than riparian areas (Platts and Nelson 1985; Parsons et al. 2003; McInnis and McIver 2009). In addition to livestock's preference for upland forage during this time, early season grazing allows riparian vegetation the remaining growing season to re-grow and reproduce, further improving its condition over time (USDI-BLM 2006). As riparian vegetation becomes more mature livestock access to the stream becomes additionally reduced and the probability of fish disturbance or redd trampling further diminishes over time.

Livestock on the Jakes Canyon Allotment are reasonably certain to disturb some adult steelhead and juvenile Chinook salmon and steelhead during the next 10 years. Disturbances can result in altered feeding rates, increased exposure to predators, and/or displacement to less suitable habitat. Although these effects can result in injury or death, high quality habitat conditions in the action area result in fish being able to safely access nearby cover. The spring season of use and thick riparian vegetation reduces livestock use in and adjacent to Canyon Creek to infrequent crossings and daily watering. Long-term loitering in the riparian area is unlikely. Although adult steelhead may be present while cattle are on the South Pasture, high spring water levels greatly reduce visibility, increases available cover for fish, and discourages livestock presence in or near streams. Livestock preference for upland habitats during this time further decreases time livestock spend adjacent to streams. Causing adult fish to periodically relocate or dart to cover to avoid what is likely to be infrequent cattle exposure is not likely to significantly disrupt normal behavioral patterns and will not rise to the level of harassment-related take.

**Redd Trampling.** There is no record of steelhead spawning in Canyon Creek, but it is expected to occur during the 10-year permit term as a result of recent reconnection efforts. Steelhead spawning (redd) survey information compiled by the IDFG from 1990 to 1998 for A-run steelhead in the upper Salmon River basin had an average density of 1.3 redds per mile surveyed. Because Canyon Creek is a high elevation stream occupied by steelhead with an A-run life history, the overall average from the IDFG survey is assumed a high, but suitable, estimate for potential Canyon Creek steelhead redd densities as the reaches were modeled as “moderate” intrinsic spawning/rearing potential (NMFS unpublished). We recognize potential errors with this approach as spawning is not normally distributed across stream length, and some sites have multiple redds while others have none. However, barring reach-specific spawning survey data, it is the most reasonable estimate we can make with the available data.

Should steelhead return to Canyon Creek and begin spawning, it's not likely that they'll spawn in greater densities than other A-run steelhead in the Upper Salmon (approx. 1.3 redds per mile). Considering this already low redd density, and the fact that the Allotment only includes 0.3 miles of habitat, it's very unlikely the Allotment would have more than one steelhead redd in any given year.

Gregory and Gamett (2009) reported that cattle affected 12% to 78% of simulated bull trout (*Salvelinus fontinalis*) redds while grazing Federal pastures. They also noted that stocking intensity [(number pairs/suitable grazing acres)/ grazing days] significantly influenced redd trampling rates with the highest stocking intensity generating the highest observed trampling levels and vice versa. Jakes Canyon Allotment has a moderate to very low stocking intensity which translates to a trampling rate less than 33%. This estimate may still be high as bull trout are fall spawners, and cattle use of riparian areas is higher in late summer than early spring when steelhead spawn (Parsons et al. 2003; McInnis and McIver 2009) and when the Allotment would be grazed. In addition, cattle are less likely to concentrate in riparian areas during spring months because of flooding, and because water and palatable vegetation are readily available in upland areas away from streams (Leonard et al. 1997; Ehrhart and Hanson 1997; Kinch 1989; Parsons et al. 2003; Wyman et al. 2006; and McInnis and McIver 2009). McInnis and McIver (2009) reported cattle presence (hoof prints) along the greenline was 59% higher in late summer pastures (90%) than in early summer pastures (53%).

Because of the high water levels characteristic of streams in the action area during early summer months and the thick riparian vegetation, streamside cattle activity during steelhead incubation is largely expected to be limited to watering at the streambanks and occasional crossing of streams, typically repeated at the same sites. To estimate a “worst-case” redd trampling risk; NMFS applied a 33% simulated redd trampling rate for moderate stocking intensities (Gregory and Gamett 2009). Because there is likely to be no more than one redd in the Allotment, there is roughly a 33% chance livestock will trample it annually. This approach is believed to overestimate potential redd trampling by: (1) Not considering the reduced riparian use during the proposed spring grazing; (2) not factoring in reduced livestock access to streams during high water conditions present during proposed grazing; and (3) not accounting for existing thick riparian vegetation, which reduces livestock access to the stream (Gregory and Gamett 2009). For these reasons, the 33% chance of trampling one redd annually should be used to gauge the

relative risk of the potential impact and should not be viewed as an absolute number that is likely to occur. This is especially true for this Allotment as spawning steelhead are only expected to spawn here at some future point and have not been documented at this time.

To put these numbers into perspective, NMFS converted the number of potential trampling events to adult equivalents lost from the population to determine potential population level effects if trampling occurs (one redd). Roberts and White's (1992) study of angler related trampling, the only available surrogate for livestock trampling, documented highly variable egg mortality, dependent on the developmental stage of eggs/pre-emergent fry trampled (Range = 0% to 43% for single trampling events). Data in Roberts and White (1992) and unpublished data acquired from the author indicate green eggs and the first two-thirds of the eyed-egg stage (part 1) were the most resilient (approximately 4% to 8% trampling mortality), with no statistical difference between control and tests. Pre-emergent fry (approximately 14%) and the later third of the eyed-egg stage, between chorion softening and hatching (max 43%), were most susceptible to trampling. Their study evaluated trampling of synthesized trout redds, whose egg burial depth is noticeably shallower than steelhead and results may or may not be directly applicable.

No early season Canyon Creek water temperature data (i.e., March to June) is available to accurately estimate what stages of embryos would most likely be present during livestock grazing on this Allotment. Between July 1 and July 15, 2011, immediately after expected emergence, daily mean water temperature in Canyon Creek was approximately 51°F (SCNF, unpublished data). Assuming water temperatures will be between 43 and 50° F during spawning/incubation period, and assuming peak spawning occurs between April 25 and May 2<sup>11</sup>, most embryonic steelhead would be in the green egg or part 1 of the eyed-egg stage (less than 310 Celsius temperature units) up to May 25. As mentioned above, this stage of embryo development coincides with the lowest observed trampling mortality, 4% to 8%. After May 25, and if water temperature is warmer, embryos would either be in the later third of the eyed – egg stage or beginning to hatch. These embryos would be exposed to the highest observed trampling mortality rates (18% to 43%). In response to NMFS' draft Opinion, the grazing permit now limits grazing the South Pasture after May 1 if an adult steelhead or a steelhead redd are observed in the Allotment. This measure effectively limits redd trampling to the period when eggs/pre-emergent fry exhibit the lowest potential mortality rates from such disturbances.

Steelhead egg-fry survival is approximately 29.3% (Quinn 2005) under natural conditions. Assuming each redd contains roughly 5,000 eggs (Quinn 2005), and trampling kills a maximum of 8% of the eggs in a redd (Roberts and White 1992)<sup>12</sup>, each trampled redd could result in up to 117 fewer fry. Assuming fry-to-smolt survival is 13.5% (Quinn 2005) results in approximately 16 fewer steelhead smolts per trampled redd. Applying a conservative smolt-to-adult survival rate of 0.8% (USFWS 1998) results in less than one fewer adult equivalent (0.13) per trampled redd.

---

<sup>11</sup> Personal communication, Mike Biggs, IDFG Fisheries Biologist, December 14, 2011, email.

<sup>12</sup> This is a 'worst-case' scenario has been adapted to acknowledge the effectiveness of the BLM's proposal to not graze the South Pasture after May 31 on years adult steelhead or redds are observed in the Allotment. NMFS' draft Opinion originally applied a 43% mortality rate to account for higher mortality when trampling affected the more sensitive life stage.

In summary, the previous analysis estimated that there is a 33% chance of one redd being trampled annually. Therefore, for purposes of this analysis, NMFS assumed a range of zero to one redd could be trampled annually. In years one redd is trampled up to one (0.12) adult equivalent may be lost from the population. However, it's important to note that this level of impact is not expected to occur annually, partially because of the small amount of stream accessible to steelhead and livestock (0.3 miles), and partially because steelhead have yet to be documented spawning in Canyon Creek. In addition, the BLM has adopted NFMS' original recommendation to limit grazing in the South Pasture to the portion (first half) of the proposed grazing season that will have the lowest trampling mortality, effectively reducing the impact of the action.

#### 2.4.2. Leadville Allotment

This Allotment is immediately upstream of the Jakes Canyon Allotment (on Canyon Creek) and also includes segments of Hawley and Eighteenmile Creeks (BLM, state, and private). Although larger, the Leadville Allotment is grazed under a similar early-season prescription and current conditions along Canyon Creek are very similar. Because of these similarities and the proximity to Jakes Canyon the potential effects are also very similar. For this reason the previous effects analysis is incorporated by reference and the following discussion will focus only on the specific risk of redd trampling in this Allotment.

As previously described, the permittee will be authorized to annually graze up to 500 cow/calf pairs on three pastures, containing a total of approximately 6,500 acres of BLM land and 900 acres of private and state lands. Non-BLM lands, which have interrelated grazing on them, are primarily uplands, with the exception of a 1.5 mile segment of lower Hawley Creek and a quarter mile segment of lower Eighteenmile Creek. Neither stream is occupied by anadromous fish due to dewatering and anthropogenic physical barriers. The Canyon Creek Pasture, consisting entirely of BLM-managed lands, contains a 2.5 mile segment of Canyon Creek, the only stream potentially occupied by anadromous fish in the Allotment boundary. Proposed permit terms and conditions would limit grazing on this riparian pasture to a maximum of 115 AUMs from May 1 to May 31(30 days), although in practice the Allotment is typically grazed for less than 1 week to achieve the permitted AUMs (Personal Communication, J. Trapani, BLM Fisheries Biologist, December 1, 2011). Under the typical grazing scenario the Leadville Allotment has a moderate stocking intensity.

This segment of Canyon Creek is "functioning appropriately" for substrate, greenline vegetation, greenline-greenline width, and bank stability (Table 25). Water temperature is "functioning at risk," with impacts believed to be related to upstream water diversions.

**Redd Trampling.** Applying the previously described 1.3 redds per mile estimate to the 2.5 miles of potential spawning habitat in the Allotment results in an estimate of three (3.25) redds per year at risk of trampling. Applying the same "worst-case" scenario and assumptions described above, NMFS calculated the following: (1) Between zero (0.4) and one (1.07) redds

may be trampled annually<sup>13</sup>. Using the same assumptions for water temperature during spawning incubation (43° to 50°F) and the April 25 to May 2 peak spawning periodicity, most embryonic steelhead would be in the green egg or early eyed-egg stage up to May 25 if water is warm versus June 15 if water is cold. As mentioned previously, this stage of embryo development coincides with the lowest observed trampling mortality, 4% to 8%, which were not significantly different from control sites. After May 25, and if water temperatures are warm (near 50°F), some embryos will have entered the more sensitive stage (i.e., green eggs up to some hatching). These embryos would be exposed to the highest observed trampling mortality rates (up to 43%).

Although the grazing would typically only occur for 7 days annually, those days could occur anytime between May 1 and May 31. As a result, the entire range of potential trampling mortalities could be experienced. Therefore, we applied the same ‘worst case’ scenario as described in the Jakes Canyon Analysis, but used the highest possible trampling mortality (43%). This results in approximately one adult equivalent (0.68) lost per trampled redd. Because up to one redd may be trampled annually, up to one (0.68) adult equivalent may be lost from the population annually.

This approach is likely to overestimate the redd trampling potential for the same reasons given above: (1) Not considering the reduced riparian use during proposed spring grazing season; (2) not factoring in reduced livestock access to streams during high water conditions present during proposed grazing; (3) not accounting for existing thick riparian vegetation, which reduces livestock access to the stream (Gregory and Gamett 2009); and (4) egg mortality from trampling varied greatly (Range = 0% to 43%) depending on developmental stage trampled with green eggs and part 1 of the eyed-egg stage exhibiting the most resiliency and pre-emergent fry and later stage of eyed-eggs being most susceptible (Roberts and White 1992). For these reasons these estimates should be used to gauge the relative risk of the potential impact and should not be viewed as an absolute number that is likely to occur. This is especially true for this Allotment as spawning steelhead are only expected to spawn here at some future point and have not been officially documented at this time.

In summary, there is a high degree of uncertainty regarding the potential for redd trampling to occur as well as the magnitude of the population level impacts if it does. Proposed annual grazing has potential to not affect any redds or it could result in enough redd trampling, during the most sensitive time, to remove up to one adult steelhead from the brood. High quality habitat and early season use on the Allotment, combined with the presumed overestimations are believed to justify the lower end of the range as being more realistic. This is especially true in the near-term as steelhead spawning remains undocumented since the stream was reconnected to the Lemhi River in 2010. The high end of the range is likely an exception, and expected to occur infrequently, particularly if BLM can focus grazing in the first half of the proposed season (May 1 to May 15).

---

<sup>13</sup> Applied 12% to 33% trampling rates for low to moderate stocking intensity as described in Gregory and Gamett (2009).

### 2.4.3. Effects to Critical Habitat

The BLM determined effects from all the proposed actions would be “not likely to adversely affect” critical habitat for Snake River spring/summer Chinook salmon and Snake River Basin steelhead. Rationale for NMFS’ concurrence with these determinations is provided in Section 2.11.

## **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. Cumulative effects that reduce the ability of a listed species to meet its biological requirements may increase the likelihood that the proposed action will result in jeopardy to that listed species or in destruction or adverse modification of a designated critical habitat.

Between 2000 and 2009, the population of Lemhi County is estimated to have increased 1.3%<sup>14</sup>. Population growth typically results in increased development on private lands. Increased development can lead to reduced habitat quality as riparian vegetation is cleared, streams are armored, and crops and weeds are treated with herbicide and pest controls. Although some of these risks surely exist within Lemhi County, the action area’s private properties are believed to have a lower potential for future development than other parts of the county. A significant portion of perennial streams in the action area are in private ownership and are primarily managed as agricultural properties. NMFS is not aware of any additional proposed private or State actions in the action area (e.g., subdivisions, road building, new crops, or increase in irrigable acres) and assumes that future private actions in the action area will be similar in nature and magnitude to those currently occurring. The effects of the current State and private activities are already described in the baseline. Because there are no known new State or private activities proposed in the action area, NMFS is unaware of any additional cumulative effects likely to occur in the action area at this time.

## **2.6. Integration and Synthesis**

The Integration and Synthesis section is the final step of NMFS’ 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 (Sections 2.4 and 2.11) to the environmental baseline (Section 2.3) and the cumulative effects (Section 2.5) to formulate the agency’s biological opinion as to whether the proposed action is likely to: (1) Result in appreciable reductions in the likelihood of both survival and recovery of the species in the wild by reducing its numbers, reproduction, or

---

<sup>14</sup> U.S. Census Bureau, State and County Quickfacts, Lemhi County. Available at <http://quickfacts.census.gov/qfd/states/16/16059.html>.

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).

In section 2.11 we determined that habitat-related adverse effects to ESA-listed species or adverse effects to designated critical habitats would be insignificant and/or discountable, and that in all instances, the conservation value of the critical habitat within the Allotments will continue to improve or be maintained. For this reason, additional discussion on habitat-related effects in this section are not warranted.

Jakes Canyon and Leadville Allotments would both be grazed annually. Egg or pre-emergent fry mortality will likely occur if a redd is trampled by livestock. Significant overlap in grazing timing and steelhead egg incubation periods results in potential for trampling to occur. Combining the previously described redd trampling estimates for each Allotment results in a range of zero to two annually trampled redds in Canyon Creek. Conservative assumptions used to calculate these estimates likely overestimate the redd trampling risk and for most years NMFS anticipates the low end of the range to be more realistic. To generate a worst-case estimate, NMFS converted the number of redds potentially trampled to adult equivalents using reasonable life stage survival estimates for the baseline conditions and the highest documented trampling mortality rates that could occur. Results of those calculations indicate the actions could result in zero to two (0.3 to 1.93) fewer adult steelhead returning to Canyon Creek each brood year.

The Lemhi River steelhead population is at moderate abundance/productivity risk and a measurable decrease in abundance may reduce the population's potential to become viable in the future. A loss of up to two adult fish annually equates to just 0.36% of the generic 10-year geometric mean A-run population size<sup>15</sup>. This impact is likely smaller than annual variability in adult returns to the subbasin under baseline conditions. In addition, the assumptions NMFS applied to generate the estimates for redd trampling rates, trampling related embryo mortality, and lost adult equivalents result in worst-case scenarios that are unlikely to occur each year the actions take place. In most years redd trampling is not expected to occur and population level effects would be effectively zero. The lack of documented spawning within Canyon Creek provides additional support to believe potential redd trampling impacts have been overestimated. Nonetheless, the worst-case scenario, the projected loss of between zero to two adults (up to 0.36% of the population) is believed to be too low to influence population abundance and the potential losses will not reduce the viability or recovery potential of the Lemhi River steelhead population.

Section 1.2 above (Table 1) identified all Federal lands grazing allotments affecting Lemhi River steelhead and the associated incidental take likely to occur. The SCNF's Upper Hayden Allotment is the only other allotment expected to affect the numbers of returning adult Lemhi River steelhead. NMFS previously estimated that up to two adult equivalent steelhead would be lost every other year, with zero lost on the other years, as a result of grazing that allotment. Considering the projected impacts of the proposed actions considered in this Opinion with

---

<sup>15</sup> Using PIT tag detection, the IDFG estimated 2010 adult steelhead returns to the Lemhi River were 574 (Range 502 to 645). Therefore it appears that the 10-year geometric mean population estimate (556) is reasonably accurate.

impacts of the previously completed consultations results in an annually alternating maximum decrease in returning adults of 0 to 2 returning adults in 1 year, versus 0 to 4 adults the next. This translates to an impact to the 10-year geometric mean population abundance ranging from up to 0.36% 1 year and up to 0.72% the next. Again, these projections are worst-case estimates and the proposed actions are unlikely to generate this level of repeated impact. In many years NMFS expects that zero redds would be trampled. The variability of annual impacts and the projected small population impacts, even under worst-case scenarios, are too small to influence the Lemhi River population. Because the project impacts are too small to influence VSP criteria at the Lemhi River steelhead population scale, the viability of the MPG and DPS will not be reduced as a result of the proposed action.

Additional support for this conclusion can be found in Peterson et al. (2010). In this study the authors demonstrated that slow growing cutthroat trout populations exposed to trampling rates as low as 25% could experience negative population growth. Under the current Federal lands grazing proposals, a maximum of five Lemhi River population redds are at risk of trampling in any given year. Considering the 10-year geometric mean abundance of 556 adults and a reasonable adult to redd ratio of 2.5, five trampled redds is approximately 2% of the population's likely annual redd total. Although the Lemhi River population fits the authors' description of the type of population most susceptible to trampling (e.g., low resiliency, low productivity, and reduced abundance from existing impacts), exposure of a maximum of 2% of the population's redds, compared to the 25% threshold identified by Peterson et al. (2010), results in a low risk of decreasing productivity for the entire population. However, this risk is higher than it would be if the action was modified to limit livestock overlap with steelhead embryos to the most resilient developmental stage (i.e., first half of the two grazing seasons), further limiting impacts to individuals<sup>16</sup>.

## **2.7. Conclusion**

After reviewing the status of the affected ESA-listed species and their designated critical habitats, the environmental baseline for 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.

## **2.8. Incidental Take Statement**

Section 9 of the ESA and Federal regulation 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 results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out

---

<sup>16</sup> Terms and conditions in this Opinion include measures to reduce grazing overlap with the most sensitive life stage of incubating steelhead.

of an otherwise lawful activity. For purposes of this consultation, we interpret “harass” to mean an intentional or negligent action that has the potential to injure an animal or disrupt its normal behaviors to a point where such behaviors are abandoned or significantly altered.<sup>17</sup> 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 an ITS.

### 2.8.1. Amount or Extent of Take

Proposed livestock grazing is expected to overlap Snake River Basin steelhead egg/embryo incubation for up to 11 days in the Jakes Canyon Allotment and up to 31 days in the Leadville Allotment (realistically less than 7 days). The proposed pasture use dates, limits on AUMs within riparian pastures, mineral placements, move-triggers/annual use standards, and thick riparian vegetation all reduce Snake River Basin steelhead redd trampling risk, but the potential for redds to be trampled by livestock still exists.

NMFS estimated that within the BLM-managed segments of Canyon Creek, in the Jakes Canyon and Leadville Allotments, no more than two redds would be trampled in any given year. Because this reach of stream is readily accessible by road it can be monitored for redds and field personnel may be able to determine how many, if any, of those redds have been trampled by livestock each grazing season. In this Opinion, it was determined that trampling of up to two redds avoided jeopardy. Therefore, the amount of take authorized for Snake River Basin steelhead on the Jakes Canyon and Leadville Allotments will be exceeded if the total number of cattle trampled redds exceeds two, one in Jakes Canyon, or one in the Leadville Allotment, in any grazing season during the permit terms.

### 2.8.2. Reasonable and Prudent Measures and Terms and Conditions

“Reasonable and prudent measures” (RPMs) are nondiscretionary measures to minimize the amount or extent of incidental take (50 CFR 402.02). “Terms and conditions” implement the RPMs (50 CFR 402.14). These must be carried out for the exemption in section 7(o)(2) to apply.

NMFS believes that full application of conservation measures included as part of the proposed actions, 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.

---

<sup>17</sup> NMFS has not adopted a regulatory definition of harassment under the ESA. The World English Dictionary defines harass as “to trouble, torment, or confuse by continual persistent attacks, questions, etc.” The USFWS defines “harass” in its regulations as: an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR 17.3). The interpretation we adopt in this consultation is consistent with our understanding of the dictionary definition of harass and is consistent with the USFWS interpretation of the term.

The BLM shall:

1. Minimize the potential for incidental take resulting from trampling of Snake River Basin steelhead redds.
2. 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.

#### *2.8.2.1. Terms and Conditions*

To be exempt from the prohibitions of section 9 of the ESA, the BLM and its cooperators, including the applicants (permittees), 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 and result in more take than anticipated.

1. To implement RPM #1, the BLM shall ensure that:
  - a. The proposed action, including all described conservation measures, monitoring, and adaptive management processes are implemented as described in the BA and proposed action section of this Opinion.
  - b. The amount of incidental take is not exceeded by conducting steelhead redd surveys in the Canyon Creek stream segments occurring in the South Pasture of Jakes Canyon Allotment and the Canyon Creek Pasture of the Leadville Allotment. Redd surveys will document that no more than one steelhead redd in each Allotment is at risk of being trampled annually.
  - c. At least two redd surveys, spaced by at least 5 days, shall be completed between April 15 and April 30 to identify steelhead redds prior to livestock turnout and before redd detection is compromised by high or turbid water. While livestock are on the South Pasture of Jakes Canyon Allotment and the Canyon Creek Pasture of the Leadville Allotment, redd surveys shall be conducted at least once per week.
  - d. To further reduce redd trampling potential within Canyon Creek, any steelhead redds found during the described surveys shall be flagged, and temporary fencing shall be erected to protect redds where there is potential for cattle to access them. The fencing shall be maintained on the pasture until cattle are removed at the end of the grazing season.
  - e. Canyon Creek water temperature data during potential steelhead incubation periods (March 20 – July 1) is collected annually. A thermograph shall be

installed near the downstream boundary of the Jakes Canyon Allotment. Water temperature data will enable confirmation of which embryonic steelhead stages are present during the proposed grazing seasons.

- f. Livestock trampling risks to the most sensitive steelhead life stages are avoided by livestock grazing the Jakes Canyon<sup>18</sup> and Ledville Allotment pastures containing Canyon Creek. This shall be accomplished by removing livestock from these pastures once 310 Celsius temperature units accumulate in Canyon Creek. Water temperature data collected as part of term and conditions 1.3 above shall be used to calculate Celsius temperature units accumulated in Canyon Creek. With a starting date of April 25 used as the assumed date of peak steelhead spawning activity. The Grazing season will be reduced after steelhead spawning, or adult presence during the spawning period, is confirmed in Canyon Creek. For example, NMFS' initial analysis suggests that not grazing pastures containing Canyon Creek after May 25 would avoid the most sensitive steelhead life stages if water temperatures are closer to 50° F (i.e., warm). But if water temperatures are closer to 43° F, (i.e. cold), grazing could proceed up to June 15 without affecting the most sensitive steelhead life stage.
  - g. Annual meetings are held with the permittee to discuss specific actions necessary to protect vulnerable steelhead spawning areas in the South and Canyon Pastures.
  - h. All exclosures, drift fences, and water developments that reduce cattle use adjacent to streams with ESA-listed fish species are properly maintained and functioning as intended prior to turnout.
  - i. Turnout dates, off dates, and annual use indicators, as well as identification of parties responsible for collection and/or moves, are clearly communicated to the permittees prior to turnout.
2. To implement RPM #2 (monitoring and reporting), the BLM shall ensure that:
    - a. An end-of-year report for the Jakes Canyon and Leadville Allotments is provided to NMFS prior to the end of each calendar year. The following shall be included in the report:
      - (1) Overview of proposed action and actual management (e.g., livestock numbers, on-off dates for each pasture, etc.).
      - (2) Date, location, and results of any specific BLM implementation monitoring data collected, including MIM monitoring described in the proposed action.

---

<sup>18</sup> BLM amended the Jakes Creek Permit on February 16, 2012, to include a permit term and condition consistent with this recommendation.

- (3) Date, location, and results of redd monitoring required under term and condition 1 above. Report shall include the following:
  - (a) Redd locations shall be marked on a legible map with GPS coordinates for each redd.
  - (b) Photos of redds, and fencing, after installing temporary fences that effectively preclude redd trampling.
  - (c) Documentation of unsuitable redd survey conditions if encountered.
- (4) Discussion of any unauthorized use and/or any maintenance issues related to fences or water developments.
- (5) Brief review of allotment management and compliance successes and failures.
- (6) Any relevant information that becomes available regarding Snake River Basin steelhead habitat trends and/or spawning locations that would modify the assumptions made in this Opinion or result in effects not considered.
- (7) A clear description of compliance with the terms and conditions contained in this ITS.
- (8) Any management recommendations for subsequent years.

b. Submit post-project report to:

Idaho State Director  
Habitat Conservation Division  
National Marine Fisheries Service  
**Attn: 2011/05232**  
10095 W Emerald St.  
Boise, ID 83704

- c. NOTICE: If a sick, injured or dead specimen of a threatened or endangered species is found in the project area, the finder must notify NMFS through the contact person identified in the transmittal letter for this Opinion, or through Idaho State Habitat Office of NMFS Law Enforcement at (208) 321-2956, 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 BLM:

1. 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 and mainstem 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.
2. To mitigate the effects of existing roads on sediment conditions in the action area, particularly in Canyon Creek, evaluate current road maintenance schedules and methods and capitalize on opportunities for reducing sediment inputs.
3. The BLM should modify the proposed grazing period or eliminate grazing on the Canyon Creek Riparian Pasture, Jakes Canyon Allotment, to eliminate the potential for livestock to trample steelhead redds. This pasture provides just 9 AUMs of utilization. This limited amount of use does not appear warranted in light of its potential to cause the loss of up to one adult steelhead.
4. Require permittee to aid in the identification and avoidance of steelhead redds while livestock graze the Jakes Canyon and Leadville Allotments.
5. To increase anadromous fish use of Canyon and Hawley Creeks the BLM should utilize their authorities to actively remove remaining fish passage barriers in both streams.
6. Water quantity is a limiting factor for anadromous fish in the Lemhi River drainage, including the action area. Both the overall production and productivity of ESA-listed fish and their habitat are affected by the number and length of streams, volume and quality of flow among stream reaches, and volume of the underlying aquifer. Changes in the

consumptive use of water can affect ESA-listed salmonids and their habitat in downstream reaches. The BLM should continue to utilize their authorities to conserve and recover aquatic habitats throughout the action area and entire Lemhi River drainage to support species recovery.

Please notify NMFS if the BLM carries out any of 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**

As provided for in 50 CFR 402.16, 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 take is exceeded; (2) new information reveals effects of the agency action on listed species or designated 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 not considered in the Opinion; or (4) a new species is listed or critical habitat is designated that may be affected by the action. To reinitiate consultation, contact NMFS' Idaho State Habitat Office and refer to consultation number: **2011/05232**.

## **2.11. "Not Likely to Adversely Affect" Determinations**

The previous discussion focused on the actions' adverse effects to Snake River Basin steelhead. The BLM determined that all the proposed actions "May Affect, but are "Not Likely to Adversely Affect" Snake River spring/summer Chinook salmon, their designated critical habitat, and critical habitat for Snake River Basin steelhead. In addition, the BLM determined all allotments, with the exception of the previously discussed Jakes Canyon and Leadville Allotments, "May Affect, but are "Not Likely to Adversely Affect" Snake River Basin steelhead.

### 2.11.1. Effects to Individuals

The principle streams in the action area are Lemhi River, Canyon, Big Timber, Hawley, Eighteenmile, and Texas Creeks. Snake River spring/summer Chinook salmon and Snake River Basin steelhead distribution is currently limited to the Lemhi River, the lower 1.5 miles of Big Timber Creek, and lower Canyon Creek. Anthropogenic barriers associated with irrigation diversion structures and channel dewatering currently prevent anadromous fish from accessing all remaining portions of the action area. With the exception of the Leadville and Jakes Canyon Allotments, there will be no overlap between any of the proposed actions and anadromous fish. Therefore, there is no potential for direct impacts (i.e., disturbance, redd trampling, etc.) to anadromous fish from any proposed action).

Livestock on the Jakes Canyon and Leadville Allotments are reasonably certain to disturb some adult/juvenile steelhead and juvenile Chinook salmon during the next 10 years. Disturbances can result in altered feeding rates, increased exposure to predators, and/or displacement to less suitable habitat. Although these effects can result in injury or death, high quality habitat conditions in these sections of Canyon Creek (Table 25) result in fish being able to safely access nearby cover. The spring season of use and thick riparian vegetation reduces livestock use in and adjacent to Canyon Creek and only infrequent crossings and daily watering present potential for disturbance. Long-term loitering in the riparian area is unlikely. Although adult/juvenile steelhead and potentially juvenile Chinook salmon, may be present on both Allotments while they are grazed, high water levels during the proposed grazing seasons reduce visibility, increases available cover for fish, and discourages livestock presence in or near streams. Livestock also prefer upland habitats during this time due to better foraging conditions which further decreases time spent adjacent to streams. Causing adult and juvenile fish to periodically relocate or dart to cover to avoid what is likely to be infrequent cattle exposure is not likely to significantly disrupt normal behavioral patterns. Therefore, the proposed grazing on the Jakes Canyon and Leadville Allotments will have insignificant effects to juvenile spring/summer Chinook salmon and adult and juvenile steelhead.

#### 2.11.2. Effects to Critical Habitat

Although currently unoccupied, most of the streams above Leadore were historically accessible to Chinook salmon and are considered designated critical habitat. Individual streams believed to have been historically accessible to spring/summer Chinook salmon, and thus designated critical habitat, are identified in the individual allotment sections below. Only the Nez Perce Allotment contains designated critical habitat for steelhead. However, small but immeasurable quantities of sediment and water temperature effects may extend downstream to the Lemhi River, where ESA-listed Snake River spring/summer Chinook salmon and Snake River Basin steelhead and their critical habitats do occur.

##### *2.11.2.1. Common Effects to Critical Habitat from All Actions*

This section includes a discussion on effects that are, in general, common to all grazing allotments being considered. Specific effects of each allotment, and other actions within the Allotment boundary, are presented individually following this section.

**Early Season Grazing.** Almost all grazing adjacent to perennial fish bearing streams, riparian pastures, is proposed to occur in the early season (roughly May- early July). Early season grazing has different impacts compared with grazing during the “hot-season” (usually July through September). Livestock preference for upland forage at this time results in limited impacts to action area riparian and stream habitats. Additionally, development of off-channel water troughs and multiple mineral supplement locations further reduce the need for livestock to congregate in or utilize streamside areas. Over the past 10 or more years BLM has observed at times dramatic improvements in stream and riparian conditions by reducing duration of

hot-season grazing or just by changing hot-season use to an early season grazing prescription. The BLM's BA provided the following information supporting the benefits of early season grazing.

*Season of use greatly influences grazing effects on vegetation. Areas that would be grazed early in the season only (before early to mid-July) would continue to fix carbon, reproduce, and set seed as the growing season progresses into the summer. Early season (spring) grazing, compared with grazing in other seasons, would be the least harmful to the majority of plant species in riparian areas (Platts and Nelson 1985), partly because of opportunity for regrowth and partly because of avoidance. During the spring timeframe, riparian vegetation could receive reduced grazing because livestock would tend to avoid certain riparian areas characterized by wet soil, cold temperatures, and immature forage (Platts and Nelson 1985; Kovalchik and Elmore 1991). In these cases, cattle would concentrate their foraging effort in uplands rather than riparian areas in spring because forage palatability and climate are more favorable in uplands compared with riparian areas (Platts and Nelson 1985). Grazing prior to the hot season has been shown to allow vegetation the remainder of the growing season to re-grow and reproduce, and over time, improves condition along the creek (Kovalchik and Elmore 1991; USDI-BLM 2006). Removing livestock before the hot summer months (mid-July through mid-September) would permit vegetation regrowth for physiological maintenance of the plants. This regrowth would function as a filter for instream and flood flows, and would reduce water velocity and permitting sediment deposition. Early season grazing would produce more regrowth than later season clipping (Boyd and Svejcar 2004). In riparian sedge communities root production would be resilient to moderate levels of defoliation during the growing season and grazing to a 10.2 cm stubble height would not substantially reduce below-ground production (Boyd and Svejcar 2004).*

*Despite variability in plant community types, Boyd and Svejcar (2004) found that clipped stubble height and time of clipping were strongly associated with end-of-season regrowth performance. The regrowth response of plants to timing of clipping supported the management concept that later clipping (July) produces less regrowth than early clipping (June). Most clipping height by time combinations produced end of season heights sufficient to meet current federal stubble height requirements (4-6 inches). Below ground biomass production is also an important consideration when evaluating plant response to early season grazing. In riparian sedge communities, Boyd and Svejcar (2008) found that root production is resilient to moderate levels of defoliation during the growing season and suggest that grazing to a 10.2 cm (4") stubble height will not substantially reduce below ground production. Root mass was only reduced by the later (hot) season July clipping treatment and not with the early season treatment.*

*In regards to fisheries, Platts and Nelson (1989) indicate that riparian pasture grazing strategies rate an 8 on a scale of 1 (poorly compatible) to 10 (highly compatible) for compatibility with fishery needs. Categories evaluated were: level to which riparian vegetation is commonly used, control of animal*

*distribution, streambank stability, brushy species condition, seasonal plant regrowth, and stream-riparian rehabilitative potential. Only rest or closure rated a 10 and most (13 of 16) other grazing strategies rated significantly lower than a riparian pasture grazing strategy for compatibility with fisheries needs.*

*At a minimum, Chaney, Elmore, and Platts (1993) propose that any successful grazing strategy will: 1) Limit grazing intensity and season of use to provide sufficient rest to encourage plant vigor, regrowth, and energy storage; 2) Ensure sufficient vegetation during periods of high flow to protect streambanks, dissipate energy, and trap sediments; and 3) Control the timing of grazing to prevent damage to streambanks when they are most vulnerable to trampling.*

*Based on both the literature and professional judgment, we [BLM] have determined that limiting cattle use to spring grazing allows the greatest amount of time for riparian species to recover and is therefore the preferred management method for riparian pastures. Salmon BLM data and/or personal observations have shown that current timing (spring), intensity (light to moderate), and duration (short-term) have resulted in both maintenance (in those pastures meeting objectives) and an increase in trend (in those pastures not meeting objectives) of desired vegetative and hydrologic conditions.*

**Monitoring and Adaptive Management Strategy.** The proposed actions include a monitoring and adaptive management program to evaluate annual livestock use to help the BLM ensure that the action is being implemented as intended. The monitoring and adaptive management program will also allow the BLM to quantitatively track resource responses to ongoing use through the term of the grazing permits. Perhaps even more importantly, the strategy will result in rapid modification of existing management to minimize repeat or long-term effects. As such, NMFS believes the adaptive management strategy is critical to integrate both annual and long-term monitoring data into daily, annual, and long-term grazing management decisions. Should monitoring indicate that implementation is not occurring as described (i.e., annual use indicators are not met), or that RMOs are not being met, use of the adaptive management strategy should ensure that either the permit administration or the grazing plans will be quickly adjusted as necessary to ensure RMOs are achieved and/or maintained. Evidence that this will occur was provided in BLM's BA for two allotments where in- or end-of-season indicators were exceeded (grazing year 2011) and livestock use was changed immediately.

Numerous symposia and publications have documented the potential detrimental effects of livestock grazing on stream and riparian habitats (Johnson et al. 1985; Menke 1977; Meehan and Platts 1978; Cope 1979; American Fisheries Society 1980; Platts 1981; Peek and Dalke 1982; Ohmart and Anderson 1982; Kauffman and Krueger 1984; Clary and Webster 1989; Gresswell et al. 1989; Kinch 1989; Chaney et al. 1990; Belsky et al. 1997). These publications describe a series of synergistic effects that can occur when cattle over-graze riparian areas, including: (1) Woody and hydric herbaceous vegetation along a stream can be reduced or eliminated; (2) streambanks can collapse due to livestock trampling; (3) without vegetation to slow water velocities, hold the soil, and retain moisture, erosion of streambanks can result; (4) the stream can become wider and shallower, and in some cases downcut; (5) the water table can drop; and (6) hydric, deeply rooted herbaceous vegetation can die out and be replaced by upland species with shallower roots and less ability to bind the soil. The resulting instability in water volume,

increased summer water temperature, loss of pools and habitat adjacent to and connected to streambanks, and increased substrate fine sediment and cobble-embeddedness may potentially affect Chinook salmon and steelhead critical habitat in the action area.

The PCEs most likely to be affected by the proposed action include water quality (turbidity and temperature), spawning substrate (sediment), cover/shelter, and forage. Livestock affect these PCEs through riparian and streambank impacts and the following discussion will focus primarily on these pathways. Modification of these PCEs could affect freshwater spawning, rearing, or migratory habitat conditions in the action area. Proper function of these essential features is necessary to support successful spawning, migration, growth, and development of ESA-listed fish.

When grazing activities are well-managed, stream and riparian impacts can be greatly reduced, and resource recovery can occur over time. The focus of the proposed actions is to meet the BLM's multiple use mission, in this case providing cattle forage, while improving conditions which are currently believed to be "at risk." Below is a brief summary of the key elements of the proposed strategy, which were designed to reduce habitat-related effects to insignificant levels.

**In-Season/End-of-Season Grazing Use Indicators.** The BLM will monitor the stubble height of grasses, sedges, and rushes, along with streambank alteration levels to determine when cattle should be moved from individual pastures or when use of sensitive areas should be eliminated. Literature summarized here indicates that the proposed use levels can reasonably be expected to prevent significant resource damage while still allowing for recovery of annual grazing disturbances prior to the next years grazing. Therefore, this should limit the actions' effects to the identified PCEs to an insignificant level and promote achievement of "functioning appropriately" conditions over time.

Erhart and Hansen (1997) found mixed success when only one use standard/management objective was applied on an allotment. However, by concurrently monitoring multiple annual indicators, the BLM is able to work with the permittees to move cattle or eliminate access to sensitive areas based on the most sensitive indicator for a given year. This is important as annual variability in precipitation and air temperature, which may be influenced by climate change, can cause wide discrepancies in forage availability and thus annual livestock foraging habits. Therefore, employing a suite of environmental monitoring indicators is expected to enable the BLM and the permittees to remove cattle from a particular pasture, or otherwise modify use, in response to the most sensitive indicator for a given year. This process is expected to prevent additional negative riparian impacts from occurring, maintain "functioning appropriately" conditions where they currently occur, and ensure an upward trend in habitat indicators elsewhere on the Allotments.

Stubble height has a direct relationship to the health of herbaceous riparian plants and the ability of the vegetation to provide streambank protection and to filter out and trap sediment from overbank flows (University of Idaho Stubble Height Review Team 2004). Stubble heights can also serve as an indicator of forage preference, with livestock switching from herbaceous vegetation to woody riparian plants after a specific amount of use (Hall and Bryant 1995). Clary and Leininger (2000) proposed a 4-inch residual stubble height as a "starting point for improved

riparian grazing management,” but acknowledged that site conditions may warrant using stubble heights between 2.75 inches and 6- to 8-inches to limit streambank trampling, or to reduce willow browsing or trampling of sensitive streambanks. The BLM proposed in-season use indicators between 4 and 6 inches across all Allotments, with end-of-season indicators of 6 inches at all Allotments. These use levels are anticipated to result in continued maintenance of “functioning appropriately” riparian and bank conditions and improved conditions where currently “functioning at risk.”

Streambank alteration is another annual use indicator proposed to manage livestock use of riparian areas on the Allotments. Streambank alteration is used to evaluate the amount of annual bank disturbance caused by livestock grazing, the levels of which can then be related to streambank stability and riparian vegetation conditions within the greenline (Cowley and Burton 2005). Excessive bank trampling can lead to increased channel widths, decreased depths, and slower water velocity. These channel changes can cause mid-channel sediment deposition, which can further erode and reduce water storage in streambanks, resulting in vegetation transitioning from willows and sedges to drier species. Sediment increases can modify fish forage base through changed densities or population structure of aquatic invertebrates. These impacts all reduce the quality of fish habitat. Bengeyfield (2006) reported that bank alteration levels were the most sensitive annual indicator they employed. On streams over-widened by historical overgrazing, they noted that between forage utilization, stubble height, and streambank alteration, streams managed for streambank alteration were the only streams consistently showing significant improvement after a 4- to 6-year period. They concluded that streambank alteration was the only annual use indicator that initiated the upward trend in stream channel shape that they believed was necessary to achieve riparian function. Their study streams were predominantly meadow systems. The Allotments considered here contains several reaches of meadow streams, particularly the lower portions of Canyon, Eighteenmile, and Texas Creeks which possess the largest and most likely the best anadromous fish habitat. Remaining streams in the action area are in moderately steep canyons with moderately confined valley bottoms vegetated by willow, aspen, and alder. Therefore, the proposed use of a combination of in- and end-of-season grazing use indicators is appropriate for these Allotments. The proposed multi-indicator monitoring and adaptive management strategy should avoid instances where an improper or insensitive standard is continually met and yet still leads to a downward trend in one of the RMOs and, ultimately, degraded habitat conditions.

Cowley (2002) suggested the maximum allowable streambank alteration that maintained streambank stability was 30%. It was further suggested that if 30% streambank alteration was the minimum necessary to maintain streambank conditions, that applying a 20% streambank alteration standard should allow for making significant progress in areas not meeting desired conditions. However, Cowley (2002) cited other studies to support his recommendation that “Ten percent or less alteration would seem to allow for near optimal recovery and should not retard or prevent attainment of RMOs.” Since the BLM proposes all Allotments will have end of year bank alteration levels at 15% or less, maintenance of existing “functioning appropriately” conditions and improvement of “functioning at risk” conditions is anticipated across the action area.

The proposed monitoring will enable the BLM to move cattle off individual pastures or eliminate access to sensitive sites before excessive cattle use could initiate bank instabilities or lead to other potential adverse habitat effects. If an exceedance occurs, the BLM will first determine why the indicator was not met and, secondly, determine if any effects not previously considered occurred as a result of the exceedance. If such an exceedance occurs, the BLM proposes to modify allotment administration. Allotment modifications would be designed to reduce the likelihood of additional impacts both within the current year and during future years. Should an exceedance result in effects not considered in this consultation, NMFS expects the BLM will pursue reinitiation of consultation.

NMFS believes the likelihood of exceeding end-of-season indicators is low on these Allotments. BLM monitoring data for the 2011 grazing season was provided in the final BA for most Allotments. Those data demonstrate that most proposed in- and end-of-season indicators were easily met. Of particular interest is where in-season bank alteration levels appeared to be high monitoring completed at the end of the season documented significant recovery and all but one site met the prescribed end-of-season indicators. In addition, the last 15 plus years of BLM management has led to RMOs being achieved in most stream segments and improved trends at all sites. This is supported by photos available in the BA and monitoring data summarized in this Opinion.

Although specific changes to allotment administration are impossible to identify before a problem occurs, typical changes can include modifying stocking rates, removing livestock, changing seasons of use, mineral site adjustments, or increased riding or fencing of site-specific problem areas during subsequent season(s). Successful implementation of adaptive management can reasonably be anticipated to modify grazing practices such that the magnitude of potential adverse effects is sufficiently minimized.

In summary, successfully meeting the established in-season and end-of-season annual use indicators is anticipated to result in only insignificant annual impacts to the water quality, sediment, cover/shelter, and forage PCEs. These insignificant effects will continue to allow habitat indicators to trend upward where “functioning at risk,” and allow all sites meeting RMOs to be maintained. In instances where prescribed annual use levels are exceeded, the proposed adaptive management strategy will ensure a rapid corrective response resulting in only insignificant effects to the identified PCEs.

#### *2.11.2.2. Jakes Canyon Allotment*

Steelhead critical habitat is not present within the Jakes Canyon Allotment but occurs downstream in the Lemhi River. In addition to the Lemhi River, Canyon Creek, including the 0.3 mile reach within the Allotment is designated critical habitat for spring/summer Chinook salmon. The proposed vegetation manipulation project would only occur in upland areas outside of RHCAs and will not influence stream habitat.

SCNF lands within the Allotment do not contain any stream reaches. Thus, interrelated grazing occurring on those lands will have no effects to critical habitat.

### ***PCEs - Freshwater spawning, rearing and migration sites***

***Water Quality*** – Habitat impacts associated with this Allotment are likely to include a few areas of denuded streambank in the South pasture. The South pasture contains 0.3 miles of Canyon Creek. Streambank areas affected by livestock will be small and limited to a few feet in width where cattle access streams to drink or cross. Bank stability is functioning appropriately now (90%). The small denuded areas associated with watering and crossing sites are likely to result in insignificant turbidity increases affecting a short distance of stream most likely only during rainstorms or runoff events. Increases are not expected to be measurable and will not reduce the conservation value of critical habitat in Canyon Creek.

Insignificant quantities of sediment introduced into allotment streams have potential to be transported downstream to the Lemhi River. Because the anticipated sediment levels produced by the action will be insignificant within the Allotment, any turbidity or sediment transported to the Lemhi River during runoff events, will also be insignificant. Thus, impacts to Chinook salmon and steelhead critical habitat in the Lemhi River are insignificant.

Cattle waste is likely to lead to a slight increase in nutrients; however, impacts will be localized and immeasurable as a result of proposed measures designed to limit cattle use in riparian areas.

Although water temperatures are “functioning at risk” in Canyon Creek, monitoring data from the Allotment suggest grazing related impacts are not significantly contributing factors. Upstream water diversions are believed to contribute to current “at risk” conditions. The primary mechanism by which grazing on BLM land could affect water temperature is through shade reductions or channel widening, as result of bank trampling induced bank instability or riparian vegetation overutilization. Riparian vegetation, bank stability, and greenline-greenline width are all “functioning appropriately” in the Allotment. Continuing the early season grazing approach with a small number of livestock and incorporating in-season and end-of-season use indicator monitoring is likely to maintain current water temperatures or improve them if channel and riparian conditions improve further. As such water temperature effects will be insignificant.

***Spawning Gravel/Substrate*** –Increased sediment can lead to reduced spawning success, reduced growth of juvenile salmonids, and may modify their forage base. Steelhead are likely to spawn in Canyon Creek but spring/summer Chinook salmon spawning likelihood is low due to the small channel size. Surface fine data from within the Allotment was higher than anticipated given the “functioning appropriately” condition of streambanks, riparian vegetation, and greenline-greenline width. Long-term fines at depth data collected on upstream SCNF lands indicate “functioning appropriately” conditions there. Although the sediment source is ultimately unknown, high sediment levels in the Allotment may be influenced by the close proximity of Highway 29, a two-lane gravel road, to Canyon Creek. Stable streambanks (90%) and dense riparian vegetation suggest recent livestock impacts are not a current significant contributing factor. Under the proposed action, livestock will continue to graze the riparian pasture for a short period and under moderate intensity during the spring season. Effects to streambanks and riparian vegetation will continue to be insignificant and “functioning appropriately” bank and vegetative conditions are expected to be maintained. In addition, the

adoption of the proposed adaptive management strategy will ensure insignificant levels of bank alteration and riparian vegetation utilization occur annually. The small amount of sediment expected to be delivered from the proposed action will not occur in quantities large enough to be measurable and are therefore insignificant within the action area. Consequently, the conservation value of Canyon Creek and Lemhi River critical habitat will not be reduced for this PCE.

*Natural Cover/Forage* – Cover and forage can be affected if livestock significantly alter streambanks or riparian vegetation. In the previous analyses we determined that the action would have insignificant effects to streambanks and riparian vegetation. Therefore, only insignificant effects to cover and forage are expected in the action area.

### *2.11.2.3. Leadville Allotment*

The following discussion considers Federal, State, and private lands within the Allotment boundary. Livestock are managed as one herd, and when prescribed use levels or use periods are met the entire herd is moved at once. This results in habitat effects being the same regardless of land ownership.

Steelhead critical habitat is not present within the Leadville Allotment but occurs downstream in the Lemhi River. In addition to the Lemhi River, designated critical habitat for spring/summer Chinook salmon, in the Allotment, is limited to a 2.5 mile reach of Canyon Creek, a 2.5 mile seasonally dewatered reach of Hawley Creek (0.5 miles state, 0.6 miles private, and 1 mile BLM), and a 1/4 mile reach of seasonally dewatered Eighteenmile Creek (on private).

Proposed livestock grazing, including possible livestock crossing permits, will not measurably affect critical habitat in Hawley or Eighteenmile Creeks. Authorized livestock crossings will be limited to the Lower Pasture which contains the seasonally dewatered reaches of Hawley and Eighteenmile Creeks. The Hawley Creek reach has sagebrush and other upland species within the channel and entirely lacks riparian vegetation. Livestock trailing will not affect the conservation value of this habitat as it does not currently function under baseline conditions. Similarly, proposed livestock use in the Leadville and Lower pastures will not affect streambank, riparian, or channel conditions in Hawley or Eighteenmile Creeks. The lack of riparian vegetation, early spring grazing season, and seasonal lack of water results in very little use of the historic stream channels and no measurable influence will occur.

### *PCEs - Freshwater spawning, rearing and migration sites*

***Water Quality*** – Habitat impacts associated with this Allotment are likely to include a few areas of denuded streambank in the Canyon Creek pasture. The Canyon Creek pasture contains 2.5 miles of Canyon Creek. Streambank areas affected by livestock will be small and limited to a few feet in width where cattle access streams to drink or cross. Bank stability is currently “functioning appropriately” (90%). The small denuded areas associated with watering and crossing sites are likely to result in small localized turbidity increases affecting a short distance

of stream, most likely only during rainstorms or runoff events. Increases are not expected to be measurable and will not reduce the conservation value of critical habitat in Canyon Creek or downstream in the Lemhi River.

Cattle waste is likely to lead to a slight increase in nutrients; however, impacts will be localized and immeasurable as a result of proposed measures designed to limit cattle use in riparian areas.

Although water temperatures are “functioning at risk” in Canyon Creek, monitoring data from the Allotment suggest grazing related impacts are not significantly contributing factors. Upstream water diversions are believed to contribute to current “at risk” conditions. The primary mechanism by which grazing on BLM lands could affect water temperature is through shade reductions or channel widening, resulting from bank trampling induced instability or riparian vegetation overutilization. Riparian vegetation, bank stability, and greenline-greenline width are all “functioning appropriately” in the Allotment. Continuing the early season grazing approach with a small number of livestock and incorporating in-season and end-of-season use indicator monitoring is likely to maintain current water temperatures or improve them if channel and riparian conditions improve further. As such water temperature effects will be insignificant.

***Spawning Gravel/Substrate*** –Increased sediment can lead to reduced spawning success and reduced growth of juvenile salmonids. Steelhead are likely to spawn in Canyon Creek but spring/summer Chinook salmon spawning likelihood is low due to the small channel size. Surface fine data from within the Allotment was higher than anticipated given the “functioning appropriately” condition of streambanks, riparian vegetation, and greenline-greenline width. Long-term fines at depth data collected on upstream SCNF lands indicate “functioning appropriately” conditions there. Although the sediment source is ultimately unknown, high sediment levels in the Allotment may be influenced by the close proximity of Highway 29, a two-lane gravel road, to Canyon Creek. Stable streambanks (90%) and dense riparian vegetation suggest recent livestock impacts are not a current significant contributing factor. Under the proposed action, livestock will continue to graze the riparian pasture for a short period and under low intensity during the spring season. Effects to streambanks and riparian vegetation will continue to be insignificant and “functioning appropriately” bank and vegetative conditions are expected to be maintained. In addition, the adoption of the proposed adaptive management strategy will ensure insignificant levels of bank alteration and riparian vegetation utilization occur annually. The small quantities of sediment expected to be delivered from the proposed action will not result in any measurable influence on stream substrates and will therefore be insignificant. As a result, the conservation value of Canyon Creek and Lemhi River critical habitat will not be reduced.

***Natural Cover/Forage*** – Cover and forage can be affected if livestock significantly alter streambanks or riparian vegetation. In the previous analyses we determined that the action would have insignificant effects to streambanks and riparian vegetation. Therefore, only insignificant effects to cover and forage are expected in the action area.

#### *2.11.2.4. Freestrip Allotment*

In the Freestrip Allotment, two of the four pastures contain riparian areas. However, the Bell pasture is the only one containing a perennial stream (approximately 1.2 miles of Canyon Creek). The Freestrip pasture contains Chippie and Whiskey Springs Creeks, which are both intermittent non-fish bearing streams. Chippie and Whiskey Springs Creeks both flow into small impoundments, eliminating or greatly reducing their ability to influence downstream habitat. No streams within the Allotment, including this segment of Canyon Creek, are believed to have been historically accessible to spring/summer Chinook salmon and there is no designated critical habitat present in the Allotment. Critical habitat for spring/summer Chinook salmon occurs in Canyon Creek but the upper extent is approximately 3 miles downstream, at the confluence of Cruickshank Creek. As such, the action's only potential impact to critical habitat is through potential water temperature and sedimentation impacts to downstream habitats.

Under the proposed action the two pastures containing riparian areas (Freestrip and Bell Field) are only proposed for early season use (i.e., not be grazed after July 15). In addition, use in the Bell Field pasture, which contains the Allotment's only perennial stream reach, will also be limited to 35 AUMs. Stream and riparian conditions are currently "functioning appropriately" in the Canyon Creek segment (bank stability 100%, PNC riparian, 23% fines at depth). Water temperature has not been measured in Canyon Creek due to small stream size (less than 1 cfs) but is rated as "functioning at risk" for the watershed, predominantly due to irrigation withdrawals. No data are available for Whiskey Springs Creek but Chippie Creek, where bank stability is poor (42%) and surface fines are high (40%), is presumed to be a suitable surrogate stream to infer conditions.

Poor bank stability, the observed high sediment levels, and underperforming riparian vegetation conditions in the Freestrip pasture present potential risks to downstream critical habitats if grazed improperly. During the 2011 grazing season, BLM's first in-season evaluation of this pasture revealed excessive bank alteration levels (71%). The BLM contacted the permittee immediately and livestock were removed from the pasture the next day (Personal Communication, J. Trapani, BLM Fisheries Biologist, December 1, 2011). Interestingly, end-of-season monitoring demonstrated significant site recovery with bank alteration recorded at just 14%. Quickly moving livestock once the indicator was exceeded combined with the early grazing season appears to have resulted in relatively minor impacts. This demonstrates the importance of the early season riparian prescription and the importance of in-season pasture evaluations required under the proposed adaptive management strategy.

Although grazing would continue to occur in the Freestrip pasture, the presence of small impoundments upstream of the tributaries' confluences with Canyon Creek prevent sediment or temperature related impacts from significantly affecting downstream critical habitat. In addition, establishment of in-season management indicators and subsequent adaptive management responses should allow conditions in Chippie and Whiskey Springs Creeks to improve during the term of the permit, ultimately achieving the identified RMOs in these intermittent tributaries. For the Freestrip Pasture, existing impoundments on both tributaries and the proposed adaptive management strategy should ensure that sediment or temperature related effects are insignificant in designated spring/summer Chinook salmon critical habitat, more than 3 miles downstream.

Grazing of the Bell Field Pasture will have insignificant effects to critical habitat due to the early season, low intensity grazing proposed, and the assumed effectiveness of the prescribed monitoring and adaptive management strategy. For example, although in-season bank alterations in 2011 were high (31%), the BLM identified the exceedance and achieved a rapid response from the permittee who moved the livestock quickly. The early season use allowed bank alteration levels to recover to 9% by the end-of-season, meeting the prescribed use levels. These use levels were previously described as adequate to maintain and improve bank stability, channel widths, and riparian vegetation conditions. The existing grazing strategy has resulted in Canyon Creek having 100% bank stability and riparian vegetation that is at PNC. Continuing the same grazing strategy, now with the inclusion of in- and end-of-season use monitoring and adaptive management responses, will maintain these conditions. The small levels of bank alteration and riparian impacts will be insignificant to critical habitat at least 3 miles downstream.

The ranch operation also utilizes the adjacent SCNF Grizzly Hill Allotment (NMFS Tracking # 2010/05813), and livestock are either trailed on the county road to get to the Freestrip Allotment, or moved directly off the ranch onto the Freestrip Allotment. The trailing route does not require any streams to be forded and trailing is accomplished with no additional impacts to aquatic habitat.

NMFS has not identified the grazing on State lands within the Allotment as an interrelated action as those lands could likely be grazed independent of the Federal action. However, because these lands are unfenced, livestock are likely to wander between ownerships and there is some potential for direct effects on those lands. However, none of the State lands within the Allotment contain accessible reaches of perennial streams and none are fish bearing. In addition, livestock are managed as one herd. This results in all the livestock being moved off the Allotment or pasture when Federally prescribed use levels or use periods are met.

*Natural Cover/Forage* – Cover and forage can be affected if livestock significantly alter streambanks or riparian vegetation. In the previous analyses we determined that the action would have insignificant effects to streambanks and riparian vegetation. Therefore, only insignificant effects to cover and forage are expected in the action area.

#### *2.11.2.5. Center Ridge Allotment*

The following discussion considers both Federal and private lands within the Allotment boundary. Livestock are managed as one herd and when Federally prescribed use levels or use periods are met, the entire herd is moved at once. This results in habitat effects being the same regardless of land ownership.

In the Center Ridge Allotment, less than 1 mile of Eighteenmile Creek occurs in the A pasture, all on BLM-managed lands. The Eighteenmile Creek reach adjacent to the C pasture has been excluded from use since 1997 and is not proposed to be grazed. To maintain riparian habitat conditions at “proper functioning” condition in the Allotment, the A Pasture will receive early

season use only and will not be grazed after July 15. Wetland riparian areas at Poison Spring will be excluded from grazing. Eighteenmile Creek is unoccupied designated critical habitat for spring/summer Chinook salmon.

Monitoring data from the A pasture indicates bank stability (83%), riparian vegetation (potential natural community, and greenline-greenline width are “functioning appropriately.” Sediment levels and water temperature are “functioning at risk.” “At risk” indicators are believed to be predominantly influenced by private land agricultural practices as the majority of Eighteenmile Creek occurs on private property.

Federally authorized livestock also have access to approximately 160 acres of private land scattered throughout the Allotment in small parcels. None of the private or State lands within the Allotment contain perennial or intermittent streams. This precludes additional interrelated or interdependent effects from the action. The permittee’s ranch is located directly adjacent to the Allotment and livestock are either trailed to the BLM via the county road or moved directly off the ranch onto the Allotment with no impacts to aquatic habitat.

In addition to the proposed grazing action, the BLM also proposes to implement the Poison Spring Exclosure, Pipeline, and Trough action within the Allotment boundary. Under the proposed action the BLM will remove broken fences and reconstruct a secure grazing exclosure to protect riparian resources associated with the spring complex. The pipeline and trough are located in conjunction with an isolated upland spring approximately 2 miles away from Texas Creek and will have “No Effect” on ESA-listed fish species or designated critical habitat.

Because Eighteenmile Creek is inaccessible by anadromous fish, critical habitat present there can only be utilized if connectivity is reestablished in the future. Spring/summer Chinook salmon spawning and rearing could potentially occur if the stream is reconnected to the Lemhi River. Thus freshwater spawning, rearing, and migratory PCEs for spring/summer Chinook salmon apply.

**Water Quality** – Habitat impacts associated with this Allotment are likely to include a few areas of denuded streambank in the A pasture. The A pasture contains approximately 1 mile of Eighteenmile Creek. Streambank areas affected by livestock will be small and limited to a few feet in width where cattle access streams to drink or cross. Early season use and upland water troughs result in livestock spending most of their time in upland habitats. Some riparian grazing and bank alteration occurs but it is insignificant as bank conditions remain “functioning appropriately” and vegetation is at PNC. The small denuded areas associated with watering and crossing sites are likely to result in insignificant turbidity increases affecting a short distance of stream, most likely only during rainstorms or runoff events. Increases are not expected to be measurable and will not reduce the conservation value of critical habitat in Eighteenmile Creek or the Lemhi River.

Cattle waste is likely to lead to a slight increase in nutrients; however, impacts will be localized and immeasurable as a result of the early season use and off-site water troughs designed to limit cattle presence in riparian areas.

Although water temperatures are “functioning at risk” in Eighteenmile Creek, monitoring data suggest grazing-related impacts are not significant contributing factors. Water diversions routinely dry up multiple segments of Eighteenmile Creek and are believed to be the primary influence on current “at risk” conditions. The primary mechanism by which grazing on BLM lands could affect water temperature on the Allotment is through shade reductions or channel widening, resulting from bank trampling induced instability or riparian vegetation overutilization. Riparian vegetation, bank stability, and greenline-greenline width are all “functioning appropriately” in the Allotment. Continuing the early season grazing approach and incorporating in- and end-of-season use indicator monitoring, and associated adaptive management responses, is likely to maintain current water temperatures or improve them if channel and riparian conditions improve further. As such water temperature effects will be insignificant.

***Spawning Gravel/Substrate*** – Increased sediment can lead to reduced spawning success and reduced growth of juvenile salmonids. Anadromous fish cannot currently access Eighteenmile Creek due to irrigation diversion structures and intermittent channel dewatering. Chinook salmon spawning could potentially occur in or downstream of the Allotment if the stream is reconnected to the Lemhi River. Surface fine data from within the BLM-managed segment of Eighteenmile Creek is high (41%) but has an improving trend. Extensive private holdings upstream of this segment and routine irrigation withdrawals, which limit sediment transport out of the system, are believed to be responsible for the high sediment levels observed. The BLM-managed stream segments exhibit high bank stability, proper width, and vegetation at PNC. This suggests BLM authorized livestock grazing has little influence on the sediment levels measured. Under the proposed action, livestock will continue to graze the riparian pasture only during the spring season when riparian utilization is lowest. Effects to streambanks and riparian vegetation will continue to be insignificant and “functioning appropriately” bank and vegetative conditions are expected to be maintained under the proposed action. In addition, the adoption of the proposed adaptive management strategy will ensure insignificant levels of bank alteration and riparian vegetation utilization occur annually. The small quantities of sediment expected to be delivered from the proposed action will not result in any measurable influence on stream substrates and are therefore insignificant. As a result, the conservation value of critical habitat in the action area will not be reduced.

***Natural Cover/Forage*** – Cover and forage can be affected if livestock significantly alter streambanks or riparian vegetation. In the previous analyses we determined that the action would have insignificant effects to streambanks and riparian vegetation. Therefore, only insignificant effects to cover and forage are expected in the action area.

#### *2.11.2.6. Chamberlain Creek Allotment*

The Chamberlain Creek Allotment contains a 4 mile headwater reach of Eighteenmile Creek. Although lower Eighteenmile Creek is considered designated critical habitat for spring/summer Chinook salmon the reach in the Allotment is not. Approximately 2 miles downstream of the Allotment boundary the stream is dry for most of the year as surface water naturally infiltrates underground. Anadromous fish are unlikely to have occurred upstream of this point. In

addition, the segment of Eighteenmile Creek on the Allotment is approximately 20 miles upstream of the current distribution of ESA-listed fish. As such the Allotment does not contain critical habitat but PCEs for potential freshwater spawning, migration, and rearing occur about 2 miles downstream. Eighteenmile Creek has an intermittent connection with the Lemhi River where Chinook salmon and steelhead critical habitat occur. However, a private pond, located about 14 miles downstream of the Allotment or 8 miles upstream of the current anadromous fish distribution, serves to reduce any further downstream sediment migration.

In recognition of some livestock overutilization in portions of Pass, upper Eighteenmile, and McGinty Creeks, the BLM proposes to reduce the authorized AUMs on the Allotment by 8.5%. They also propose to construct a new fence to separate the Big Bend pasture into an upland (Big Bend) and a riparian (McGinty) pasture. The riparian pasture would only be grazed before June 30 to promote summer recovery. Only 35 cattle will be allowed in the Eighteenmile Creek Pasture and grazing will not occur beyond August 15, which is earlier than the previous permit, which grazed the area for 3 weeks between August and September.

NMFS has not identified the grazing on State and private lands within the Allotment as an interrelated action as those lands could likely be grazed independent of the Federal action. However, because some of these lands are unfenced, livestock are likely to wander between ownerships and there is some potential for direct effects on those lands. However, none of the private or State lands within the Allotment contain perennial streams and none are fish bearing. In addition, none of the intermittent streams on State or private lands measurably impact habitat conditions in Eighteenmile Creek. The permittee's ranch is adjacent to the Allotment and livestock are either trailed on the county road, or moved directly off the ranch onto the Allotment with no impacts to aquatic habitat during trailing activities.

A pipeline and water trough will also be installed to provide water to livestock in the newly created upland Big Bend Pasture. Installation and use of the pipeline will have "no effect" on critical habitat or ESA-listed species. Under the proposal, the landowner will transfer 0.02 cfs from an existing 0.04 cfs McGinty Creek water right to the BLM for stockwater use. Because the water right is currently being exercised by the private landowner, the transfer does not result in any change in water quantity in the action area. Proposed pipeline installation procedures will result in minimal soil disturbance near the intermittent channel of McGinty Creek. In addition to being intermittent, McGinty Creek does not have a surface connection to Eighteenmile Creek. The intermittent and disconnected nature of McGinty Creek, minimal disturbance, and rapid revegetation of disturbed sites will result in minor and insignificant sediment introductions that are incapable of being delivered to downstream critical habitats.

**Water Quality** – Habitat impacts associated with this Allotment are likely to include a few areas of denuded streambank in riparian pastures (18 Mile, North 18 Mile, McGinty). Streambank areas affected by livestock will be small and limited to a few feet in width where cattle access streams to drink or cross. Early season use and upland water troughs result in livestock spending most of their time in upland habitats. Some riparian grazing and bank alteration occurs but it is insignificant as bank conditions remain functioning appropriately and vegetation is at PNC. The small denuded areas associated with watering and crossing sites are likely to result in

insignificant turbidity increases affecting a short distance of stream, most likely only during rainstorms or runoff events. Increases are not expected to be measurable and will not reduce the conservation value of critical habitat in the action area.

Cattle waste is likely to lead to a slight increase in nutrients; however, impacts to critical habitat will be localized and immeasurable as a result of the early season use, off-site water troughs designed to limit cattle presence in riparian areas, and significant distance between the grazed areas and critical habitat.

Although water temperatures are “functioning at risk” in Eighteenmile Creek, monitoring data suggest grazing-related impacts are not significant contributing factors. In addition to the naturally dry segment, water diversions routinely dry up multiple segments of Eighteenmile Creek and are believed to be the primary influence on current “at risk” watershed conditions. The primary mechanism by which grazing on BLM lands could affect water temperature on the Allotment is through shade reductions or channel widening, resulting from bank trampling induced instability or riparian vegetation overutilization. Riparian vegetation, bank stability, and greenline-greenline width are all “functioning appropriately” in the Allotment. The 18 Mile and McGinty Pastures will be grazed early in the season when livestock use of riparian areas is lowest. The North 18 Mile pasture will be grazed until mid-August but under lower intensity than previous seasons. In addition, all riparian pastures will now have in- and end-of-season use indicators applied. These indicators, and associated adaptive management responses, are designed to ensure livestock utilization result in insignificant effects to riparian vegetation and streambank stability. As a result, the proposed action is likely to maintain current water temperatures or improve them if channel and riparian conditions improve further. As such water temperature effects will be insignificant.

***Spawning Gravel/Substrate*** –Increased sediment can lead to reduced spawning success and reduced growth of juvenile salmonids. Anadromous fish cannot currently access Eighteenmile Creek due to irrigation diversion structures and intermittent channel dewatering. Chinook salmon spawning could potentially occur several miles downstream of the Allotment if the stream is reconnected to the Lemhi River and significant diversion modifications are made. Surface fine data from the BLM-managed segment of Eighteenmile Creek on the Allotment indicate “functioning appropriately” condition (3%), as this site is upstream of the majority of irrigation influence and private lands. BLM-managed segments of Eighteenmile Creek exhibit high bank stability and “functioning appropriately” channel width and riparian vegetation. This suggests BLM authorized livestock grazing has maintained or led to the current conditions and is having insignificant influence on fine sediment contributions to the watershed. Under the proposed action, livestock will continue to graze the riparian pastures primarily during the spring season when riparian utilization is lowest. Effects to streambanks and riparian vegetation will continue to be insignificant and “functioning appropriately” bank and vegetative conditions are expected to be maintained under the proposed action. In addition, the adoption of the proposed adaptive management strategy will ensure insignificant levels of bank alteration and riparian vegetation utilization occur annually. Extensive irrigation withdrawals, a naturally dewatered channel segment, and an on-channel pond all significantly limit sediment transport potential to critical habitat several miles downstream. The small quantities of sediment expected to be delivered from the proposed action will not have any measurable influence on stream substrates

and are therefore insignificant. As a result, the conservation value of Eighteenmile Creek critical habitat will not be reduced. Because effects will be insignificant in Eighteenmile Creek effects to critical habitat in the Lemhi River, approximately 20 miles downstream of the Allotment, will also be insignificant.

*Natural Cover/Forage* – Cover and forage can be affected if livestock significantly alter streambanks or riparian vegetation. In the previous analyses we determined that the action would have insignificant effects to streambanks and riparian vegetation. Therefore, only insignificant effects to cover and forage are expected in the action area.

#### 2.11.2.7. Powderhorn Allotment

The following discussion considers both Federal and private lands<sup>19</sup> within the Allotment boundary. Livestock are managed as one herd and when Federally prescribed use levels or use periods are met, the entire herd is moved at once. This results in habitat effects being the same regardless of land ownership.

The Powderhorn Allotment, not counting the Steer Pasture, contains approximately 1/4 mile of Eighteenmile Creek, approximately 3 miles of Clear Creek, and approximately 5.5 miles of Tenmile Creek, (both Eighteenmile Creek tributaries). As previously stated, current anadromous ESA-listed fish distribution ends near Eighteenmile Creek's Lemhi River confluence, more than 10 miles downstream of the Allotment. The headwaters of Clear Creek are perennial and contain resident fish. A private irrigation ditch near the canyon mouth dewateres the stream from April through November. Further downstream, when flowing, the stream continually loses surface water due to the naturally high infiltration rates in the large alluvial expanses it crosses. Tenmile Creek originates from artesian springs on private land and its entire flow (2-4 cfs) is diverted year-round. The short section of BLM above the diversion appears to lose much of its volume as it flows across the sage-steppe flat. Neither Clear nor Tenmile Creeks appear to directly influence downstream habitats due to the intermittent connectivity with Eighteenmile Creek. Neither stream is designated critical habitat. Eighteenmile Creek itself is seasonally dewatered by irrigation withdrawals downstream of the Allotment but is Chinook salmon critical habitat. However, under the proposed action the reaches currently accessible to livestock will be excluded after new fence construction is completed (planned for spring 2012).

The 2.8 mile reach of Eighteenmile Creek in the Steer Pasture is the only critical habitat in the Allotment boundary. The BLM-authorized livestock will occur in this pasture but the proportion of AUMs provided by the Federal land, in comparison to the available private AUMs (312), is only 16% (Personal Communication, J. Trapani, BLM Fisheries Biologist, December 1, 2011). Therefore, permittees would likely graze the same number of livestock on the private land regardless of the Federal action. Thus any grazing on private lands is not interrelated to the proposed action and the BLM has no discretionary authority on activities on those lands. However, the inclusion of the BLM portions, which are entirely upland acres, provides additional space and forage in areas away from perennial stream reaches (i.e., critical habitat). The season

---

<sup>19</sup> The Steer Pasture is predominantly private land, and BLM-managed portions are entirely upland areas. Grazing on the private land in this pasture is not interrelated to the proposed action.

of use is such that these upland areas provide desirable forage, ultimately improving cattle distribution across the Pasture. Improved distribution may actually reduce livestock impacts on Eighteenmile Creek (all privately owned) in the Steer Pasture.

Sediment contributions from grazed areas are the most likely downstream impact from the proposed actions. The BLM proposal includes a 30% reduction in the permit's active preference and will significantly restrict current hot-season grazing in Clear and Tenmile Creeks (none after August 15). The BLM will also apply the previously described monitoring and adaptive management strategy. In addition, new fence construction will exclude livestock from Clear Creek upstream of the private diversion in the Winter Range Pasture. Together these measures are expected to minimize livestock utilization along the headwater reaches of these streams to an insignificant level. Grazing on Clear Creek will only occur in the reach currently "functioning appropriately" and now for only 7 days annually. This will be a lower intensity and smaller stream segment than what has been grazed in the past and what led to the current conditions. Further, Clear and Tenmile Creeks' intermittent nature should prevent the streams from meaningfully influencing critical habitat several miles downstream. As such, effects of the proposed grazing action will have insignificant effects on designated critical habitat present downstream of the Allotment.

Within the Allotment boundary BLM proposes to implement three rangeland improvement projects. The two fencing projects (18 Mile Flat Fence Relocation and Clear Creek Division Fence) were referred above. The new and relocated fences will eliminate livestock access to Federally managed segments of Eighteenmile Creek and eliminate winter access to Clear Creek and its associated spring complexes. Steep topography and the fence further results in limited access to the Clear Creek spring complex during the proposed spring grazing season. Actual fence construction will have "no effect" to critical habitat or species.

The third rangeland improvement project is the 18 Mile Pipeline. Under this proposal, the adjacent private landowner would transfer a 0.02 cfs stockwater right to the BLM from an existing stockwater right off Eighteenmile Creek. The BLM would then install a pipeline and three troughs to replace lost watering opportunities following the elimination of the existing Eighteenmile Creek water gap. Because the landowner is currently exercising this water right, the transfer would not result in any additional water withdrawal from Eighteenmile Creek. Fitting the new troughs with self-regulating water floats will likely reduce the quantity of water that is currently used, leaving more water in the channel than under baseline conditions. Additionally, installation of a water trough in the Steer Pasture will further reduce livestock utilization along the privately owned segment of Eighteenmile Creek. Reduced livestock use on this segment may result in additional but immeasurable stream condition improvements. In conclusion, effects from the three rangeland improvement proposals will have insignificant effects on downstream critical habitat and ESA-listed species.

***Natural Cover/Forage*** – Cover and forage can be affected if livestock significantly alter streambanks or riparian vegetation. In the previous analyses we determined that the action would have insignificant effects to streambanks and riparian vegetation. Therefore, only insignificant effects to cover and forage are expected in the action area.

#### *2.11.2.8. Hawley Creek Allotment*

The following discussion considers both Federal and State lands within the Allotment boundary. Livestock are managed as one herd and when Federally prescribed use levels or use periods are met, the entire herd is moved at once. This results in habitat effects being the same regardless of land ownership.

The Hawley Creek Allotment contains approximately 1 mile of Eighteenmile Creek and a 4.3 mile segment of Hawley Creek, which flows into Eighteenmile Creek. All the Allotment's streams are located on BLM-managed lands. Anthropogenic barriers and irrigation practices prevent anadromous fish from occupying either stream. About 1.3 miles of the Hawley Creek segment, from the SCNF boundary downstream to a private irrigation diversion, is in "proper functioning condition." The diversion dewateres the channel during the irrigation season and historically dewatered the channel for most of the year. Downstream of the diversion the Hawley Creek channel lacks any riparian area and is occupied by sage brush and other upland species. Three separate reaches of Eighteenmile Creek occur in the Allotment, one on the Hawley Creek pasture and two on the Eighteenmile pasture. Both streams have potential to seasonally influence habitat conditions downstream in the Lemhi River (approximately 4 miles) where habitat related effects to ESA-listed fish/habitats may occur.

The upper Eighteenmile Creek segments are in "proper functioning condition," although on the lower end of the scale. The lower segment's streambank stability is within the measurement range for "functioning appropriately" (85%) and dominance of sedge and woody vegetation along the greenline results in an early-seral ecological status with an upward trend. Surface fines appear appropriate with 14% observed in the lower Eighteenmile Creek segment in 2009. No monitoring data exist for the upper reach of Hawley Creek but its rocky banks and heavily vegetated riparian area led BLM to conclude the segment is "functioning appropriately." Upstream sediment and water temperature data are meeting RMOs and support this conclusion. Below the diversion, Hawley Creek is in a non-functioning condition due to the lack of water and is not used by anadromous fish.

The proposed grazing season includes an early use period (May 15 through June 30) and a fall use period (September 15 through October 31). Fall use and potential trailing (Permit A) would only occur on the Hawley Creek Pasture. As previously described, livestock spend most of their time in the uplands during the early use period, thus limiting impacts to riparian areas. Cooler weather in October presents a similar situation and livestock use of riparian areas in the Hawley Creek Pasture (upstream of the diversion) is low during this time. Available monitoring data and photos provided in the BA demonstrate that this prescription has resulted in achieving RMOs in the flowing stream reaches. Incorporating the described monitoring and adaptive management strategy will further ensure that proposed grazing results in insignificant levels of annual bank alteration and riparian utilization. Bank alteration and riparian utilization indirectly influence bank stability, which influences sediment production. Because prescribed measures are likely to maintain or continue to improve bank stability and riparian vegetation, only insignificant sediment-related effects are likely to occur. Effects will be predominantly related to intermittent use of existing watering and crossing locations, as described in previous sections. Hydrologic

influences currently limit habitat potential in lower Hawley Creek. The proposed action will not influence the amount of water present and this reach is anticipated to remain in a non-functioning condition until diversion practices are substantially modified.

Although water temperatures periodically exceed standards in both streams, recovered riparian vegetation, stable banks, and proper channel widths on BLM-managed lands suggest BLM grazing has little influence on current conditions. The majority of Eighteenmile Creek is privately managed and lacks suitable riparian vegetation, sinuosity, instream cover, has a small percentage of pool habitat, and continues to have much of the flow volume diverted for irrigation. These impacts likely generate the water temperature issues observed. Hawley Creek water temperature is “functioning appropriately” upstream from the diversion but the lack of water below the diversion obviously results in unsuitable conditions and water temperature cannot be measured.

The BLMs only ability to influence water temperature with the proposed action is through riparian vegetation or stream channel alterations. Early season use on the upper segments of Eighteenmile Creek reduces livestock utilization of riparian vegetation and the observed upward trends of riparian condition are expected to continue. Although the upper segment of Hawley and the lower Eighteenmile Creek segment will receive limited fall grazing use, the cool temperatures at this time appear to have led to similar results to spring grazing. This is reflected by the “functioning appropriately” and upward trend in riparian conditions in both streams’ flowing segments. These conditions were achieved under nearly identical grazing intensity and timing as proposed and thus are anticipated to continue. Additional confidence is provided by the adoption of the proposed monitoring and adaptive management strategy which will ensure bank alteration and riparian utilization levels remain so minor that annual improvement and/or maintenance of conditions is likely. Together, season of use and presumed effectiveness of the proposed monitoring strategy will result in insignificant effects to water temperature in the action area and continued upward trend of riparian and bank conditions on allotment streams. Because the action will result in insignificant effects in Hawley and Eighteenmile Creeks, effects will also be insignificant in the Lemhi River, more than 4 miles downstream.

*Natural Cover/Forage* – Cover and forage can be affected if livestock significantly alter streambanks or riparian vegetation. In the previous analyses we determined that the action would have insignificant effects to streambanks and riparian vegetation. Therefore, only insignificant effects to cover and forage are expected in the action area.

#### *2.11.2.9. Tex Creek Allotment*

The following discussion considers both Federal and private lands within the Allotment boundary. Livestock are managed as one herd and when Federally prescribed use levels or use periods are met, the entire herd is moved at once. This results in habitat effects being the same regardless of land ownership.

The Tex Creek Allotment contains two separate segments of Eighteenmile Creek totaling approximately 1/4 mile. The 30 acres of private lands in the Allotment boundary do not contain

any streams. Barriers and irrigation practices prevent anadromous fish from occupying Eighteenmile Creek. Eighteenmile Creek is designated critical habitat for spring/summer Chinook salmon and is also connected to the Lemhi River. Although the two segments are more than 4 miles upstream of the Lemhi River, grazing has a small potential to influence ESA-listed fish/habitats present when the stream is connected during spring runoff. In addition to the proposed grazing action, the BLM proposes to construct the Tex Creek Pond Exclosure in spring of 2012 (45 acres) to make progress toward meeting riparian standards at this upland spring.

Effects to critical habitat can only occur at the two Eighteenmile Creek segments. These segments function as water gaps for the larger pasture areas and as such some localized bank disturbance and sediment inputs are likely to occur when livestock water there. Although no data are currently available for either segment BLM cited visual observations from the past 10 years indicate a substantial increase in deep-rooted herbaceous vegetation, a narrowing channel, and stabilizing banks. Photos of the stream from 2009 support these observations. Because the segments function as water gaps bank instability is anticipated to be high. However, 2011 monitoring documented low bank alteration levels (12% in-season and 1% end-of-season) and low riparian utilization (5.5 inch in-season stubble height and 16.5” inch end-of-season). The quarter mile of stream in the Allotment represents just 1% of Eighteenmile Creek’s fish bearing stream miles (resident fish only).

Due to good upland grass conditions, off-channel water on the south side of the Allotment, and the early season use prescriptions, livestock spend less time along Eighteenmile Creek than expected. Based on the 2011 monitoring data and existing conditions/observed trends, the two short BLM-managed stream segments are apparently long enough to resist significant bank alteration and riparian utilization. As such, the segments are expected to improve in condition, though likely at a slower rate than an ungrazed area. Prior to 2000, these reaches of Eighteenmile Creek were completely dewatered by irrigation diversions. Although baseflows remain severely modified, irrigation modifications by the Kruckeberg ranch in 2000 left much more water in the channel. That water is likely responsible for the continued vegetative and channel improvements observed.

The proposed early season grazing and increased summer-long flows in the Eighteenmile Creek segments are resulting in a slow upward trend. Regardless, the extensive diversions and higher livestock utilization on private lands along Eighteenmile Creek are likely to keep the two short BLM segments in an “at risk” condition for the foreseeable future. Minor impacts to these two short reaches of BLM-managed land will continue for the proposed permit term. These minor impacts will affect less than 1% of the potential fish bearing stream miles in Eighteenmile Creek. This impact is too small to generate measurable effects (i.e., insignificant) to critical habitat in Eighteenmile Creek or in downstream in the Lemhi River.

***Natural Cover/Forage*** – Cover and forage can be affected if livestock significantly alter streambanks or riparian vegetation. In the previous analyses we determined that the action would have insignificant effects to streambanks and riparian vegetation. Therefore, only insignificant effects to cover and forage are expected in the action area.

#### 2.11.2.10. Leadore Hill Allotment

The following discussion considers both Federal and private lands within the Allotment boundary. Livestock are managed as one herd and when Federally prescribed use levels or use periods are met, the entire herd is moved at once. This results in habitat effects being the same regardless of land ownership.

The Leadore Hill Allotment, including private lands, contains one approximate 1/2 mile long reach of Little Timber Creek (Lower Pasture) and one 2 mile reach of Big Timber Creek (Upper Pasture). Big Timber Creek serves as the Upper Pasture's western boundary. Downstream anthropogenic fish passage barriers and irrigation practices prevent anadromous fish from occupying either segment. Both streams were likely historically accessible and are considered critical habitat for spring/summer Chinook salmon but not for steelhead.

The Little Timber Creek segment occurs immediately downstream of a private diversion which completely dewateres the channel for most of the irrigation season. The lack of water during the growing season results in a near absence of riparian vegetation and isolated channel downcutting. Sediment levels there visually appear low although no data are currently available to support this observation. Big Timber Creek is "functioning appropriately" in the reach on the Allotment. The channel is bounded by extensive willow stands and streambanks are extremely stable as a result of the willows and large boulder substrate present throughout the reach. Early season use, steep topography, and thick riparian vegetation result in essentially zero grazing use along this reach. The BLM reported observing very limited evidence of livestock presence here since the 1990s.

Because the private parcels are small and isolated, they are grazed concurrently with and under the same prescription as the Federal lands. The private lands do not contain any stream reaches. Thus, there are no additional effects resultant of interrelated grazing on private lands. In addition, the permittee's ranch is adjacent to the Allotment and livestock are either trailed on the county road or moved directly off the ranch onto the Allotment with no impacts to aquatic habitat or species.

The action area contains unoccupied Chinook salmon spawning, rearing, and migratory habitat. Like previous allotment discussions potential effects of the proposed grazing are limited to water quality (turbidity, water temperature, chemical contaminants) and substrate (sediment), natural cover, and forage PCEs.

**Water Quality** – Habitat impacts associated with this Allotment are likely to include a few areas of denuded streambank along the Little Timber Creek reach (Lower Pasture). However, the annual dewatering of this reach and near complete lack of riparian vegetation result in little incentive for livestock to congregate in this area and effects to streambanks are anticipated to be insignificant. Along Big Timber Creek, the extremely limited use of this stream segment by livestock makes the likelihood of turbidity related impacts from livestock watering/trailing discountable. Because effects of the action are discountable in the Allotment they are also discountable in downstream reaches of Big Timber Creek and the Lemhi River.

Cattle waste is likely to lead to a slight increase in nutrients; however, impacts to critical habitat will be localized and immeasurable as a result of the early season use, off-site water troughs designed to limit cattle presence in riparian areas, and the extreme low utilization of action area riparian sites.

Although Big Timber Creek water temperatures exceed the 64°F RMO (average 7-day max daily average = 64.4°F for the past 14 years), irrigation diversions downstream of the action area significantly dewater the stream and are believed to be the primary factor influencing conditions. The lack of water and near complete lack of riparian vegetation in the Little Timber Creek segment, combined with the lack of livestock use along Big Timber Creek result in a discountable potential for proposed livestock grazing to influence water temperature. The early season of use period further reduces likelihood livestock will congregate in riparian areas. Nonetheless, BLM does propose to apply the previously described monitoring and adaptive management strategy. Adhering to that strategy and routinely meeting the prescribed in- and end-of-season use indicator levels will provide further assurance that proposed livestock grazing will have insignificant and/or discountable effects on action area riparian and stream width conditions, which in turn will maintain water temperature.

***Spawning Gravel/Substrate*** –Increased sediment levels can lead to reduced spawning success and reduced growth of juvenile salmonids. Anadromous fish cannot currently access allotment streams but juvenile steelhead and Chinook salmon, and likely adult steelhead, occur approximately 1 mile downstream, where an irrigation diversion halts upstream migration. Anadromous fish are not known to spawn in Big Timber Creek at this time but the Lemhi River spring/summer Chinook salmon population's core spawning area occurs immediately downstream of the Big Timber Creek confluence with the Lemhi River.

Big Timber Creek surface fines, as measured downstream in the BLM's Timber Creek Allotment, are likely "functioning at risk," but limited data exist. The SCNF monitoring of fines at depth suggest watershed-wide sediment conditions are meeting objectives and sediment levels are not likely limiting fish production. Thick riparian vegetation, steep topography, and the early season use result in very little to no livestock use occurring along Big Timber Creek. The lack of water and near lack of riparian vegetation, combined with the early season use period, results in little livestock utilization along Little Timber Creek. In addition, the BLM proposes to implement the monitoring and adaptive management strategy which will limit bank alteration and riparian utilization to insignificant levels. Considering the low streamside use and anticipated effectiveness of the monitoring program, sediment-related effects within or downstream of the Allotment will be insignificant.

***Natural Cover/Forage*** – Cover and forage can be affected if livestock significantly alter streambanks or riparian vegetation. In the previous analyses we determined that the action would have insignificant effects to streambanks and riparian vegetation. Therefore, only insignificant effects to cover and forage are expected in the action area.

### 2.11.2.11. Timber Creek Allotment

The Timber Creek Allotment contains two pastures. The Upper Pasture contains approximately 0.8 miles of Little Timber Creek, a 1.6 mile segment of Swan Basin Creek (0.9 miles private and 0.6 miles BLM), and approximately 2 miles of Big Timber Creek (which is the eastern pasture boundary)<sup>20</sup>. The Lower Pasture contains approximately 0.2 miles of Little Timber Creek and approximately 1 mile of Big Timber Creek. Downstream fish passage barriers (anthropogenic) and irrigation practices prevent anadromous fish from occupying any segment but all streams are designated critical habitat for spring/summer Chinook salmon.

The proposed grazing permit would authorize the same active preference (670 AUMs) as the current permit but livestock use will only occur from May 6 through June 30, 30 days less than the current permits. Livestock on private lands in the Upper Pasture are managed under the same grazing management proposed for the Federal lands and thus impacts on the privately owned reach of Swan Basin Creek are expected to be identical to effects on Federal lands.

Habitat and riparian conditions across the Allotment are predominately “functioning appropriately” with some segments “functioning at risk” for some indicators. For example, Swan Basin Creek riparian vegetation is “at risk” due to irrigation-related dewatering on the upper half of the private land inclusion (Figure 10). Streamside springs and beaver dams begin approximately halfway down the private land parcel and extend downstream through the BLM segment. These beaver/spring complexes maintain PNC vegetation in the lower stream segment. Photo point monitoring indicates the BLM segments are in an upward trend under current management. No data or photos are available for the private segment. However, conditions downstream of the beaver/spring complex are believed to be at PNC due to the perennial flows and sub-irrigation. Upstream of the beaver/spring complex riparian conditions are classified as “functioning at risk” due to seasonal dewatering from upstream diversions but the BLM has observed upward trend in riparian and channel conditions (Personal Communication, J. Trapani, BLM Fisheries Biologist, December 15, 2011). Water temperature is “at risk” for all allotment streams but impairments are believed to be due to basin-wide irrigation practices (see previous allotment discussion). The Upper Pasture contains a 1 mile reach of Little Timber Creek with half upstream and half downstream of a private diversion. Conditions are at PNC above the diversion. Below the diversion there is essentially no riparian vegetation and the channel is “functioning at risk” with a static trend. In the lower Big Timber Creek reach (Lower Pasture), bank stability is high (84%) and riparian vegetation is late-seral. The Upper Big Timber Creek reach is at PNC and was described in the previous allotment discussion.

The action area contains unoccupied Chinook salmon spawning, rearing, and migratory habitat. Like previous allotment discussions, potential effects of the proposed grazing are limited to water quality (turbidity, water temperature, chemical contaminants), substrate (sediment), cover/shelter, and forage PCEs.

**Water Quality** – Habitat impacts associated with this Allotment are likely to include a few areas of denuded streambank along action area streams. However, the annual dewatering of a portion

---

<sup>20</sup> This segment of Big Timber Creek is the same segment discussed in the Leadore Hill Allotment discussion above. As stated previously, livestock use along this segment is almost nonexistent due to dense riparian vegetation

of the Little Timber Creek reach in the Lower Pasture results in no riparian vegetation and little incentive for livestock to congregate in this area. Upstream of the diversion, and elsewhere on the Allotment, riparian vegetation conditions are all late-seral or at PNC and streambanks are stable and improving, meeting RMOs. Previous grazing management led to these conditions. Proposed grazing will occur for 30 fewer days with the same number of livestock and is expected to result in even less impact (i.e., thicker vegetation and more stable banks). The BLM also proposes to implement the previously described monitoring and adaptive management strategy which provides additional assurance that effects to vegetation and streambanks will be minimal. As a result, effects to streambanks are anticipated to be insignificant. Essentially no livestock use occurs along the upper Big Timber Creek segment which leads to a discountable potential for turbidity related impacts from livestock watering/trailing there. Because effects of the action will be insignificant within the Allotment any effects downstream (i.e., lower Big Timber Creek and Lemhi River) will also be insignificant.

Cattle waste is likely to lead to a slight increase in nutrients; however, impacts to critical habitat will be localized and immeasurable as a result of the early season use, off-site water troughs designed to limit cattle presence in riparian areas, and the extreme low utilization of action area's riparian sites.

Although Big Timber Creek water temperatures exceed the 64°F RMO (average 7-day max daily average = 64.4°F for the past 14 years), irrigation diversions downstream of the action area significantly dewater the stream and are believed to be the primary factor influencing these conditions. The lack of water and near complete lack of riparian vegetation in half of the Little Timber Creek segment and small portion of Swan Basin Creek, and the lack of livestock use along Big Timber Creek, result in a discountable potential for proposed livestock grazing to influence water temperature in these areas. Elsewhere, the early season use period further reduces the likelihood livestock will congregate in riparian areas. Nonetheless, BLM proposes to apply the previously described monitoring and adaptive management strategy on both pastures. Adhering to that strategy and routinely meeting the prescribed in- and end-of-season use indicator levels will provide further assurance that proposed livestock grazing will have insignificant effects on action area riparian and stream width conditions, which in turn will maintain water temperature.

***Spawning Gravel/Substrate*** –Increased sediment levels can lead to reduced spawning success and reduced growth of juvenile salmonids. Anadromous fish cannot currently access allotment streams but juvenile steelhead and Chinook salmon, and likely adult steelhead, do occur approximately 1 mile downstream, where an irrigation diversion halts upstream migration. Anadromous fish are not known to spawn in Big Timber Creek at this time but the Lemhi River spring/summer Chinook salmon population's core spawning area occurs immediately downstream of the stream's confluence with the Lemhi River.

Surface fines, as measured in the lower Big Timber Creek segment, appear to be “functioning at risk” but limited data exist. SCNF monitoring of fines at depth suggest watershed-wide sediment conditions are meeting objectives and sediment levels are not likely limiting fish production. Thick riparian vegetation, steep topography, and the early season use period result in very little to no livestock use occurring along the upper Big Timber Creek segment and in Little Timber

Creek upstream of the diversion. Below the Little Timber Creek and Swan Basin Creek diversions, the lack of water and near complete lack of riparian vegetation, combined with the early season use period, results in little livestock utilization there. In addition, the BLM proposes to implement the monitoring and adaptive management strategy which would limit bank alteration and riparian utilization to insignificant levels and allowed maintenance and continued improvement of bank and vegetative conditions across the Allotment. Considering the low streamside use and anticipated effectiveness of the monitoring program the proposed grazing, sediment-related effects within or downstream of the Allotment will be insignificant. As a result, the conservation value of critical habitat in Swan Basin, Big, and Little Timber Creeks and the Lemhi River will not be reduced.

***Natural Cover/Forage*** – Cover and forage can be affected if livestock significantly alter streambanks or riparian vegetation. In the previous analyses we determined that the action would have insignificant effects to streambanks and riparian vegetation. Therefore, only insignificant effects to cover and forage are expected in the action area.

***Vegetation Management Actions*** – The BLM proposes two separate vegetation treatments within the Allotment boundary: (1) Douglas-fir trees will be removed from 506 acres where they are currently encroaching on mountain big sagebrush communities; and (2) 160 acres of aspen stands will be treated to remove encroaching juniper and Douglas-fir trees. The sagebrush treatment would occur entirely outside RHCAs and by hand. No effects to species or critical habitat are expected from this treatment. Aspen restoration will include treatment of approximately 8 acres within the Swan Basin and Big Timber Creek RHCAs. If machinery is used for the aspen treatment two crossings of Swan Basin Creek would occur. Treatment of RHCA acreage and the potential stream crossing could both potentially affect critical habitat in Swan Basin and Big Timber Creeks.

To preclude effects to large woody debris recruitment the BLM proposes that no trees would be cut where they have the ability to be recruited to the stream channel. This will typically mean only trees further than one site-potential tree height from existing or possible future channel locations will be cut. Cut material will be piled and burned during cooler months. The restriction on cutting trees within one site-potential tree height should result in burn piles occurring a similar distance from any streams. Therefore, there will be limited potential for post-burn transport of ash to action area streams.

If equipment is utilized for the aspen treatment some channel substrate disturbance may occur at the designated crossing location. The crossing site is an existing road open to the public. As such gravels in the crossing are already compacted and regularly disturbed. Fording would only occur after high water flows subside to reduce sediment impacts. Based on visual observations of vehicle ford crossings a short turbidity plume, affecting less than 20 feet of stream will occur with each crossing. This small duration and low intensity plume will be insignificant to water quality in the action area.

Chemical contaminant risk will be reduced to a discountable level through the proposed prevention measures. For example, no fuel will be stored within RHCAs or within 300 feet of surface water and a spill prevention and containment plan will be developed prior to the transport

of any fuel or equipment to the project site. Maintenance activities involving the changing or loss of oil, fuel, or other liquids will be conducted in such a manner as to retain the fluids for removal from the site, ultimately being recycled. Leaks from equipment will be monitored and controlled prior to arrival. BLM personnel will be on site during implementation to ensure these measures are adhered to. As result risk of chemical contamination is discountable from the proposed actions.

#### *2.11.2.12. Nez Perce Allotment*

Approximately 7 miles of Texas Creek occur in the Nez Perce Allotment boundary. However, land ownership is blocky here and BLM managed lands contain six individual stream segments of Texas Creek, totaling just 1 mile of stream. All six segments receive only incidental livestock use as they are co-fenced with private lands in the Queenie and Lower Riparian Pastures. Private lands provide approximately 92% of the Lower Riparian Pasture's AUMs and approximately 75% of the Queenie Pasture's AUMs (Personal Communication, J. Trapani, BLM Fisheries Biologist, December 1, 2011). In addition to providing the vast majority of AUMs, private land in these two pastures contain over 90% of the perennial stream miles. A complete passage barrier (anthropogenic) 10 miles downstream of the Allotment prevents anadromous fish from occurring in the Allotment. Texas Creek was likely historically accessible and is designated as critical habitat for spring/summer Chinook salmon and steelhead. Significant numbers of diversions are present upstream and downstream of the Allotment, altering peak and baseflow quantity and likely modifying sediment transport capability.

The BLM manages six separate parcels containing only one of six total stream miles in the Allotment. The BLM reported on the condition of lands they manage, indicating the ratings may imply conditions on adjacent private lands but no data is available for those areas. Little sediment data is available for Texas Creek. The BLM monitored surface fines in 2010 at one site, documenting 12% (functioning appropriately). Approximately 1/2 mile of stream was rated as "functioning appropriately" for greenline vegetation although at mid-seral (below the late-seral RM)), with the other half mile "functioning at risk." All riparian components exist, but older age-class vegetation is deficient in some areas. The high sedge component present may naturally limit site-potential at some sites. Visual observations indicate conditions are trending upward but no data exists to confirm this. Bank stability (91%) and greenline-greenline width are also "functioning appropriately." Water temperature is "functioning at risk" but extensive water diversions in the watershed likely generate the impacts.

Generally, one of the two riparian pastures is grazed first, and then the other, then the sage-steppe uplands, and then livestock are moved back to the first pasture for a short time before being moved to adjacent private ground for the winter. Riparian pastures rotate annually. This Allotment is unique in that BLM manages only 'incidental' corners that are co-fenced with private lands. The BLM has no regulatory authority over how the private lands are managed and cannot require in- and end-of-season use indicators there. Because the BLM acreage in the two riparian pastures provides just 20% of the potential forage base, livestock grazing on private lands here would likely be the same regardless of the proposed Federal action (i.e., not interrelated). Texas Creek is a relatively large (~12 feet wide) stream occurring in a wet meadow

complex. Extensive spring systems occur on private and Federal lands resulting in perennially saturated soils and extensive *carex spp.* communities. This sub-irrigation, and the improved forage it provides outside the traditional streamside areas, results in less frequent livestock use of actual streamside areas, despite the season-long grazing prescription.

Thick riparian vegetation along much of the greenline restricts livestock access to both private and Federal segments of Texas Creek. Available data indicates streambank conditions are “functioning appropriately” under the current management prescription. The BLM (2011) reported that visual observations since the mid-1990s demonstrate that “streambanks have vegetated and stabilized, the channel has narrowed, and runoff does not result measurable sediment input.” Since the proposed action is identical, with the only exception being the adoption of in- and end-of-season indicators on BLM-managed segments, these conditions are likely to be maintained or further improved over the proposed permit terms. Adopting the proposed monitoring strategy will likely result in slightly reduced impacts on BLM-managed lands but the small proportion of stream miles managed by BLM results in low likelihood of watershed level habitat improvements. There is potential that management on BLM parcels may influence how co-fenced private lands are managed during the permit term. For example, if in-season or end-of-season indicators are exceeded and the BLM requires some reduced utilization, private lands may benefit as well. Under the proposed management only insignificant impacts to bank stability, water temperature, and sediment will occur on BLM-managed lands. As such the conservation value of the affected critical habitat there will be maintained. If private managers adopt similar strategies, reduced grazing intensities/durations could potentially lead to improved habitat and channel conditions in Texas Creek.

The Allotment lies over 10 miles upstream of the Lemhi River. Although peak flows may transport sediments out of the action area to the Lemhi River, the large distance and insignificant effects anticipated on the BLM managed lands results in a discountable potential for significant effects to downstream critical habitats.

### 2.11.3. Not Likely to Adversely Affect Conclusions

NMFS anticipates that only insignificant effects to critical habitat and the species are likely to occur as result of implementing proposed actions considered in this document. Primary reasons for this conclusion include: (1) The demonstrated effectiveness of the early season grazing prescriptions proposed for most riparian pastures; (2) habitat and riparian conditions are functioning at or near potential in almost all BLM-managed reaches, except where private irrigation practices overwhelmingly influence conditions; and (3) and the presumed ability of the proposed monitoring and adaptive management strategy to identify potential livestock over utilization and then react with an effective management response, resulting in insignificant effects and maintenance or improving trends to the identified focus indicators. As a result of successfully implementing the proposed actions, including conservation measures and monitoring, as described in the BA and this Opinion and based on the best available information, NMFS concurs with the BLM findings that the subject actions are “not likely to adversely affect” spring/summer Chinook salmon, Snake River Basin steelhead, and their designated critical habitats.

### **3. MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT**

Federal agencies are required, under 305(b)(2) of the MSA and its implementing regulations (50 CFR 600 Subpart K), to consult with NMFS regarding actions that are authorized, funded, or undertaken by that agency that may adversely affect EFH. The MSA defines EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” If an action would adversely affect EFH, NMFS is required to provide the Federal action agency with EFH conservation recommendations (MSA 305(b)(4)(A)). This consultation is based, in part, on information provided by the Federal action agency and descriptions of EFH for Pacific salmon contained in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (August 1999) developed by the Pacific Fishery Management Council and approved by the Secretary of Commerce (September 27, 2000).

The proposed action and action area are described in the BA and the preceding Opinion. The action area includes habitat which has been designated as EFH for various life stages of Chinook salmon. Because the habitat requirements (i.e., EFH) for Chinook salmon in the action area are similar to those of the ESA-listed species and because the conservation measures included as part of the proposed action are adequate to address ESA concerns, they are also adequate to avoid, minimize, or otherwise offset potential adverse effects to designated EFH. Therefore, conservation recommendations pursuant to MSA (305(b)(4)(A)) are not necessary.

#### **3.1. Supplemental Consultation**

The BLM must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH [50 CFR 600.920(l)].

### **4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW**

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

#### **4.1. Utility**

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users.

This ESA consultation concludes that the effects of the proposed grazing permits, rangeland improvement projects, and vegetation treatment proposals will not jeopardize Snake River

steelhead, will not adversely affect Snake River spring/summer Chinook salmon, and will not adversely affect critical habitat for both species. Therefore, the BLM can permit these actions in accordance with their authorities under in the Federal Land Policy and Management Act of 1976, as amended in October 2001, and in accordance with CFR 4130.2(a). The intended users are the BLM and their permittees.

Individual copies were provided to the BLM. This consultation will be posted on NMFS Northwest Region website (<http://www.nwr.noaa.gov>). 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 NMFS ESA Consultation Handbook, ESA Regulations, 50 CFR 402.01, *et seq.*, and the MSA implementing regulations regarding EFH, 50 CFR 600.920(j).

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

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

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

## 5. LITERATURE CITED

- American Fisheries Society. 1980. Western Division. Position paper on management and protection of western riparian stream ecosystems. 24 p.
- Araki, H., B. Cooper, and M. S. Blouin. 2007. Genetic Effects of Captive Breeding Cause a Rapid, Cumulative Fitness Decline in the Wild. *SCIENCE*. October 5, 2007, Volume 319, pp. 100-103.
- Araki, H., B. A. Berejikian, M. J. Ford, and M. S. Blouin. 2008. Fitness of hatchery-reared salmonids in the wild. *Evolutionary Applications* ISSN 1752-4571. pp. 342–355.
- Araki, H., B. Cooper, and M. S. Blouin. 2009. Carry-over effect of captive breeding reduces reproductive fitness of wild-born descendants in the wild. *Biology Letters, Conservation Biology*, doi:10.1098/rsbl.2009.0315, Published online, 4 pgs.
- Ballard, T.M. 1999. Interactions of Cattle and Chinook Salmon. Master's thesis. Oregon State University, Corvallis.
- Ballard, T. M., and W. C. Krueger. 2005. Cattle and salmon II: interactions between cattle and spawning spring Chinook salmon (*Oncorhynchus tshawytscha*) in a northeastern Oregon riparian ecosystem. *Rangeland Ecology and Management* 58:274–278.
- Belsky, J., A. Matzke, and S. Uselman. 1997. Survey of livestock influences on stream and riparian ecosystems in the western United States. Oregon Natural Desert Association. 38 p.
- Bengeyfield, P. 2006. Managing cows with streams in mind. *Rangelands*, 28(1). pp. 3-6.
- Bjornn, T.C. 1978. Survival, production, and yield of trout and Chinook salmon in the Lemhi River, Idaho. University of Idaho, College of Forestry, Wildlife and Range Sciences Bulletin 27, Moscow, Idaho, USA.
- BLM (Bureau of Land Management). 1999. Steelhead Section 7 Consultation, Lemhi River Watershed. Combined agency watershed biological assessment for ongoing actions submitted by BLM to National Marine Fisheries Service, February 10, 1999. 187 pages.
- BLM. 2010. Canyon-Big Timber Watershed Assessment Report Salmon Field Office, Salmon, ID. September, 2010. [http://www.blm.gov/id/st/en/prog/planning/canyon-big\\_timber.html](http://www.blm.gov/id/st/en/prog/planning/canyon-big_timber.html)
- BLM. 2011. Biological Assessment for BLM Actions in the Canyon to Big Tiber Watershed Assessment Area. Salmon Field Office, Salmon, ID. September, 2011.
- Boyd, C.S, and Svejcar, A.J. 2004. Regrowth and production of herbaceous riparian vegetation following defoliation. *Journal of Range Management*. 57:448-454.

- Boyd, C.S., and Svejcar, A.J. 2008. Defoliation impacts on above and below-ground production in a riparian sedge community. Society for Range Management Meeting Abstracts. Building Bridges: Grasslands to Rangelands. Watershed Management & Hydrology Poster#46
- Burton, T.A., E.R. Cowley, and S.J. Smith. 2010. Riparian Area Management: Multiple Indicator Monitoring (MIM) of Stream Channels and Streamside Vegetation. U.S. Department of the Interior, Bureau of Land Management. Technical Reference 1737-23. National Science and Technology Center. Denver, Co.
- Busby, P.J., T.C. Wainwright, G.J. Bryant, L.J. Lierheimer, R.S. Waples, F.W. Waknitz, and I.V. Lagomarcino. 1996. Status review of West Coast steelhead from Washington, Idaho, Oregon, and California. NOAA-NWFSC-27. Available from NOAA Fisheries, Northwest Fisheries Center, Coastal Zone and Estuaries Studies Division, 2725 Montlake Blvd., E., Seattle, Washington 98112-2097.
- Chaney, E., W. Elmore, and W. S. Platts. 1990. Livestock grazing on western riparian areas. Report prepared for U.S. Environmental Protection Agency by Northwest Resource Information Center, Inc., Eagle, Idaho. 45 p.
- Chaney, E., W. Elmore, and W. S. Platts. 1993. Managing change: livestock grazing on western riparian areas. Produced for the U.S. Environmental Protection Agency by the Northwest Resource Information Center. 31 p.
- CIG (Climate Impacts Group). 2004. Overview of climate change impacts in the U.S. Pacific Northwest (July 29, 2004, updated August 17, 2004). Climate Impacts Group, University of Washington, Seattle
- Clary, W. P. and B. F. Webster. 1989. Managing grazing of riparian areas in the Intermountain Region. General Technical Report INT-263, U.S. Dept. of Agriculture, USFS, Intermountain Research Station, Ogden, Utah. 11 p.
- Clary, W.P and W.C. Leininger. 2000. Stubble height as a tool for management of riparian areas. Journal of Range Management. 53 (6): 563-573.
- Cope, O. B. (ed.). 1979. Proceedings of the forum - grazing and riparian/stream ecosystems. Trout Unlimited. 94 p.
- Cowley, Ervin R. 2002. Guidelines for Establishing Allowable Levels of Streambank Alteration. Bureau of Land Management. Idaho State Office. March, 2002

- Cowley, E.R. and T.A. Burton. 2005. Monitoring Streambanks and Riparian Vegetation – Multiple Indicators. Tech. Bull. No. 2005-002. USDI, BLM, Idaho State Office. Boise, ID. [http://www.id.blm.gov/techbuls/05\\_02/doc.pdf](http://www.id.blm.gov/techbuls/05_02/doc.pdf)
- Cowley, E.R. 2002. Monitoring Current Year Streambank Alteration. Idaho State Office, Bureau of Land Management. 16p.
- Ecovista. 2004. “Salmon Subbasin Assessment”. In Draft Intermountain Subbasin Plan, prepared for the Northwest Power and Conservation Council. Portland, Oregon, May 2004. <http://www.nwcouncil.org/fw/subbasinplanning/Default.htm> 36
- Ehrhart, R.C. and P.L. Hansen. 1997. Effective cattle management in riparian zones: a field survey and literature review. USDI, Bureau of Land Management, Montana State Office. November.
- Fagan, W. F. and E. E. Holmes. 2006. Quantifying the extinction vortex. Ecology Letters, 9: pgs. 51–60.
- Ford, M.J. (ed.). 2011. Status review update for Pacific salmon and steelhead listed under the Endangered Species Act: Pacific Northwest. U.S. Dept. Commerce, NOAA Tech. Memo. NMFS-NWFSC-113, 281 p.
- FPC (Fish Passage Center). 2011. July 13, 2011, query of on-line data base. [http://www.fpc.org/adultsalmon/adultqueries/Adult\\_Table\\_Submit.html](http://www.fpc.org/adultsalmon/adultqueries/Adult_Table_Submit.html)
- Fulton, L.A. 1968. Spawning areas and abundance of Chinook salmon, *Oncorhynchus tshawytscha*, in the Columbia River Basin--past and present. U.S. Fish and Wildlife Service Special Science Report—Fisheries No. 571. Washington, D.C.
- Good, T.P., R.S. Waples, and P. Adams (editors). 2005. Updated status of federally listed ESUs of West Coast salmon and steelhead. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-66, 598 p. <http://santacruz.nmfs.noaa.gov/files/pubs/00749.pdf>
- Gregory, J.S. and B.L. Gamett. 2009. Cattle trampling of simulated bull trout redds. North American Journal of Fisheries Management 29:361.
- Gresswell, R. E., B. A. Barton, and J. L. Kershner (eds.). 1989. Practical approaches to riparian resource management: an educational workshop. May 8 -11, 1989, Billings, Montana. USDI Bureau of Land Management: BLM-MT-PT-89-001-4351. 193 p.
- Hall, F. C., and L. Bryant. 1995. Herbaceous stubble height as a warning of impending cattle grazing damage to riparian areas. Gen. Tech. Rep. PNW-GTR-362. Portland, OR. U.S. Department of agriculture, Forest Service, Pacific Northwest Research Station. 9 p.
- ICBTRT (Interior Columbia Basin Technical Recovery Team). 2003. Independent Populations of Chinook, Steelhead, and Sockeye for Listed Evolutionarily Significant Units within the Interior Columbia River Domain (July 2003).

- ICBTRT. 2007. Viability Criteria for Application to Interior Columbia Basin Salmonid ESUs. Review Draft March 2007.  
[http://www.nwfsc.noaa.gov/trt/trt\\_documents/ictrt\\_viability\\_criteria\\_reviewdraft\\_2007\\_complete.pdf](http://www.nwfsc.noaa.gov/trt/trt_documents/ictrt_viability_criteria_reviewdraft_2007_complete.pdf)
- IDEQ (Idaho Department of Environmental Quality). 2008. Department of Environmental Quality Working Principles and Policies for the 2008 Integrated (303[d]/305[b]) Report. State of Idaho Department of Environmental Quality. Boise, Idaho 83706.
- ISAB (Independent Scientific Advisory Board). 2007. Climate change impacts on Columbia River Basin fish and wildlife. ISAB Climate Change Report, ISAB 2007-2, Northwest Power and Conservation Council, Portland, Oregon.
- Johnson, R. R., C. D. Ziebell, D. R. Patton, P. F. Folliet, and R. H. Hamre (Tech. Coordinators). 1985. Riparian ecosystem and their management: reconciling conflicting uses; first North America riparian conference; April 16-18. Tucson, Arizona. USDA Forest Service Gen. Tech. Rpt. Rm-120. 523 p.
- Kauffman, J. B. and W. C. Krueger. 1984. Livestock impacts on riparian ecosystems and streamside management implications - a review. *Journal of Range Management* 37(5):430-438.
- Kinch, G. 1989. Riparian area management: grazing management in riparian areas. U.S. Bureau of Land Management, Denver, Colorado. Tech. Ref. 737-4. 44 p.
- Kovalchik, B.L. and W. Elmore. 1991. Effects of cattle grazing systems on willow-dominated plant associations in central Oregon. *In: Symposium on Ecology and Management of Riparian Shrub Communities*, Sun Valley, ID, May 29-31, 1991.
- Leonard, S., G. Kinch, V. Elsbernd, M. Borman, and S. Swanson. 1997. Riparian area management. TR 1737 14. Grazing management for riparian wetland areas. USDI Bureau of Land Management and USDA Forest Service. 63 p.
- McElhany, P., M. Ruckleshaus, M. J. Ford, T. Wainwright, and E. Bjorkstedt. 2000. Viable Salmon Populations and the Recovery of Evolutionarily Significant Units. U. S. Department of Commerce, National Marine Fisheries Service, Northwest Fisheries Science Center, NOAA Technical Memorandum NMFS-NWFSC-42. 156 p.  
<http://www.nwfsc.noaa.gov/publications/techmemos/tm42/tm42.pdf>
- McInnis, M.L. and J.D. McIver. 2009. Timing of Cattle Grazing Alters Impacts on Streambanks in an Oregon Mountain Watershed. *Journal of Soil and Water Conservation*. Volume 64, No. 6.

- McLaughlin, J. F., J.J. Hellmann, C. L. Boggs, and P. R. Ehrlich. 2002. Climate change hastens population extinctions. *Proceedings of the National Academy of Sciences*, April 30, 2002, vol. 99, no. 9, pgs 6070-6074.
- Matthews, G. M., and R. S. Waples. 1991. Status review for Snake River spring and summer Chinook salmon. U.S. Department of Commerce, NOAA Tech. Memo. NMFS F/NWC-200, 75 p. <http://www.nwr.noaa.gov/Publications/Biological-Status-Reviews/loader.cfm?csModule=security/getfile&pageid=21476> <<http://www.nwr.noaa.gov/Publications/Biological-Status-Reviews/loader.cfm?csModule=security/getfile&pageid=21476>>
- Meehan, W. R. and W. S. Platts. 1978. Livestock grazing and the aquatic environment. *Journal of Soil and Water Conservation* November - December 1978:274-278. Menke, J. (ed.). 1977. Symposium on livestock interactions with wildlife, fish and the environment. Sparks, Nevada. USDA Forest Service Pacific Southwest Forest and Range Experiment Station. Berkeley, California.
- Menke, J. (ed.). 1977. Symposium on livestock interactions with wildlife, fish and the environment. Sparks, Nevada. USDA Forest Service Pacific Southwest Forest and Range Experiment Station. Berkeley, California.
- NMFS. 2011. 5-Year Review: Summary & Evaluation of Snake River Sockeye, Snake River Spring-Summer Chinook, Snake River Fall-Run Chinook, and Snake River Basin Steelhead. National Marine Fisheries Service Northwest Region Portland, OR
- NMFS. 2011. Draft Snake River Recovery Plan. Idaho State Salmon Recovery Division. Boise, ID. June, 2010.
- Ohmart, R. D. and B. W. Anderson. 1982. North American desert riparian ecosystems. P. 433-466. *In*: G. L. Bender, ed., *Reference Handbook on the Deserts of North America*. Greenwood Press, Westport, Connecticut.
- O'Grady, J. J., D. H. Reed, B. W. Brook, R. Frankham. 2004. What are the best correlates of predicted extinction risk? *Biological Conservation*. Volume 118 (2004), pgs 513–520.
- Parsons, C.T., P.A. Momont, T. Delcurto, M. McInnis, and M.L. Porath. 2003. Cattle distribution patterns and vegetation use in mountain riparian areas. *Journal of Range Management*. Volume 56: 334-341.
- Peek, J. M. and P. D. Dalke. 1982. Wildlife - livestock relationships symposium; Proceedings 10. (ed). April 20-22, 1982, Coeur d'Alene, Idaho. Univ. of Idaho Forest, Wildlife, and Range Experiment Station. Moscow, Idaho.
- Platts, W. S. 1981. Influence of forest and rangeland management on anadromous fish habitat in western North America -effects of livestock grazing. USDA Forest Service Gen. Technical Report PNW-124. 25 p.

- Platts, W.S. and R.L. Nelson. 1985. Impacts of rest-rotation grazing on stream banks in forested watersheds in Idaho. No. Am. J. of Fisheries Manage. 5:547-556.
- Platts, W.S and R.L. Nelson, 1989. Stream Canopy and its relation to salmonid biomass in the Intermountain West. North American Journal of Fisheries Management 9:446-457.
- Quinn, T.P. 2005. The Behavior and Ecology of Pacific Salmon & Trout. University of Washington Press.
- Roberts, B. C., and R. G. White. 1992. Effects of angler wading on survival of trout eggs and pre-emergent fry. North American Journal of Fisheries Management 12:450-459.
- Rosgen, D. 1996. Applied river morphology. Wildland Hydrology. Pagosa Springs, CO.
- Scheuerell, M.D., and J.G. Williams. 2005. Forecasting climate-induced changes in the survival of Snake River spring/summer Chinook salmon (*Oncorhynchus tshawytscha*). Fisheries Oceanography 14:448-457.
- Trapani, J. 2002. Stream habitat inventory report: Lemhi, Pahsimeroi, and the East Fork Salmon River, ID. Upper Salmon Basin Watershed Project, Salmon, ID.
- USDI - Bureau of Land Management. 1997. Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management (Final). Boise, Idaho: Idaho State Office, BLM.
- USDI - Bureau of Land Management. 2006. Riparian area management: Grazing management processes and strategies for riparian-wetland areas. Technical Reference 1737-20. BLM/ST/ST-06/002+1737. Bureau of Land Management, National Science and Technology Center, Denver, CO. 105 pp.
- U.S. Fish and Wildlife Service (USFWS). 1998. Proceedings of the Lower Snake River Compensation Plan Status Review Symposium. Boise Idaho. February 3-5, 1998. Compiled by USFWS, LSRCP Office, Boise ID.
- University of Idaho Stubble Height Review Team. 2004. University of Idaho Stubble Height Study Report. Submitted to Idaho State Director BLM and Regional Forester Region 4, U.S. Forest Service. University of Idaho Forest, Wildlife and Range Experiment Station Moscow, ID. 33p.

- Wyman, S., D. Bailey, M. Borman, S. Cote, J. Eisner, W. Elmore, B. Leinard, S. Leonard, F. Reed, S. Swanson, L. Van Riper, T. Westfall, R. Wiley, and A. Winward. 2006. Riparian area management: grazing management processes and strategies for riparian-wetland areas. United States Department of the Interior, Bureau of Land Management, Technical Reference 1737-20:1–105.
- Zabel, R.W., M.D. Scheuerell, M./M. McClure, and J.G. Williams. 2006. The interplay between climate variability and density dependence in the population viability of Chinook salmon. *Conservation Biology* 20:190-200.