



United States Department of Agriculture

LeClerc Creek Grazing Allotment Management Planning

Final Environmental Impact Statement



Forest Service

Colville National Forest

Newport-Sullivan Lake
Ranger Districts

February 2018

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotope, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at http://www.ascr.usda.gov/complaint_filing_cust.html and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

USDA is an equal opportunity provider, employer, and lender.

**LeClerc Creek Grazing Allotment Management Planning
Final Environmental Impact Statement
Colville National Forest, Pend Oreille County, Washington**

Lead Agency: USDA Forest Service

Responsible Official: Rodney Smoldon
Forest Supervisor
765 South Main
Colville, WA 99114
509-684-7000

For Information Contact: Gayne Sears
District Ranger
315 North Warren
Newport, WA 99156
509-447-7300

This document is available on the internet:

<http://www.fs.usda.gov/projects/colville/landmanagement/projects>

Abstract: This Final Environmental Impact Statement (FEIS) documents the analysis of four alternatives for the management of the LeClerc Creek Grazing Allotment, located approximately six miles southeast of Ione, Washington. The focus of the project is reauthorization of an existing permit for grazing cattle on National Forest System land. Alternatives include Alternative A – No Change (current management), Alternative B – No Action (no grazing, preferred alternative), Alternative C, and Alternative D – Modification of Alternative C.

Summary

Introduction

The Colville National Forest originally analyzed management of the LeClerc Creek Cattle and Horse Grazing Allotment (hereafter referred to as the LeClerc Creek Allotment) for a qualified applicant to continue grazing this allotment. The original Notice of Intent (NOI) was published in the Federal Register on April 18, 2014 (Vol. 79 No. 75).

The area affected by the proposal includes land identified as capable and suitable for domestic livestock grazing in the Colville National Forest Land and Resource Management Plan (Forest Plan). The focus of this project is to analyze livestock management practices and determine effects of continued grazing within the existing allotment. The analysis area encompasses 23,412 acres of land within the LeClerc Creek subwatershed. Primary access is via Fourth of July (National Forest System (NFS) Road 1932), East Branch LeClerc Creek (NFS Road 1934), Middle Branch LeClerc Creek (NFS Road 1935), and West Branch LeClerc Creek (NFS Road 1933) roads.

The project area lies within the traditional use area of the Kalispel Tribe. The Kalispel Tribe has a vested interest in the LeClerc Creek Allotment area because of historical cultural uses on the land, aquatic restoration that has already taken place, as well as several other planned projects to enhance and restore habitat. The Tribe believes that there is an incompatibility between their free exercise of traditional beliefs, curative arts, and rites of passage, and cattle grazing. They have informed the Forest Service of their intent to nominate approximately 482 acres located in the northernmost portion of the allotment for listing with the National Register of Historic Places (Beat 2015).

The permittee also has a vested interest in continuing use of this allotment as his family business and because of family ties and tradition.

For these reasons as well as the condition of the natural resources affected by livestock grazing, the Forest Service has developed four alternatives, which are described and analyzed in this Environmental Impact Statement (EIS). The alternatives analyzed include the No Change (Alternative A - current management), No Action (Alternative B - no grazing), Alternative C and Alternative D, a modification of Alternative C.

Twenty comment letters were received during the comment period on the 2015 Draft EIS. The comments were reviewed and responses were prepared by the interdisciplinary team (IDT). The comment letters and responses are found in the Response to Comments located in Appendix D and on the Forest's website.

Based on the comments received, no new significant issues were identified. However, changes were made to incorporate updated explanations of data (specifically in the hydrology and fisheries sections in chapter 3) in the effects analysis for Alternatives C and D based on comments received. There was also a slight change to Alternative D (boundary and fencing changes) based on comments received from the current permittee to improve operational management of the LeClerc Creek Allotment.

Issues

Considering current and desired conditions in the LeClerc Creek Allotment and using comments from the public and interested groups during scoping efforts, the project interdisciplinary team identified five issues for analysis in the DEIS.

- Issue 1 - Effects of livestock grazing on riparian and aquatic functions

- Issue 2 - Lack of effective livestock movement controls potentially leading to increased duration of use and decreased opportunity for vegetative growth or regrowth
- Issue 3 – Disturbance to wildlife during critical periods
- Issue 4 - Feasibility of successful allotment management
- Issue 5 - Effects of changes in livestock grazing on social or cultural issues

Twenty comment letters were received during review of the DEIS. All substantive comments were considered and used to identify issues that needed to be addressed by the proposal, refine alternative design and ensure a thorough analysis, thus helping the project interdisciplinary team, district ranger, and responsible official in determining the best course of action.

Issues are described in detail on pages 12-15 of the FEIS; public comments are summarized in FEIS Appendix D.

Alternatives

The following alternatives were developed based on these issues and were analyzed in detail in chapter 3 of this FEIS.

Alternative A - No Change (current management): This alternative would authorize grazing under the existing management plan for the LeClerc Creek Allotment. There would be no change to the existing allotment or pasture boundaries, season of use, and permitted number of cow/calf pairs (101). No new improvements would be installed (except a riparian enclosure that was planned and approved prior to this project).

Alternative B - No Action (no grazing): No action in grazing management planning is synonymous with “no grazing” and means that livestock grazing would not be authorized within the project area. (USDA Forest Service 2005a). Livestock grazing would be discontinued, the allotment would be closed, and no range improvements or resource protection projects would be implemented.

Alternative C - Proposed Action: This alternative would continue to authorize grazing within the project area with modification to the existing permit terms and conditions to address management and resource concerns that currently exist within the allotment. The LeClerc Creek Allotment would remain as a Cattle and Horse allotment, but current management would change as described in chapters 2 and 3.

Alternative D - Modification of Alternative C: This alternative would continue to authorize grazing within the project area with modification to the existing permit conditions to address management and resource concerns that currently exist within the allotment. This alternative was proposed by the current allotment permittee and incorporates all of the elements of Alternative C, but with modifications. The LeClerc Creek Allotment would remain as a Cattle and Horse allotment, but current management would change as described in chapters 2 and 3.

Alternatives C and D incorporate adaptive management strategies. Adaptive management is an approach to natural resource management where actions are designed and executed and effects are monitored for the purpose of learning and adjusting future management actions, which improves the efficiency and responsiveness of management (36 CFR 219.16). Essentially, the responsible official would determine which indicators would be monitored to assess conditions, give a timeframe of when monitoring would take place, determine how long monitoring would last, indicate “trigger” points or thresholds of when an action would need to take place, list the possible actions with the potential effects of those actions, and

then implement those actions to mitigate potential resource damage. Additional discussion of adaptive management is contained in chapter 2.

Monitoring and evaluation are key elements of adaptive management. Monitoring is discussed in chapter 2.

Decision Framework

This FEIS discloses the environmental consequences of implementing the preferred alternative and alternatives to that action. The scope of this analysis is limited to evaluating the appropriate amount of permitted livestock grazing and how the allotment is managed, given considerations of rangeland condition and other Forest Plan goals and objectives.

The Record of Decision (ROD) will identify the selected alternative based on the analysis in the FEIS including such factors as how the alternative meets the purpose and need for action, consideration of the environmental consequences, response to public concerns and compliance with the Forest Plan and other laws, regulations, and policies.

If a decision is made to authorize grazing, Term Grazing Permits, Allotment Management Plans, and Annual Operating Instructions would be issued in compliance with the decision. These are implementing documents and do not constitute decision points.

The responsible official for this project is the forest supervisor of the Colville National Forest.

Document Structure

Chapter 1 - Purpose and Need for Action includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposals for achieving that purpose and need. This section also details how the Forest Service informed the public and how the public responded.

Chapter 2 – Alternatives provides a more detailed description of the agency's alternatives for achieving the stated purpose. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes mitigation measures. Finally, this section provides a comparison table of significant issues and indicators by alternative.

Chapter 3 - Affected Environment and Environmental Consequences describes the environmental effects of implementing the alternatives. Recent, current, and foreseeable activities are included in the content of this chapter (Appendix C). This analysis is organized by resource area.

Appendices include detailed maps of the proposals (Appendix A), best management practices (Appendix B) identified for the project area, a listing of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek Grazing Allotment Area (Appendix C), a summary of all public comments received on this project and Forest Service responses (Appendix D), and a description of primary changes made between the draft and final environmental impact statements (Appendix E).

Additional documentation may be found in the project planning record located at the Newport Office of the Newport-Sullivan Lake Ranger Districts.

Table of Contents

Summary	1
Chapter 1. Purpose and Need for Action	1
Introduction	1
Purpose of and Need for Action	1
Project Location.....	2
Affected Environment	4
Management Direction	6
Public Involvement and Collaboration	8
Issues	12
Issues Not Analyzed in Detail	15
Decision Framework.....	16
Chapter 2. Alternatives.....	17
Introduction	17
Alternatives Considered in Detail.....	17
Design Criteria.....	31
Mitigation Measures	34
Alternatives Considered but Eliminated from Detailed Study.....	34
Comparison of Alternatives.....	36
Chapter 3. Affected Environment and Environmental Consequences.....	39
Introduction	39
Rangeland Management	40
Social and Economic Analysis	59
Hydrology and Water Quality	78
Fish and Aquatic Habitat	113
Terrestrial Wildlife Species and Habitats	127
Sensitive Plants.....	172
Soils	177
Heritage Resources	187
Noxious Weeds.....	194
Recreation.....	200
Transportation System.....	202
Special Use Authorizations and Minerals.....	205
Short-term Uses and Long-term Productivity.....	206
Unavoidable Adverse Effects	207
Irreversible and Irretrievable Commitments of Resources	207
Incomplete or Unavailable Information.....	207
Rationale for Project-Scale Effects Conclusions on Climate Change	207
Other Required Disclosures.....	208
References	1
Acronyms/Glossary	1
Preparers and Contributors	1
Index.....	1
Appendix A: Maps	A-1
Appendix B: Best Management Practices	B-1
Appendix C: Past, Ongoing and Reasonably Foreseeable Activities	C-1
Appendix D: Public Comment and Response	D-1
Appendix E: Changes between Draft and Final Environmental Impact Statements	E-1

List of Tables

Table 1. Legal description of the LeClerc Creek area.....	2
Table 2. Forest plan management areas for LeClerc Creek Allotment	7
Table 3. Pasture and allotment size after proposed boundary changes, by alternatives	19
Table 4. Monitoring and adaptive management strategy for streambank integrity and riparian shrub habitat, Alternatives C and D	27
Table 5. Monitoring and adaptive management strategy for green forage and sensitive plants, Alternatives C and D	29
Table 6. Comparison of operation and administration, by alternative	36
Table 7. Comparison of estimated effects, by issue and alternative	37
Table 8. Historic use summary	42
Table 9. Current pastures in the LeClerc Creek allotment	44
Table 10. LeClerc Creek Allotment improvements	46
Table 11. Parker 3-step assessment methodology	48
Table 12. Percent of total population by race, 2014.....	61
Table 13. Percent of total population by poverty level, 2014	62
Table 14. Estimated past investments to improve cattle management in LeClerc Creek Allotment	69
Table 15. Estimated costs for range management and improvements, Alternatives C and D.....	76
Table 16. Estimated costs for adaptive management measures, Alternatives C and D.....	76
Table 17. Total estimated additional costs Alternatives C and D	76
Table 18. Washington Department of Ecology water quality criteria.....	79
Table 19. Number of surveys by watershed/catchment	91
Table 20. Pasture and watershed statistics, by alternative.	106
Table 21. Forest Plan consistency for hydrology, by alternative	110
Table 22. Forest Service survey data ¹ for streams in the LeClerc Creek Allotment ²	117
Table 23. Effects determination for bull trout and bull trout critical habitat.....	125
Table 24. Summary of effects of livestock grazing on riparian and aquatic functions measures by alternative.....	126
Table 25. Threatened (T), endangered (E), proposed (P), and candidate (C) species listed for the CNF ...	129
Table 26. Approximate acres of lynx primary range in the LeClerc Creek Allotment, by alternative.....	131
Table 27. Approximate acres of grizzly bear foraging habitats on the LeClerc Creek Allotment	137
Table 28. Approximate acres of grizzly bear foraging habitats available to cattle in the LeClerc Creek Allotment, by alternative.....	138
Table 29. Woodland caribou seasonal habitat components (Allen 2013)	148
Table 30. Caribou habitat data for the Molybdenite Caribou Management Unit (CMU)	149
Table 31. Approximate acres of spring and summer “target” stands for caribou in the LeClerc Creek Allotment by alternative.....	149
Table 32. Sensitive birds listed for the CNF	152
Table 33. Sensitive mammals listed for the CNF.....	153
Table 34. Sensitive invertebrates listed for the CNF	153
Table 35. Summary of direct and indirect effects to sensitive terrestrial wildlife species, by alternative ..	155
Table 36. MIS Listed for Colville National Forest	160
Table 37. Summary of effects to MIS.....	163
Table 38. Migratory birds of conservation concern	166
Table 39. LeClerc Creek Allotment - summary of effects to priority habitats for birds of conservation concern	169
Table 40. Number of sensitive plant populations documented from the project area by allotment	173
Table 41. Sensitive plants and population threats by allotment	174
Table 42. Summary of the effects of the alternatives on sensitive plants	177
Table 43. Summary of soil disturbance monitoring protocol for the LeClerc Creek Allotment	180
Table 44. National Register for Historic Places determinations of eligibility, and recommendations.	187
Table 45. Comparison summary of effects for each alternative on the different allotment areas	193
Table 46. Noxious Weed Species in the LeClerc Allotment.....	196
Table 47. Roads by jurisdiction in the planning area	203

Table 48. Miles of system road under Forest Service jurisdiction in the planning area by maintenance level	203
Table 49. Core BMP Descriptions.....	2
Table 50. BMP Format.....	3
Table 51. Individuals/organizations responding during the DEIS Comment Period.....	3

List of Figures

Figure 1. LeClerc Creek Allotment vicinity map	3
Figure 2. Potential adaptive management monitoring sites, Alternatives C and D	30
Figure 3. Current LeClerc Creek Allotment pastures	45
Figure 4. Existing LeClerc Creek Allotment pasture boundaries and subwatersheds.	83
Figure 5. Maitlen Creek Subwatershed Catchments in relation to Dry Canyon Pasture.	84
Figure 6. Temperature impaired stream reaches in the LeClerc Creek Allotment.	88
Figure 7. Water temperatures in Middle Branch LeClerc Creek in 2014, 2013, and 2010.	89
Figure 8. Dry Canyon Meadow	93
Figure 9. Meadow/wetland/tributary complex in Lower Bunchgrass pasture adjacent to the Middle branch LeClerc Creek road (NFS Road 1935) with high cattle use and proposed trough location.	101
Figure 10. Primary route (purple line) cattle use in Lower Bunchgrass and Mineral Creek pastures.	107
Figure 11. Allotment pasture boundaries under Alternative D in comparison to Alternative C.....	108

Chapter 1. Purpose and Need for Action

Introduction

The Forest Service has prepared this Final Environmental Impact Statement (FEIS) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations.

Public comments are an important consideration in the responsible official's decision, and are used to ensure all relevant issues and an appropriate range of alternatives have been addressed in the analysis. Public review of the 2015 Draft Environmental Impact Statement did not result in any new alternatives or issues. However, comments did indicate a need for clarification related to several of the analysis issues and for additional information related to measures used to compare effects of the alternatives.

The FEIS has been updated to describe public review of the DEIS and identify how public comments are reflected in the effects analysis; Appendix D provides a summary of comments and responses. None of the revisions change the scope or findings of the analyses. A summary of changes to the EIS is provided in Appendix E.

Purpose of and Need for Action

The purpose and need statement defines the scope and objectives of the proposal. A well-defined purpose and need statement narrows the range of alternatives that may need to be developed in the alternatives section (chapter 2). It describes in detail why action is being proposed at that location and at that time.

The focus of this project is to analyze management of the LeClerc Creek Grazing Allotment. A qualified applicant would like to continue livestock grazing on the LeClerc Creek Allotment, and there is a need to comply with requirements of the 1995 Rescissions Act (Public Law 104-19, Section 504) and Forest Service policy. The Rescissions Act addresses allotment analysis, grazing permit issuance, and compliance with National Environmental Policy Act (NEPA) and other environmental laws.

Management of the allotment must provide protection or enhancement of ecosystem values affected by grazing, including streams, fisheries habitat, riparian areas, sensitive plant species, terrestrial wildlife habitats, vegetation, cultural and heritage resources, and recreation sites.

There is a need to update the management plan (including adaptive management) to move the existing condition toward compliance with the Riparian Management Objectives prescribed in the Inland Native Fish Strategy (USDA Forest Service 1995) and portions of the Box Canyon Hydroelectric Power Federal Energy Regulatory License (Trout Habitat Recovery Program), which would also indirectly lead to moving the State listed stream reaches toward State Water Quality standards for temperature.

There is also a need to determine what improvements are needed within the allotment, where they are needed, and how to implement the proposals. This includes addressing allotment management conditions (e.g., improvement of riparian conditions in some areas, review of allotment boundaries, and addressing forage quality and quantity).

Project Location

The LeClerc Creek analysis area (Figure 1) encompasses about 23,412 acres of land within the LeClerc Creek watershed. Of this, 81 percent (18,911 acres) are National Forest System (NFS) lands, 18 percent (4,300 acres) are private lands, and less than one percent (202 acres) are Washington State lands. The elevation of the area ranges from about 2,600 to 6,700 feet. Primary access is via Fourth of July (NFS Road 1932), East Branch LeClerc (NFS Road 1934), Middle Branch LeClerc (NFS Road 1935), and West Branch LeClerc (NFS Road 1933) roads.

This table displays the legal description of the LeClerc Creek analysis area.

Table 1. Legal description of the LeClerc Creek area.

Township	Range	All or portions of Sections
T. 35 N.	R. 44 E.	2-5, 9, 10
T. 36 N.	R. 44 E.	2-11, 15-18, 20-22, 29, 32-35
T. 37 N.	R. 43 E.	2, 3, 10, 11, 14, 15, 22, 23, 26, 27, 34-36
T. 37 N.	R. 44 E.	13-36

LeClerc Creek Allotment General Vicinity Map

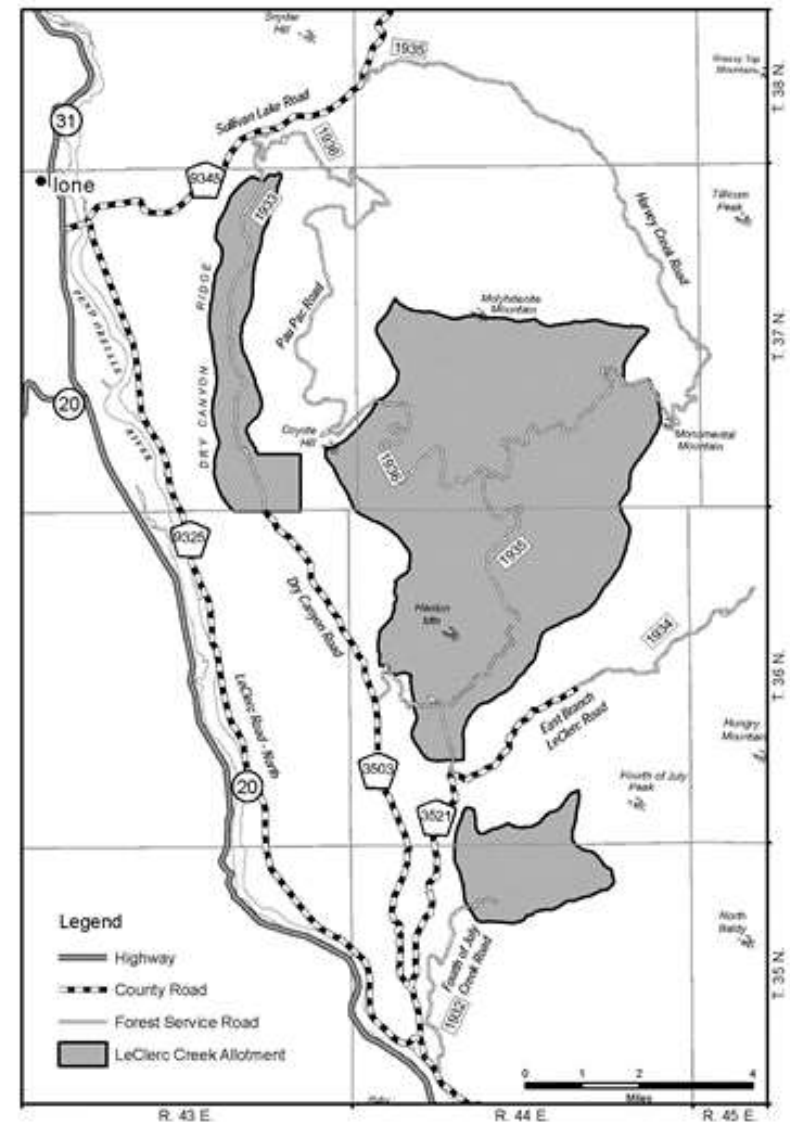
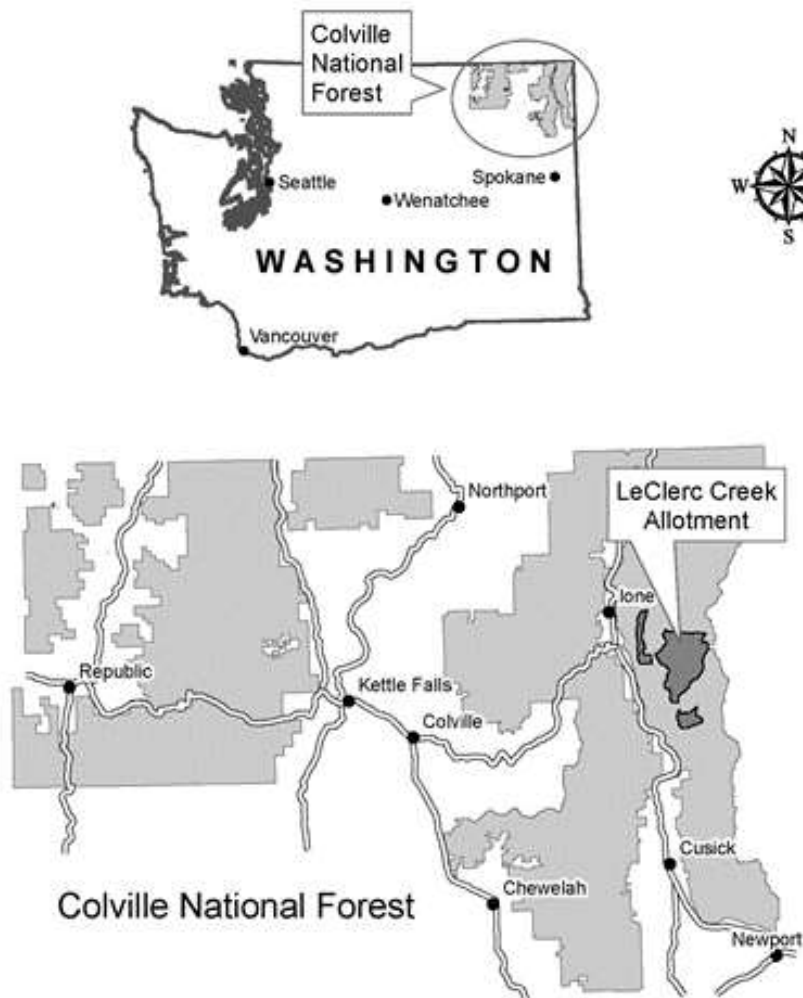


Figure 1. LeClerc Creek Allotment vicinity map

Affected Environment

The National Forest System lands (NFS) contained within the boundaries of the LeClerc Creek Allotment are grazed under permit, which grants grazing privileges to the permit holder. There is private property, both fenced and unfenced, within or adjacent to the boundaries of the LeClerc Creek Allotment. The lands within the project boundary have been determined to be “range areas,” also sometimes referred to as “open range” by Pend Oreille County. The Revised Code of Washington (RCW) 16.24.010 states that within range areas, “it shall be lawful to permit cattle, horses, mules, or donkeys to run at large.” Pend Oreille County has specified that the season for the range areas within the boundary of the LeClerc Creek Allotment is from April 1 to November 30 each year. The RCW 16.60.015 further states that it is the responsibility of the land owner to construct and maintain fencing around their property should they not want livestock to run at large on their property.

Several homestead meadows provide valuable forage for livestock and wildlife within the LeClerc Creek Allotment. These homestead meadows are generally located adjacent to water sources such as streams. Homestead meadows are areas that were cleared of timber to provide a home site, then tilled and planted to provide forage for livestock. Some of the homestead meadows on the Forest were maintained into the 1980s by removing encroaching trees, burning, tilling, and reseeding these areas to maintain their productivity. Conifer tree encroachment into the original cleared area of homestead meadows is occurring at varying degrees within this allotment, and is decreasing the amount and quality of upland foraging areas provided by meadows. Additionally, noxious weeds are present in many of the homestead meadows within the allotment, further decreasing the amount and quality of available forage. Grass species commonly found in homestead meadows include Kentucky bluegrass, orchard grass, timothy and red top.

There are no developed water sources within this allotment, so cattle are required to water at streams and undeveloped springs within the allotment. This lack of off-stream water causes cattle to concentrate in riparian areas. Drift between pastures and off the allotment has been an ongoing concern, especially since the majority of the drift appears to be returning to the Lower Bunchgrass pasture. Having cattle drift back into the early season pasture tends to result in a season long grazing pattern of the riparian areas in Lower Bunchgrass pasture rather than the expected rotational use of pastures designed to limit impacts in the high-use cattle-preferred riparian areas.

It is Forest Service policy to continue contributions to the economic and social well-being of people by providing opportunities for economic diversity and by promoting stability for communities that depend on range resources for their livelihood (FSM 2202.1). It is also Forest Service policy to make forage available to qualified livestock operators from lands suitable for grazing consistent with land management plans (FSM 2203.1). Where consistent with other multiple use goals and objectives there is congressional intent to allow grazing on suitable lands (Multiple Use Sustained Yield Act of 1960, Forest and Rangeland Renewable Resources Planning Act of 1974, Federal Land Policy and Management Act of 1976, National Forest Management Act of 1976). Similarly, Federal regulations (36 CFR 222.2(c)) state that forage producing lands will be managed for livestock grazing where consistent with land management plans (Multiple Use Sustained Yield Act of 1960, Forest and Rangeland Renewable Resources Planning Act of 1974, Federal Land Policy and Management Act of 1976, National Forest Management Act of 1976), Clean Water Act, Endangered Species Act, and the National Historic Preservation Act.

The East and West Branch LeClerc subwatersheds are a high priority for restoration on the Colville National Forest. In addition, there is Federal, State, Tribal, and power company interest in watershed and fisheries restoration in these subwatersheds. LeClerc Creek is a tributary of the Box Canyon reservoir on the Pend Oreille River.

The Box Canyon Hydroelectric Project (FERC No. 2042) forms the Box Canyon reservoir and is operated by the Public Utility District No. 1 of Pend Oreille County (POPUD). On July 11, 2005, the Federal Energy Regulatory Commission (FERC) issued a new license for the Project. Some of the provisions in the license were subsequently modified in a settlement agreement and included in an order amending the Project license on February 19, 2010 (130 FERC 61,148). The amendment order included a requirement for a Trout Habitat Restoration Program (THRP) in the Box Canyon watershed (Appendix A of the License Amendment Order, Revised 4(e) Condition 6). As part of the THRP, POPUD is required to restore 164 miles of tributary habitat through the life of the license.

The Colville National Forest is a member of the Technical Committee that directs and approves aquatic and fisheries restoration in the tributaries to the Box Canyon Reservoir on and off NFS lands under the THRP. The THRP prioritizes watersheds within the Box Canyon Reservoir for restoration, and the LeClerc watershed is currently one of the POPUD's highest priorities for restoration.

The POPUD and other partners have made substantial investments (approximately \$3 million dollars) in aquatic restoration in the East and West Branch LeClerc subwatersheds since the inception of the THRP, with approximately 16 miles of in stream large woody debris placement, and several culvert replacements to improve fish passage and habitat.

In 2011 and 2012, 2.6 miles of NFS Road 1935000 was decommissioned along the Middle Branch of LeClerc Creek to improve watershed and aquatic function. The decommissioned NFS Road 1935000 (adjacent to the stream) prism was seeded and replanted with herbaceous grass, conifers, and shrubs. In addition, four road stream crossings were removed and the stream was recontoured to its channel, which was funded by the Salmon Recovery Funding Board (SRFB) as well as stewardship funds.

During the past 6,000 years, the region has been utilized by diverse groups of people for a variety of activities. The project area lies within the traditional use area of the Kalispel Tribe. The Kalispel is a sub-group of the Salishan speaking groups, which include the following cultural traditions: Wenatchee, Columbia, Chelan, Methow, Okanogan, Nespelem, Sanpoil, Spokane, Coeur d'Alene, Colville, Lakes, and Kalispel. Ethnographic accounts indicate that the Pend Oreille River Valley, specifically, the eastern edge of Colville National Forest may have also been utilized by the Kootenai, Spokane and Colville Tribes (Kennedy and Bouchard 1998, Lahren 1998). Native people of the region ranged freely over the hills and valleys hunting and gathering. Compared with many other areas of the Pacific Northwest, the numbers of native peoples living in Pend Oreille County were relatively small. Ethnographic accounts indicate that the Kalispel practiced wintertime deer drives and maintained resident fisheries along the Pend Oreille River. In addition to hunting deer and fishing, the Kalispel harvested camas (*Camassia* sp) (Lahren 1998).

According to the Kalispel Tribe's web site: in 1872 the Lower Kalispel Tribe refused to enter into a treaty with the United States (because doing so may have forced them to leave their ancestral lands on the Pend Oreille River). As result they did not cede their ancestral lands to the United States and do not legally retain treaty rights to federally managed lands adjacent to the Kalispel

Tribe Reservation on the Pend Orville River (see social economic section for additional information). Native American cultural resource sites (on National Forest System lands) have been identified within the LeClerc Creek Allotment.

Additional description of the affected environment is provided by resource in chapter 3.

Management Direction

Where consistent with other multiple use goals and objectives, there is congressional intent to allow grazing on suitable lands as provided by the Multiple Use Sustained Yield Act of 1960, Forest and Rangeland Renewable Resources Planning Act of 1974, Federal Land Policy and Management Act of 1976, and National Forest Management Act of 1976.

The LeClerc Creek Allotment project is further guided by federal and state laws, regulations, policies and plans; including (but not limited to) the Rescissions Act, National Environmental Policy Act, and Colville Land and Resource Management Plan (Forest Plan). Other resource-related management directions, policies, laws, and regulations (such as the National Historic Preservation Act, Endangered Species Act, Clean Water Act, etc.) are discussed in chapter 3 by resource and under “Other Required Disclosures.”

Rescissions Act

The Rescissions Act (P.L. 104-19) became law on July 27, 1995. Section 504 addresses allotment analysis, grazing permit issuance, and compliance with the National Environmental Policy Act (NEPA) and other environmental laws. This act directs the Forest Service to complete site-specific environmental analysis and management decisions for allotments, and set a schedule for completion of allotment reviews. Compliance with the Rescissions Act would be met by completion of the LeClerc Creek Grazing Allotment Management Planning project by 2019.

National Environmental Policy Act

Planning and public involvement for this project was done in accordance with the National Environmental Policy Act (NEPA) of 1969. Procedures described in the Council of Environmental Quality’s implementing regulations for the NEPA (Title 40; CFR Parts 1500-1508) were used to ensure compliance with the NEPA.

National Forest Management Act

The National Forest Management Act (NFMA, US Congress 1976) includes provisions applicable to all projects and requires the following: (a) resource plans and permits, contracts and other instruments shall be consistent with the land management plan, (b) insure consideration of the economic and environmental aspects of management, to provide for outdoor recreation, range, timber, watershed, wildlife, and fish, and (c) provide for diversity of plant and animal communities.

Land and Resource Management Plan and Amendments

This analysis is tiered to the Final Environmental Impact Statement for the land and resource management plan (Forest Plan) for the Colville National Forest, as amended by the Regional Forester's Forest Plan Amendment #2 and the Inland Native Fish Strategy (INFISH).

- Inland Native Fish Strategy (USDA Forest Service 1995a): The Inland Native Fish Strategy (INFISH) establishes Riparian Habitat Conservation Areas (RHCAs). The RHCAs are portions of watersheds where riparian-dependent resources receive primary

emphasis, and management activities are subject to specific standards and guidelines. Projects within RHCAs follow the INFISH standards and guidelines so the activities will not retard or prevent attainment of riparian management objectives (RMOs) and not adversely affect inland native fish (INFISH 1995).

- Regional Forester’s October 11, 2005 amendment to forest plans in Region 6, Preventing and Managing Invasive Plants, (USDA Forest Service 2005b): This management direction includes invasive plant prevention and treatment and restoration standards intended to help achieve stated desired future conditions, goals, and objectives.
- Regional Forester’s Forest Plan Amendment #2 entitled Revised Interim Management Direction Establishing Riparian, Ecosystem and Wildlife Standards for Timber Sales (Lowe 1995). This amendment replaced the interim ecosystem and wildlife standards from Regional Forester’s Forest Plans Amendment #1. In this interim direction, the regional forester directs National Forests in eastern Washington to maintain, and, or enhance late and old structural stages in stands subject to timber harvest. Forest Plan Amendment #2 is referred to as the “Eastside Screens.”

Revision of the Forest Plan is in progress, including revised goals, desired conditions, objectives, standards, guidelines, suitable uses and activities, management area designations, and monitoring items. The pending revision is not expected to change the capability and suitability of grazing.

Management Area Direction

Management direction for each management area (MA) is provided by the Forest Plan, which describes in detail the Goals, Objectives, Standards, Guidelines, and Management prescriptions for National Forest System lands (Forest Plan Chapter 4). There are eight MAs in the LeClerc Creek analysis area. The following table shows the percent of NFS land allocated to each management prescription; management prescription areas are displayed in Appendix A (Figure A-1).

Table 2. Forest plan management areas for LeClerc Creek Allotment

Management Area	Acres	Percent
1	345	2
2	13	<1
4	22	<1
5	2,101	11
6	26	<1
7	7,767	41
8	4,710	25
11	3,926	21

Desired Conditions for LeClerc Creek Allotment

Most of the LeClerc Creek Allotment is located within an area designated by the Forest Plan as having a desired future condition (DFC) of sustainable and resilient grazing lands with continued restoration and maintenance of resources and ties to the purpose and need for this project.

Management recommendations for management areas within the project boundary include:

- Providing essential habitat for wildlife species that require old growth forest components and contribute to the maintenance of diversity of wildlife habitats and plant communities;

- Providing sufficient and suitable seasonal habitat for caribou to a fully recovered population as specified in the caribou recovery plan;
- Providing opportunities for research in ecosystems influenced only by natural processes;
- Providing a natural appearing foreground, middle and background along major travel routes (such as state route 20 and the Pend Oreille River) while providing wood products and developing late and old structural (including park-like structure) stands;
- Providing a natural appearing foreground, middle, and background along major scenic travel routes, managing vegetation for fish habitat (INFISH), wildlife habitat, and late and old structural stands (including park-like structure) as well as production of timber products; and
- Meeting the habitat needs of deer and elk to sustain carrying capacity at 120 percent of the 1980 level, while managing timber and other resources consistent with fish and wildlife management objectives.

The desired future conditions for specific resources on this grazing allotment are discussed in each resource section of chapter 3.

It is apparent that several different but similar terms (excellent, good, fair, satisfactory, with upward trend, functioning) are used to describe desired range conditions in the management direction discussed above. For this analysis, all of these slightly different terms for the desired condition are interpreted as meaning the area would be in a mid or later seral status and in a stable or upward trend. The mid to late seral status indicates a relationship to a potential natural community (i.e., a condition that would be achieved if there were no interference by humans) and a resilience to disturbance.

This analysis describes the desired condition in terms of whether the area is functioning. The term “functioning” indicates the same concepts as the desired conditions referenced in the Forest Plan and FSH 2209.21. “Functioning” means a vegetative community has the most appropriate soil and vegetative characteristics that enable it to efficiently process precipitation, reproduce healthy vegetation, and withstand or be resilient to disturbance. It incorporates how well these individual vegetative groups receive and process precipitation and are able to withstand extreme weather, fire, or human caused events or activities without resulting in degraded states.

Public Involvement and Collaboration

Two of the major goals of the environmental analysis process are to better inform governmental decisions and to enhance citizen involvement. In recent years, federal agencies have sought to use a more collaborative approach to engaging the public and assessing the impacts of federal actions under NEPA.

The following describes the public involvement activities and collaborative efforts associated with the LeClerc Creek Allotment project.

Public Involvement Activities

This project was first scoped with the public as an Environmental Assessment (EA) in 1998. This EA was never finalized and a decision was not signed due to controversial issues the Forest did not have the capacity to address at the time.

Another EA was initiated and scoping associated with a new proposed action occurred in 2013; the public was notified of the opportunity for their involvement through the quarterly Schedule of Proposed Actions (beginning in spring 2013) and a letter sent to interested and/or affected members of the public describing the proposed action (dated April 22, 2013). Target audiences included landowners whose property is within or adjacent to the project analysis area; individuals or groups having Special Use permits within the project analysis area; American Indian Tribes, State and Federal agencies, local government offices, interested private groups (such as cattlemen's associations, environmental organizations, timber industry, recreation organizations), and other potentially interested members of the public.

Through initial analysis, it became apparent that the proposed action could result in possible significant impacts; therefore it was determined that an environmental impact statement (EIS) would be prepared. Scoping for the EIS began with the April 18, 2014 publication of a Notice of Intent (NOI) in the Federal Register to inform the public of the Forest Service's intent to analyze the allotment with an environmental impact statement. The NOI asked for public comment on the proposal from April 18, 2014 to May 19, 2014.

The Forest Service (FS) interdisciplinary team (IDT) and line officer worked with the Kalispel Tribe and the current permit holder to develop opportunities for improvements to manage the LeClerc Creek Allotment. In addition, comments received from the public during the 2013 and 2014 scoping periods were considered by the IDT during project development and used to develop a draft proposed action.

Public comments, follow-up collaboration, and specialist input were used to generate the final proposed action, presented to the public in the third scoping letter (2014 Notice of Intent). The scoping period was 30 days. Tribal, permit holder, county, agencies with jurisdiction and public comments on the proposed opportunities were considered by the IDT during project development and used to develop a draft proposed action. Follow-up collaboration with many of the above parties and interdisciplinary team was used to generate the final proposed action and alternatives to the proposed action.

On October 2, 2015, the Environmental Protection Agency (EPA) published a Notice of Availability for the LeClerc Creek Grazing Allotment Management Planning Draft Environmental Impact Statement (DEIS) in the Federal Register (Federal Register 2015). The comment period for the DEIS was open until November 16, 2015, granting interested parties the allowable 45 days to comment and have standing to object, according to 36 CFR 218.

In early November, after a request from an interested and affected party, the district ranger decided to extend the comment period to ensure that all interested parties were allowed adequate time to comment. On December 11, 2015, the EPA published a second announcement in the Federal Register publishing the extension of the comment period to December 16, 2015, resulting in a 75-day comment period.

Throughout the planning process, issues raised by the permit holder, public, other agencies and governments, Pend Oreille County Commissioners, resource specialists, and the Kalispel Tribe were screened to identify those that related to potential impacts of the proposed action, were within the control of the Forest Service and were within the scope of the project. These issues were reviewed by the responsible official and are tracked throughout this document. Alternatives were developed to address these issues to varying degrees, as described in chapter 2.

Collaborative Efforts

Collaboration is a process that involves people working together – often with widely varied interests – to share knowledge, ideas and resources toward addressing common goals and objectives. Collaboration can be informal or structured, and be applied to a broad range of activities and scope. Communication may occur through a variety of methods – from large group settings to smaller groups (such as field trips) and one-on-one conversations.

The Newport-Sullivan Lake Ranger Districts have developed an ongoing collaborative process that engages other federal, Tribal, state and local agencies, affected and interested parties, and the public at large to address management of NFS lands and resources under the jurisdiction of the ranger district. The process is designed to include people with a diversity of perspectives and ideas, and is flexible enough to embrace newcomers and sustain momentum if some need to leave or choose not to participate (for example, some participants may only have an interest in one particular set of activities or geographic area).

Collaborative efforts related to the LeClerc Creek Grazing Allotment project involved the ranger district's ongoing work with several organizations as well as with individuals and organizations interested in this particular project, as described below.

Allotment Grazing Permittee

Collaboration efforts have also included the LeClerc Grazing Allotment permittee. Beginning in 2013, the Forest Service met with the LeClerc Creek Allotment permittee multiple times (both in meetings with other collaborators and independently) to discuss his concerns with the project. Range management, including access to different parts of the allotment; range improvement needs, labor and maintenance costs; and feasibility of the proposals were discussed.

Permittee input was used in development of Alternative C where the input met the purpose and need of the project. However, the permittee determined that some components of Alternative C (especially the proposed allotment boundary around section 21 of the Middle Branch LeClerc Creek and using the Diamond City corrals as the area to collect the whole herd) would not be operationally practical. The permittee stated in comments (dated June 9, 2014) that, "The pictures (located at the district office) of the washed out trail and the fast moving creek are on the west branch where the trail crosses the creek before heading down to Diamond City. Although the cattle still use this trail, it would not be suitable for a main route for the whole herd." And, "The next group (of pictures) is of the new road on the middle branch right at the Simson property boundary where one of the two proposed cattle guards is to be placed to enlarge the fish enclosure. It is clear that this would completely close off the only practical way for cattle to move from the lower half to the upper half of this unit. A different alternative is clearly needed here." The permittee was also concerned that the proposed fence around the NW corner of section 21 (due to adjacent private land) would require cattle to either climb up and down a steep road cut bank which would increase erosion and bare soil, and/or to be trailed upland in areas where there are no well-defined trails (Fountain 2014).

Because of these issues, during the summer of 2014 the Forest Service met with the permittee several times to develop modifications to Alternative C, which resulted in development of Alternative D (described in chapter 2).

Cattlemen's Associations

Representatives from the cattlemen's association were engaged in informal discussions throughout the comment periods and during the analysis process. Consideration was given to comments received from Washington Cattlemen's Association and Pend Oreille County Cattlemen's Association and were included in the analysis file for this project.

Tribal Consultation

Letters inviting consultation and collaboration were sent to the Kalispel Tribe of Indians, the Confederated Tribes of the Colville Reservation, and the Spokane Tribe on April 18, 2013 and April 25, 2014. No response was received from the Colville Tribe. The Spokane Tribe provided comments during the 2014 scoping period, but deferred to the Kalispel Tribe during review of the DEIS. Consultation with the Kalispel Tribe is ongoing:

- The Kalispel Tribe of Indians contacted the Forest in October 2012 via written correspondence, at the outset of this project; their letter emphasized their concern for these parcels. The Tribe indicated that "there has been an increasing reluctance on the part of the Kalispel membership in the use of specific landforms in the existing cattle allotment for the gathering of traditional medicinal plants." Furthermore, they believe that there is an incompatibility between free exercise of traditional beliefs, curative arts, and rites of passage and cattle grazing. Statements to this affect have been made at almost every meeting with the Forest regarding the LeClerc Allotment.
- Requested formal consultation with the Kalispel Tribe of Indians, the Spokane Tribe, and the Confederated Tribes of the Colville Reservation under Executive Order 13175 on April 18, 2013. This was prior to the scoping period for the EA.
- Meeting with representatives of the Kalispel Tribe of Indians to identify and incorporate issues of concern to the Tribe. Meetings were held February 19, 2013, March 18, 2013, November 26, 2013, September 10, 2014, and several others documented in the project record.
- Requested formal consultation with the Kalispel Tribe of Indians, the Spokane Tribe, and the Confederated Tribes of the Colville Reservation under Executive Order 13175 on July 1, 2014. This was during the scoping period for the DEIS.
- Several informal meetings and conversations have been had with the Kalispel Tribe throughout this project planning.

Trout Habitat Recovery Program Technical Committee

The Forest Service is a member of the Technical Committee tasked with implementing the Box Canyon Trout Habitat Recovery Program. The ranger district is working alongside the U.S. Bureau of Indian Affairs, U.S. Fish and Wildlife Service, Washington State Department of Fish and Wildlife, Kalispel Tribe of Indians, Washington State Department of Ecology, Idaho Department of Fish and Game, and U.S. Environmental Protection Agency to protect and restore several watersheds, including LeClerc Creek.

Pend Oreille Public Utility District

As part of the Trout Habitat Restoration Program, the Pend Oreille PUD is required to restore 164 miles of stream habitat in tributaries to the Pend Oreille River. Restoration efforts must be focused in seven priority watersheds; LeClerc is the largest and highest priority of these.

Pend Oreille County

Pend Oreille County Board of Commissioners participated in discussions throughout project development. Several letters from the county and other correspondence were received and responded to throughout the project. The Board of Commissioners was sent a letter dated April 22, 2013, advising them of the proposed action and their opportunity to comment.

In March 2016, the county submitted a letter with a request to postpone implementing a determination in the matter of the LeClerc Creek Grazing Allotment due to continued research through county efforts in accordance with 43 USC 1712 [c] [9] and Pend Oreille County resolution 2015-46. The county commissioners coordinated two field trips to the LeClerc Creek Allotment on August 17, 2016 and October 14, 2016. In November 2016, the Forest Service received a letter from the county relating concerns about Alternative D and how the economics of grazing affect the county. In December 2016, the county sent a letter identifying additional concerns related to monitoring, adaptive management and watershed analysis.

Summary of Comments Received

Twenty comment letters were received during public review of the DEIS; all are located in the project record and available for viewing on the project website (<http://www.fs.usda.gov/projects/colville/landmanagement/projects>). All written comments were considered in compliance with 36 CFR 218.25 and 40 CFR 1503.4. All substantive comments related to the project were considered and used to identify issues that needed addressed by the proposal, refine alternative design and ensure a thorough analysis, thus helping the project interdisciplinary team, district ranger, and responsible official in determining the best course of action.

Public comments submitted during review of the DEIS (see Appendix D) did not result in modification of any existing alternative (including the proposed action), nor development of any new alternative not previously given serious consideration. No new issues were identified in public comments.

Issues

Using comments from the public and interested groups the interdisciplinary team developed a list of issues to address. Issues serve to highlight effects or unintended consequences that may occur from the proposed action and alternatives, giving opportunities during the analysis to reduce adverse effects and compare trade-offs for the decision maker and public to understand. Issues help set the scope of the actions, alternatives, and effects to consider in our analysis (Forest Service Handbook 1909.15.12.4).

Input in creation of the original proposed action (Alternative C) that was scoped in 2013 and 2014 was used to formulate issues, eliminating issues which were not significant or which have been covered by prior environmental review (Sec. 1501.7). While no new issues were identified in public comments submitted during review of the DEIS, comments did result in taking a closer look at the measures used to compare alternatives as they related to specific issues.

The issues are not listed in any order of priority. Measures listed below each issue were used in the analysis to display the differences between each alternative.

Issue 1 - Effects of Current and Historic Livestock Grazing on Riparian and Aquatic Functions

Historic permitted stocking levels for the lands that make up the current LeClerc Creek Allotment are summarized in Table 8 in the rangeland management section of this document (chapter 3). This allotment is likely experiencing legacy effects from historically higher stocking rates, and may also be experiencing legacy effects from having different classes of animals (sheep) graze on the allotment in the past. Though it is known that some of the lands within the LeClerc Creek Allotment were historically grazed by sheep, it is not known how many animals were permitted or the number of years that sheep grazing was authorized. These legacy effects may include, but are not limited to: altered vegetative communities or decreased productivity due to high grazing pressure, areas of high soil compaction, altered hydrology, or altered stream morphology. The recovery of riparian plants in both density and diversity is essential for healthy and sustainable ecosystems.

This issue was analyzed in part in response to public comments from adjacent landowners and other individuals, Pend Oreille Public Utility District, Washington Department of Ecology, Washington Department of Fish & Wildlife, Kalispel Tribe, U.S. Department of the Interior, and U.S. Environmental Protection Agency.

Measures:

- Miles of designated critical habitat for bull trout accessible to livestock;
- Miles of fish-bearing streams accessible to livestock;
- Acres of wetlands accessible to livestock;
- Number of hardened stream crossings for livestock;
- Number of upland water sources needed (water troughs), and
- Adaptive management strategy in place.

Issue 2 – Lack of effective livestock movement controls potentially leading to increased duration of use and decreased opportunity for vegetative growth or regrowth

Managed properly, grazing is a natural process that can maintain plant health (Bradford et al. 2002). A plant subject to overgrazing, either by domestic livestock or wildlife species, would weaken over time. This would make it less able to grow adequate healthy roots, reducing above-ground production of leaf material and reducing its capability to store carbohydrates for the following year's growth, to withstand drought, extreme winters, or additional grazing from herbivores. A plant's ability to continue to grow healthy roots is critical to its survival.

Over the years, timber harvest and road construction has opened up once dense timber stands and created new movement pathways for livestock on the LeClerc Creek Allotment. As a result, existing fencing and other control structures are no longer adequate to prevent cows from moving between pastures and re-grazing pastures, resulting in over-grazed conditions already used to the proper level.

This issue was analyzed in part in response to public comments from adjacent landowners and other individuals, Pend Oreille County Board of Commissioners, Washington Department of Ecology, Washington Department of Fish & Wildlife, Kalispel Tribe, U.S. Department of the Interior, and U.S. Environmental Protection Agency.

Measures:

- Miles of pasture and allotment boundaries with constructed barriers (fencing);
- Miles of boundaries with natural features intended to control livestock movement.

Issue 3 - Disturbance to wildlife during critical periods from grazing livestock

Meadows and riparian areas are important foraging sites for big game on the allotment. Cattle also tend to concentrate their grazing in these areas. Grazing livestock could disturb and displace native wildlife depending on the time of year and wildlife species. For many species, this may be most critical during the post-wintering period. Wildlife could be forced to move onto less productive foraging sites, or abandon activity centers such as day beds, dens, or rendezvous sites. Grazing livestock could disturb and displace native wildlife depending on the time of year and wildlife species. For many species, this may be most critical during the post-wintering period.

This issue was analyzed in part in response to public comments from an adjacent landowner, Pend Oreille County Board of Commissioners, Washington Department of Fish & Wildlife, and U.S. Environmental Protection Agency.

Measures:

- Presence of livestock during the post-wintering and spring reproductive period for elk and large carnivores.

Issue 4 - Feasibility of successful allotment management

There are a number of requirements and considerations potentially affecting successful allotment management, such as the stocking rates (livestock numbers), timing of grazing, allotment/pasture boundaries, and range improvements (fencing, cattle guards etc.).

The current management strategy is a deferred rotation grazing schedule, but the loss of effective barriers to cattle drift over time (both from natural degradation and from changes in the landscape due to timber harvest) has created porous allotment and pasture boundaries that cannot effectively contain cattle. Of particular concern is the late season drift of cattle back into Lower Bunchgrass pasture after this pasture has already been grazed, as well as cattle drift off the allotment along the East Branch LeClerc Creek Road (NFS Road 1934000) and the predominantly privately owned lands around Scotchman and Caldwell Lakes.

Management of the allotment is complicated by the fact that the Fourth of July and Dry Canyon pastures are spatially separated from the rest of the allotment. This makes management difficult for the permittee because moving cattle to or from these disconnected pastures requires cattle to be trucked or trailed off-allotment. Trailing cattle off-allotment is less desirable as it leads to cattle being present in areas not covered under any agreement, such as a Term Grazing Permit. This type of movement off the allotment is not regulated by the Forest Service.

There are no developed water sources within this allotment, so cattle water at streams and undeveloped springs within the allotment. This lack of off-stream water causes cattle to concentrate in riparian areas, which is exacerbated later in the grazing season as upland forage cures and becomes less palatable.

This issue was analyzed in part in response to public comments from adjacent landowners and other individuals, the permittee, Pend Oreille County Board of Commissioners, Washington Cattlemen's Association, Washington Department of Ecology, Washington Department of Fish &

Wildlife, Kalispel Tribe, U.S. Department of Interior, and U.S. Environmental Protection Agency.

Measures:

- Number of pastures separate from the rest of the allotment;
- Total miles of fencing the permittee must maintain.

Issue 5 - Effects of Livestock Grazing leading to adverse effects on Social or Cultural Issues

Livestock grazing on federally permitted lands provides an economic value to grazing permittees, which in turn contributes to the social and economic stability of the surrounding community. Agriculture, including the ranching industry, has been a part of the community economic and social fabric since the homesteading era (circa 1890s). Changes in use on the allotment could affect contributions ranching operations generate in Pend Oreille County. Values a working ranch provides such as open space, family values, and more resilient local communities could also be affected.

There are also cultural issues that have been expressed. In 1993, the Kalispel Tribe of Indians notified the Colville National Forest via written correspondence of traditional cultural properties that were located in the LeClerc drainage. The letter briefed the Forest on the Tribes' intent to nominate those lands for listing with the National Register of Historic Places. Through the years, the Tribes have consistently provided comments to the Forest regarding their interest and concern for activities occurring on and in the vicinity of this allotment, specifically identifying the LeClerc watershed as a significant cultural landscape for Native American values and uses.

This issue was analyzed in part in response to public comments from the permittee, Pend Oreille County Board of Commissioners, Pend Oreille County Cattlemen's Association, Washington Cattlemen's Association, Washington Department of Ecology, Washington Department of Fish & Wildlife, Kalispel Tribe, U.S. Department of the Interior, and U.S. Environmental Protection Agency.

Measures:

- Effect to the local economy
- Effects to areas considered culturally, spiritually, or botanically important within the allotment (traditional cultural properties)
- Effects to the significant cultural landscape for Native American uses and values

Issues Not Analyzed in Detail

Below is a summary of issues not analyzed in detail. These issues are 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan or other higher level decision; 3) irrelevant to the decision to be made; 4) conjectural and not supported by scientific or factual evidence; or 5) or are resolved by mitigation that is similar for all action alternatives.

- Timely monitoring: resolved by monitoring that is similar for all the action alternatives and the adoption of adaptive management.
- Limiting motorized access: irrelevant to the decision to be made.

- This project is not adjacent to, nor would it have any effect on, existing wilderness areas. A portion of the Harvey Creek and Dry Canyon Breaks Inventoried Roadless Areas (IRA) overlap the LeClerc Creek Allotment but are located in areas that are mainly inaccessible to cattle. Incidental cattle access to these areas would not affect roadless characteristics or eligibility for wilderness consideration.

Decision Framework

This FEIS discloses the environmental consequences of implementing the preferred alternative and alternatives to that action. The scope of this analysis is limited to evaluating the appropriate amount of permitted livestock grazing and how the allotment is managed, given considerations of rangeland condition and other Forest Plan goals and objectives.

The Record of Decision (ROD) will identify the selected alternative based on the analysis in the Final EIS including such factors as how the alternative meets the purpose and need for action, consideration of the environmental consequences, response to public concerns and compliance with the Forest Plan and other laws, regulations, and policies.

If a decision is made to authorize grazing, Term Grazing Permits, Allotment Management Plans, and Annual Operating Instructions would be issued in compliance with the decision. These are implementing documents and do not constitute decision points.

The responsible official for this project is the forest supervisor of the Colville National Forest.

Chapter 2. Alternatives

Introduction

This chapter describes and compares the alternatives considered for the LeClerc Creek Grazing Allotment FEIS in response to the issues identified. This chapter provides readers and the responsible official a summary of the entire project, displaying the preferred alternative, the monitoring requirements, and the potential effects of the preferred alternative on identified issues. The team identified a reasonable range of alternatives and then evaluated potential environmental impacts of the various proposals (see chapter 3). All alternatives analyzed in detail are found in chapter 3 and are consistent with the Forest Plan as amended, including Regional Forester's Forest Plan Amendment #2 and the Inland Native Fish Strategy Environmental Assessment (EA).

A detailed discussion of effects is contained in chapter 3 and the analysis file. Measures required to mitigate the effects of this project are also presented in this chapter.

Alternatives Considered in Detail

The Forest Service developed four alternatives, in response to issues raised by the allotment permittee, the Tribes, and other interested members of the public.

Alternative A—No Change (current management)

This alternative would authorize grazing under the existing management plan for the LeClerc Creek Allotment. There would be no change to the existing allotment or pasture boundaries, season of use, and permitted number of cow/calf pairs (101). No new improvements would be installed, with the exception of a riparian enclosure on the lower Middle Branch LeClerc Creek that was planned and approved prior to this project. Other planned management activities would continue.

Alternative B—No Action (no grazing)

Alternative B is the “no grazing” alternative. The Council for Environmental Quality (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) require that a “no action” alternative be developed as a benchmark from which the agency can evaluate the action alternatives. For the purposes of this project, no action in grazing management planning is synonymous with “no grazing” and means that livestock grazing would not be authorized within the project area. (USDA Forest Service 2005a).

Under this alternative, livestock grazing would be discontinued on the LeClerc Creek Allotment and the allotment would be closed. The existing Term Grazing Permit would be cancelled pursuant to Forest Service Handbook (FSH) 2209.13 part 16.24 which references Code of Federal Regulations (CFR) chapter 36, part 222.4(a)(1) and states “except in an emergency, no permit shall be cancelled without 2 years prior notification.” The requirement is 2 calendar years (January 1 – December 31) notification. The grazing year runs from March 1 – February 28; therefore, a decision that becomes final after the start of the grazing year would allow the permittee 3 grazing years but only 2 calendar years to continue to graze the allotment. The authority to cancel the current Term Grazing Permit lies with the regional forester and is delegated to the forest supervisor as described in Forest Service Manual (FSM) 2204.2 and 2204.3.

Access to the Hanlon meadow is currently provided by an approximately 800-foot long section of Middle Branch LeClerc Creek Road. This road segment encroaches on a scrub/shrub wetland on the Middle Branch LeClerc Creek. For this reason, the road segment would be obliterated to restore the hydrologic integrity of the wetland. A new access route to the meadow would be provided via NFS Road 1935116. A short spur road (approximately 600 feet) would be built from NFS Road 1935116 to the meadow. The gate that is presently on the entrance of NFS Road 1935116 would then be moved approximately 200 feet up the road, in order to maintain open road access to the meadow and Hanlon Meadow pasture.

No range improvements or resource protection projects would be implemented. Current Forest-wide programs such as noxious weed management and road maintenance would continue. Range improvements including fences, water systems, and corrals would remain on the allotment but would no longer be the responsibility of the permittee to maintain and would be removed as needed pending available funding and project requirements. An objective would be set to have all range improvements removed within a 10-year time frame but this would be dependent on available funding and resources. To benefit wildlife and diversity of the forest, the Forest Service would attempt to maintain homestead meadows within the project area as described in Alternative C.

In the DEIS, Alternative C (the proposed action) was identified as the agency's preferred alternative (40 CFR 1502.14(e)); that is, the alternative which the agency believes would best fulfill its statutory mission and responsibilities. However, based on further consideration of economic, environmental, technical, and other factors, as well as discussions with and comments from interested and affected members of the public, Alternative B is now the agency's preferred alternative.

Alternatives C and D

Development of Alternatives C and D

Alternative C represents the proposed action, developed to address (to varying degrees) all five issues identified during the 2013 scoping process.

Alternative D was developed during discussions with the current permittee based on the elements of Alternative C but with modifications to address his operational concerns while still addressing resource and management concerns. For example, one of the main operational elements driving development of Alternative D was the topographic barrier to cattle movement in the lower bunchgrass pasture imposed by the Alternative C allotment boundary and fence line running along the northwest corner of section 21 T. 36 N., R. 44 E. (see Appendix A, Figure A-3). Additionally, the permittee expressed interest in using the existing 7-mile fence line running along the north of the East Branch of LeClerc Creek as an allotment boundary and deterrent to cattle drift.

Under Alternatives C and D, the LeClerc Creek Allotment would remain as a Cattle and Horse allotment and would continue to authorize grazing within the project area. Both alternatives would modify the existing permit conditions (to varying degrees) to address management and resource concerns that currently exist within the allotment.

The following identifies activities that would occur under Alternatives C and D, describing the changes or activities that would occur under both alternatives and highlighting the differences where applicable.

Allotment and Pasture Boundary Changes

The analysis area is the LeClerc Creek Grazing Allotment boundary and currently encompasses about 23,412 acres of land within the LeClerc Creek subwatershed. Alternatives C and D would differ in proposed boundary changes to pastures in the allotment. The following table summarizes proposed changes to the allotment acres under Alternatives C and D (in comparison to the existing condition, depicted by Alternative A). Alternative B would discontinue livestock grazing, and is therefore not displayed in the table.

Proposed boundary changes and improvements are depicted on maps in Appendix A (Figures A-3 through A-7).

Table 3. Pasture and allotment size after proposed boundary changes, by alternatives

Current Pasture Designations	Alternative A (acres)	Alternative C (acres)	Alternative D (acres)
Dry Canyon	3,037	6,025	6,018
Fourth of July	2,460	0	0
Lower Bunchgrass	5,621	4,372	7,401
Upper Bunchgrass/ Mineral Creek	12,294	10,247	12,433
Hanlon Meadow	0	0	13
Total allotment	23,412	20,644 (net loss of 2,768 acres)	25,865 (net gain of 2,453 acres)

Dry Canyon Pasture – Under both Alternatives C and D, this pasture would be connected to the rest of the allotment by adding the area between the West Branch LeClerc Creek Road (County Road 3503) and the Lower Bunchgrass Pasture. Existing stock trails (or other paths that cattle could use to drift outside the new allotment boundary) would be blocked with sections of fencing, slash piles, or other means. The purpose of this action would be to allow the permittee to trail his cattle between the two pastures on existing roads, without being outside the allotment and out of compliance with the grazing permit. This would help the permittee to better manage the allotment and cattle movement.

Under Alternative D, a short drift fence would be constructed across the NFS Road 1933141 to reduce cattle drift out of the Dry Canyon pasture and off the allotment, resulting in slightly fewer acres in the pasture than would occur under Alternative C.

Fourth of July Pasture – Under both Alternatives C and D, this pasture and associated improvements would be removed from the allotment due to lack of control barriers and to address tribal concerns. The pasture is not contiguous to the rest of the allotment, so any cattle trailed to the pasture would be outside of the allotment boundary. Recent heavy timber harvest on State lands adjacent to the pasture has opened up once dense stands of trees, rendering existing movement controls such as cattle guards ineffective.

Lower Bunchgrass Pasture – Under Alternative C, the southeastern boundary of this pasture would be moved to the west side of the Middle Branch LeClerc Creek, restricting cattle access from approximately 2.3 miles of the creek. The southern boundary of the pasture would be shifted to the north, restricting cattle access from an additional half mile of creek and from areas of deciduous scrub/shrub wetlands, to address resource concerns in these areas. The western

pasture boundary would be moved to the ridgeline east of NFS Road 1935105 (the area between the old and new pasture boundaries would be added to the Mineral Creek pasture).

Under Alternative C, the proposed fence around the NW corner of T. 36 N., R. 44 E., section 21 would not be incorporated into Alternative D because of concern by the permittee about the viability of moving cattle around the fence in that area due to steep slopes.

The southeast boundary of the pasture would be adjusted from the Middle Branch LeClerc Creek to the existing fence along the East Branch road (NFS Road 1934). There would be a new fence constructed adjoining the existing fence along the East Branch Road north along the creek, outside of the RHCA management zone and would tie into topography or vegetation to help restrict cattle movement south around T. 36 N., R. 44 E., section 13. Fencing would be constructed and/or natural barriers would be used on the east side of Middle Branch LeClerc Creek (T. 36 N., R. 44 E., sections 16 and 20) to exclude cattle from Middle Branch LeClerc Creek.

The southern allotment boundary would be adjusted in T. 36 N., R. 44 E., section 29 NE¼ to include the shrub wetland south of the Hanlon Meadow pasture in the allotment. Part of this proposal is also to extend proposed fencing in section 20 south along the road to the bridge, then cross the stream and continue down the east side of Middle Branch LeClerc Creek and tie into existing fencing.

The proposed cattle guard at the north end of the Hanlon Meadow pasture in section 20 would not be incorporated into Alternative D, and the existing cattle guard in section 29 would be left in place. Depending on future collaboration with interested parties, the PIBO DMA¹ site may or may not be fenced due to resources. This change is being proposed so the existing PIBO DMA on the Middle Branch LeClerc Creek would remain inside the allotment and continue to provide data pertinent to cattle management and the effects of grazing.

New fence would be constructed to tie two pieces of existing fence together, creating an effective barrier to cattle drift in the NW¼ of T. 36 N., R. 44 E., section 20.

Upper Bunchgrass and Mineral Creek Pastures – Under Alternative C, the northern boundary of these pastures would be moved from Molybdenite Ridge south to where the slope begins to flatten out due to lack of cattle accessibility and to address issues of concern to the Kalispel Tribe. Most of the area removed from the pasture is not accessible to livestock due to dense stands of timber, steep topography, and a lack of good forage. Other existing stock trails (or paths that cattle could use to drift outside the new allotment boundary) would be blocked with sections of fencing, slash piles, or other means.

Under Alternative D, the northern allotment boundary would be modified to include an area of upper Paupac to allow cattle to access more forage in that area. Adjustment of the allotment boundary here would result in approximately an additional 1,420 acres in the Mineral Creek Pasture and a decrease in the Upper Bunchgrass Pasture by approximately 1,281 acres.

Hanlon Meadow – Under Alternative D (but not Alternative C), Hanlon Meadow would be designated as a pasture within the allotment and would be monitored. Once grazing standards have been reached, all cattle would be removed from Hanlon Meadow and the gates would remain closed. The need to use the Hanlon Meadow pasture would be approved on a case-by-

¹ PACFISH/INFISH Biological Opinion Designated Monitoring Area

case basis by the Forest Service (such as short-term holding for an injured cow). There are approximately 13 acres within this pasture, but this change would not increase the acres in the total allotment because the pasture is already located within the boundaries of the allotment.

All Pastures - Under both Alternatives C and D, existing stock trails or other paths that cattle could use to drift outside new allotment boundaries would be blocked with sections of fencing, slash piles or other means.

Deferred Rotation Grazing Strategy

Deferred rotation means that one portion of the allotment is grazed early season, thereby deferring grazing on the remainder of the allotment and allowing for plant growth and seed production to occur. This strategy helps to maintain plant health and vigor as well as species diversity.

Under Alternative C, the allotment would feature four pastures. The projected pasture rotation would be from Lower Bunchgrass, into Upper Bunchgrass, Mineral Creek, and finally Dry Canyon.

Under Alternative D, the allotment would feature five pastures. The projected pasture rotation would be to turn livestock out into Hanlon Meadow first, then actively move them to Lower Bunchgrass, Upper Bunchgrass, Mineral Creek and finally Dry Canyon. Each pasture would be grazed only a certain amount of time and then livestock would be actively moved to the next pasture when utilization standards are met.

Livestock Numbers

Under both Alternatives C and D, initial stocking rates for the allotment would be 101 cow/calf pairs, and based on monitoring information collected through the adaptive management and monitoring plan, livestock numbers could be adjusted in the future if there is a demonstrated need based on monitoring results of forage utilization, impacts to riparian or other natural or cultural resources.

Timing of Grazing

Both Alternatives C and D would change the turn-on date for moving cattle onto the allotment from June 1 to June 15. This would provide an extra two weeks during late spring for grizzly bears, elk, deer, and other wildlife to utilize green forage resources in the absence of permitted livestock. Dates may be adjusted as the adaptive management strategy is implemented and monitoring information is analyzed and assessed. However, the turn-on date for permitted grazing would not occur prior to June 15th. The end of the normal use period would be extended from October 1 (current) to October 15. The permittee would retain their ability to request an extension to the grazing season beyond October 15. Any request to extend the grazing season would need to be submitted in writing and approved or denied by the Forest Service, as described in FSM 2200.

New Access Route to Hanlon Meadow

Hanlon Meadow is located in the Lower Bunchgrass Pasture in T. 36 N., R. 44 E., sections 20 and 29. The meadow contains a corral, which the permittee currently uses to release and gather up cows.

An approximately 800-foot long section of Middle Branch LeClerc Creek Road presently provides road access to the meadow. This road segment encroaches on a scrub/shrub wetland on the Middle Branch LeClerc Creek. Under both Alternatives C and D, the road segment would be obliterated to restore the hydrologic integrity of the wetland. A new access route to the meadow would be provided via NFS Road 1935116. A short spur road (approximately 600 feet) would be built from NFS Road 1935116 to the meadow. The gate that is presently on the entrance of NFS Road 1935116 would then be moved approximately 200 feet up the road, in order to maintain open road access to the Hanlon Meadow pasture.

Stream Crossings

Under Alternatives C and D, the stream crossing inside the Hanlon Meadow pasture would be hardened and exclosure fencing would be added.

Two existing hardened crossings (located at T. 36 N., R. 44 E., sec. 20, SE $\frac{1}{4}$ SE $\frac{1}{4}$ and T. 37 N., R. 44 E., sec. 32, SE $\frac{1}{4}$ SW $\frac{1}{4}$) would be improved.

One new hardened crossing (located at T. 37 N., R. 44 E., sec. 33, SW $\frac{1}{4}$ SW $\frac{1}{4}$) would be developed.

Range Improvements

Under both Alternatives C and D, range improvements (Appendix A, Figures A-4 and A-6) would be completed to better control and distribute livestock across the allotment, and reduce localized impacts to riparian areas and other habitats. The improvements described below would be the same under both alternatives, except as noted.

Fencing

New allotment boundary fencing would be installed as needed to address identified natural resource issues. To the extent feasible, cliffs, talus, rock outcrops, steep side-hills, and dense forest stands would be incorporated into new pasture and allotment boundaries. These features act as natural barriers to cattle movement. The intent would be to minimize annual fence maintenance needs and reduce the risk of drift off the allotment.

Where continuous forest stands are used as a pasture or allotment “boundary,” stands would be surveyed for any trails that cattle could potentially use to drift off the allotment. Steps would be taken as needed to effectively block these trails with sections of fencing, piled slash, felled “jackpots” of trees, or other means.

Existing pasture fencing would be improved to bring it up to standard and act as an effective barrier to cattle drift, including three sections of fence in: T. 36 N., R. 44 E., section 4, SW $\frac{1}{4}$ NW $\frac{1}{4}$; T. 36 N., R. 44 E., section 8, NW $\frac{1}{4}$ NW $\frac{1}{4}$ (crossing West Branch LeClerc Creek); T. 36 N., R. 44 E., section 8, NE $\frac{1}{4}$; and T. 37 N., R. 44 E., section 33, SW $\frac{1}{4}$ and NW $\frac{1}{4}$).

Exclosure fencing would be installed (T. 36 N., R. 44 E., section 20 NW/SE) to protect sensitive plants (see sensitive plants in chapter 3 and the Sensitive Plants Report in the project record).

A fencing exclosure would be installed around the Middle Branch LeClerc Creek reach and associated riparian area between Hanlon Meadow Pasture and the bridge to the south on NFS Road 1935000, in accordance with Public Utility District #1 of Pend Oreille County compliance with Box Canyon Dam licensing agreement.

As funding becomes available, existing, unnecessary fence sections would be removed from changed allotment and pasture alignments. The existing drift fence outside the allotment on the East Branch LeClerc Creek would be removed.

Water Development

Off-stream watering opportunities would be provided by developing four water troughs in the Lower Bunchgrass pasture where there are small springs or other water sources (T. 36 N., R. 44 E., sections 8, 10, 16 and 20; see Appendix A, Figures A-4 and A-6). Hardened crossings would serve as watering sites as well.

Cattle Guards

Alternatives C and D would both include new and/or improved cattle guards, but would vary in the number and location (Appendix A, Figures A-4 and A-6).

Under Alternative C, four new cattle guards would be installed, and one existing cattle guard would be moved:

- A new cattle guard would be installed on NFS Road 1935011 near the eastern edge of section 10 (T. 36 N., R. 44 E.). Construct fence segments from either side of the cattle guard to control points such as dense timber or rock outcrops. This action is necessary to prevent cattle from using the road to move off the allotment.
- A new cattle guard would be installed on Paupac Road (NFS Road 1936) in the Coyote Hill area. Fence segments would be constructed from either side of the cattle guard to serve as control points, as needed. This action is necessary to prevent cattle drift on this road and off the allotment.
- Two new cattle guards would be installed on the Middle Branch LeClerc Creek Road (NFS Road 1935) where the road crosses through a section of private property in T. 36 N., R. 44 E., section 21, NW ¼. These structures would be tied in to new pasture fencing along the section boundaries
- The existing cattle guard on the Middle Branch LeClerc Creek Road (NFS Road 1935) would be moved north to the new allotment boundary in T. 36 N., R. 44 E., section 20, SE ¼. The structure would be tied in to the new allotment boundary fencing.

Under Alternative D, three new cattle guards would be installed:

- Two new cattle guards would be installed, one on Paupac Road (NFS Road 1936) in T. 37 N., R. 43 E., section 23, and one on NFS Road 1936010 in T. 37 N., R. 43 E., section 25. Fence segments would be constructed from either side of the cattle guard to serve as control points, as needed. This action is necessary to prevent cattle drift on these roads and off the allotment.
- Install a new cattle guard on NFS Road 1935011 near the eastern edge of section 10 (T. 36 N., R. 44 E.). Construct fence segments from either side of the cattle guard to control points such as dense timber or rock outcrops. This action is necessary to prevent cattle from using the road to move off the allotment.

Additional Improvements

Under Alternatives C and D, the catch pen fences at the Diamond City corrals would be expanded to make the catch pens larger if needed, and provide a loading chute for getting cattle onto and off of stock trucks (T. 36 N., R. 44 E., section 18, SW $\frac{1}{4}$ SE $\frac{1}{4}$).

Existing vegetation would be used to reduce drift potential between Mineral Creek and Lower Bunchgrass Pastures. There are currently areas where cattle are able to drift between pastures in T. 36 N., R. 44 E., section 8. Existing vegetation would be used to deter cattle drift and create a more effective barrier. Methods utilized may include but are not limited to directional falling of trees, brush barriers, or placement of root wads.

Monitoring and Adaptive Management

Adaptive management is an approach to natural resource management where actions are designed and executed and effects are monitored for the purpose of learning and adjusting future management actions, which improves the efficiency and responsiveness of management (36 CFR 219.16). Essentially, the responsible official would determine which indicators would be monitored to assess conditions, give a timeframe of when monitoring would take place, determine how long monitoring would last, indicate “trigger” points or thresholds of when an action would need to take place, list the possible actions with the effects of those actions, and then implement those actions to mitigate resource damage (FSH 2209.13, Ch. 90, Section 98.2).

Monitoring helps determine how well Forest Plan and NEPA decisions are being implemented, whether allotment management plan (AMP) implementation is achieving the desired outcome, or whether changes in management are needed. Through monitoring, the Forest Service can measure whether or not management actions are meeting or moving toward desired conditions in an appropriate timeframe. Through adaptive management, AMPs can remain dynamic, relevant, and useful documents over many years.

Two types of monitoring are associated with initiating management actions for a grazing allotment—implementation monitoring and effectiveness monitoring. Implementation monitoring generally measures and documents whether Forest Plan standards and guidelines and project-level design criteria are being applied. Effectiveness monitoring evaluates how effective management actions are at moving toward, achieving, or maintaining desired conditions. Under Alternatives C and D, if a management action is determined not to be effective, the monitoring would trigger implementation of an adaptive management action. Monitoring on the allotments can be accomplished by the Forest Service, permittees, or others (such as partners), implementing approved methods and providing appropriate documentation that meets specified standards.

The range specialist or range staff and resource specialists would coordinate collection of monitoring data. If monitoring indicates that standards for riparian or upland habitats, compliance, and utilization are not being met due to current livestock grazing, then adjustments in the way the allotment is managed would be initiated. The strategies are listed above in Table 4 and Table 5. Any sites where new range improvement projects are proposed for construction would have all applicable surveys completed and clearances issued.

To increase monitoring effectiveness, the Forest Service would establish three riparian Designated Monitoring Areas (DMAs) to implement Multiple Indicator Monitoring (MIM) protocols at existing monitoring sites. An additional riparian DMA in the Dry Canyon pasture may be established as monitoring of resource conditions necessitates.

Alternatives C and D differ in monitoring related to the PACFISH-INFISH Biological Opinion (PIBO) site near the wetland plant community south of the Hanlon Meadow in T. 36 N., R. 44 E., section 29 NE¼ NE¼. **This site would be excluded from the allotment under Alternative C due to boundary changes for functionality of allotment; the site would be included under Alternative D.** This PIBO site utilizes the Multiple Indicator Monitoring (MIM) protocol described by Burton et al (2011) to determine livestock impacts to riparian and wetland areas. Of the methods available in the MIM protocol, the Colville National Forest uses greenline stubble height, streambank alteration, and woody species browse to evaluate the impacts from livestock grazing (see Hydrology Report for more information about the PIBO monitoring site).

Including this site within the allotment boundary under Alternative D would allow for future monitoring to occur at this site to help determine if impacts from livestock grazing are allowing the associated riparian area to be maintained or improved, or are causing it to become degraded. If it is determined through monitoring that the site is being degraded, under the Adaptive Management Strategy (Table 4 and Table 5) it would be excluded and an alternate monitoring site identified.

Term grazing permits may be modified at the request of the permit holder or the Agency. Permit modifications are administrative actions and do not require additional analysis unless they are inconsistent with existing environmental analyses and related decisions. Permit modifications may include the actions described below.

An administrative action could include: modifying the seasons of use, numbers, class of livestock allowed, or the allotment to be used under the permit, because of resource condition, or permittee request. These changes may be implemented at the request of the agency or the permittee. Grazing management needs to be responsive to forest resource condition. It also requires responsiveness to the livestock permittee operational needs. For example, market economics may lead to short-term reductions in breeding cattle and consequently the need to adjust the number of animals grazed in a given year on forest rangelands.

Monitoring Thresholds/Trigger Points

The value of monitoring under an adaptive management approach is that it reveals how management is performing relative to desired conditions. A natural extension of this process is to ask, “At what point do we consider the need to change management if monitoring indicates a lack of acceptable progress toward desired conditions?” The point at which monitoring indicates a possible need for change is called a monitoring threshold or trigger point. Once a trigger point is reached, the district ranger would convene a team, composed of Forest Service specialists in consultation with the affected permittee. The team would review the monitoring data and other pertinent information to determine if a management adjustment is needed. If it is determined that any adjustments are needed, the team would review the adaptive management options identified under Potential Adaptive Management Strategies within the Adaptive Management Strategy tables and recommend a course of action to the district ranger. Those monitoring triggers for each of the primary resource issues are identified and described in detail in the Adaptive Management Strategy tables (Table 4 and Table 5). The triggers are applied at site-specific areas of concern.

Based on analysis of conditions in the project area, potential sites were identified for implementation of adaptive management strategies in both Alternatives C and D (Figure 2). These potential sites include:

- Fence - Additional drift fence may be needed in T. 36 N., R. 44 E., section 6 (exact location to be determined) to further eliminate drift to private lands.
- Water Developments - Additional water development sites may be identified in the upland portions of the allotment to provide watering sites off streams. Before development of these sites, effects to natural and cultural resources would be assessed. Approximate locations of potential sites are displayed in Appendix A, Figures A-4 and A-6.
- Cattle Guards- Assess the need for a new cattle guard on the Middle Branch LeClerc Creek Road (NFS Road 1935) southwest of Bunchgrass Meadows. If cattle drift is documented, install a cattle guard and wing fencing on the road at the most appropriate location to block cattle drift.

The following two tables describe the adaptive management strategies, monitoring, triggers and thresholds, resource parameters, and proposed responsibilities for streambank integrity and riparian shrub habitat (Table 4) and green forage and sensitive plants (Table 5). These tables and the proposed monitoring and adaptive management discussed above are the same for both Alternatives C and D.

Table 4. Monitoring and adaptive management strategy for streambank integrity and riparian shrub habitat, Alternatives C and D

Resource Parameter	Streambank Integrity	Riparian Shrub Habitat
Objective/ Management Goal	Stream bank stability and stream channel morphology stays within established standards (Forest Plan 1988).	Riparian shrubs are sufficiently contributing to fish habitat including: shading, nutrients (leaf fall), and forage inputs. Riparian shrub lands are providing sufficient habitat complexity and concealing cover for landbirds, furbearers, and other terrestrial wildlife.
Monitoring Method	Use Multiple Indicator Monitoring. Establish permanent photo points Establish channel cross sections at all Multiple Indicator Monitoring sites	Cole browse Permanent photo points Visual estimate
Monitoring Standard / Threshold	No more than 20% stream bank alteration Wetted width to depth ratios meet/are moving toward INFISH RMO <10	For areas in unsatisfactory condition, no more than 25% woody browse utilization and different age classes are present, including regeneration. For areas in satisfactory condition, no more than 40% woody browse utilization and different age classes are present, including regeneration.
If Threshold is exceeded	Streambank and Riparian parameters: If standards are not trending toward the management goal after 3 years of monitoring, implement management strategies 1 - 4 (below) as necessary / feasible. If standards are still not trending toward the management goal after 3 more years of monitoring, implement management strategies 1-4 (below) as necessary / feasible. If standards are still not trending toward the management goal after the 9 th year of monitoring, reinstate NEPA review of the allotment.	
Potential Adaptive Management Strategies	<ol style="list-style-type: none"> <u>Implement strategies for reducing re-grazing of pastures</u> <ul style="list-style-type: none"> install additional pasture fencing, cattle guards, or other structures to reduce livestock drift between pastures alter pasture rotation alter use periods for pastures increase pasture fence maintenance frequency increase range riding <u>Implement strategies for reducing livestock use of riparian habitats</u> <ul style="list-style-type: none"> install additional upland water developments increase range riding <u>Implement strategies for reducing site-specific impacts to riparian habitats / function</u> <ul style="list-style-type: none"> rebuild/armor livestock crossing/watering structures install enclosure fencing around impacted riparian areas plant native vegetation to shade stream and stabilize banks <u>Reduce livestock numbers and / or grazing season.</u> 	

Resource Parameter	Streambank Integrity	Riparian Shrub Habitat
Effects of implementation	Short-term adverse effects if additional hardened stream crossings are installed, long term beneficial effects to the streambanks and riparian areas (see hydrology section in chapter 3 for discussion)	Riparian shrub populations would start to become stable or increasing. They would be sufficiently contributing to fish and wildlife habitat values such as stream shading. (see hydrology and botany section in chapter 3 for discussions)
Monitoring Timing	Annually for first 3 years after the Middle Branch LeClerc Creek fence is completed (to determine if the exclusion fencing causes impacts elsewhere on the creek). If stable conditions persist, every 5 years at the end of the grazing or growing season, whichever is later	Annually, end of growing season
Evaluation Period	Streambank stability would be assessed every 3-5 years, and streambank alteration would be assessed annually. Refer to MIM 2011 technical reference (Burton et al 2011).	Bank alteration read annually
Responsibility	CNF Specialists	CNF Specialists
Proposed Monitoring Locations	West and Middle Branches of LeClerc Creek and their tributaries; at established monitoring sites as determined necessary	NFS Road 1935011 riparian shrubfield; Whiteman Creek wetland (below NFS Road 1935); at established monitoring sites as determined necessary

Table 5. Monitoring and adaptive management strategy for green forage and sensitive plants, Alternatives C and D

Resource Parameter	Green forage vigor and productivity	Sensitive plants
Objective/Management Goal	The range condition meets utilization standards to achieve forage conditions favorable for grizzly bears (IGBC et al. 1986) and maintains or moves toward RMOs to avoid adverse effects on inland native fish. Vegetation will meet established standards.	Plant populations are stable or increasing over time.
Monitoring Method	Permanent stubble height transects Permanent photo points	Revisit selected sensitive plant populations annually for 3 years to establish a base population size and area. Use standard sighting form to document revisits, including numbers of plants and area, evidence of livestock utilization and trampling, and presence of noxious weeds. See invasive plant report for list of other vectors.
Monitoring Standard/Threshold	Utilization = 55% for upland and 45% for forested areas For riparian areas in unsatisfactory condition, no more than 25 % utilization. Minimum riparian stubble height = 8 inches For areas in satisfactory condition, no more than 40% utilization. Minimum riparian stubble height = 6 inches	Evaluate any changes in the population in the context of the expected range of fluctuations and in consultation with the Forest Botanist determine the need for more intensive surveys or management actions, and provide recommendations for noxious weed control.
If Threshold is exceeded	If standards are exceeded after 3 years of monitoring, implement management actions 1 - 2 (below) as necessary / feasible. If standards are still not met after 3 more years of monitoring, implement management action 3. If standards are still not being met after 3 more years of monitoring, reinitiate NEPA review of the allotment.	
Potential Adaptive Management Strategies	<ol style="list-style-type: none"> <u>Implement strategies for reducing re-grazing of pastures</u> <ul style="list-style-type: none"> install additional pasture fencing, cattle guards, or other structures to reduce livestock drift between pastures increase pasture fence maintenance frequency increase range riding <u>Block livestock access to sensitive plant populations with fencing or other means</u> <u>Reduce livestock numbers and / or grazing season.</u> 	
Effects of implementation	Green forage would be grazed to standard by livestock, and then rested for the remainder of the season. This would remove grass thatch and stimulate vigorous stem growth. Wildlife, which avoid cows (such as elk), would be able to take full advantage of this regrowth, without being disturbed / displaced by cattle.	Sensitive plant populations would be stable or increasing in number and extent.
Responsibility	CNF Range staff	CNF Botanist
Timing	Annually, end of growing season	Revisit every 3 years, after baseline is established
Proposed Monitoring Locations	MIM sites previously listed	Known sensitive plant sites

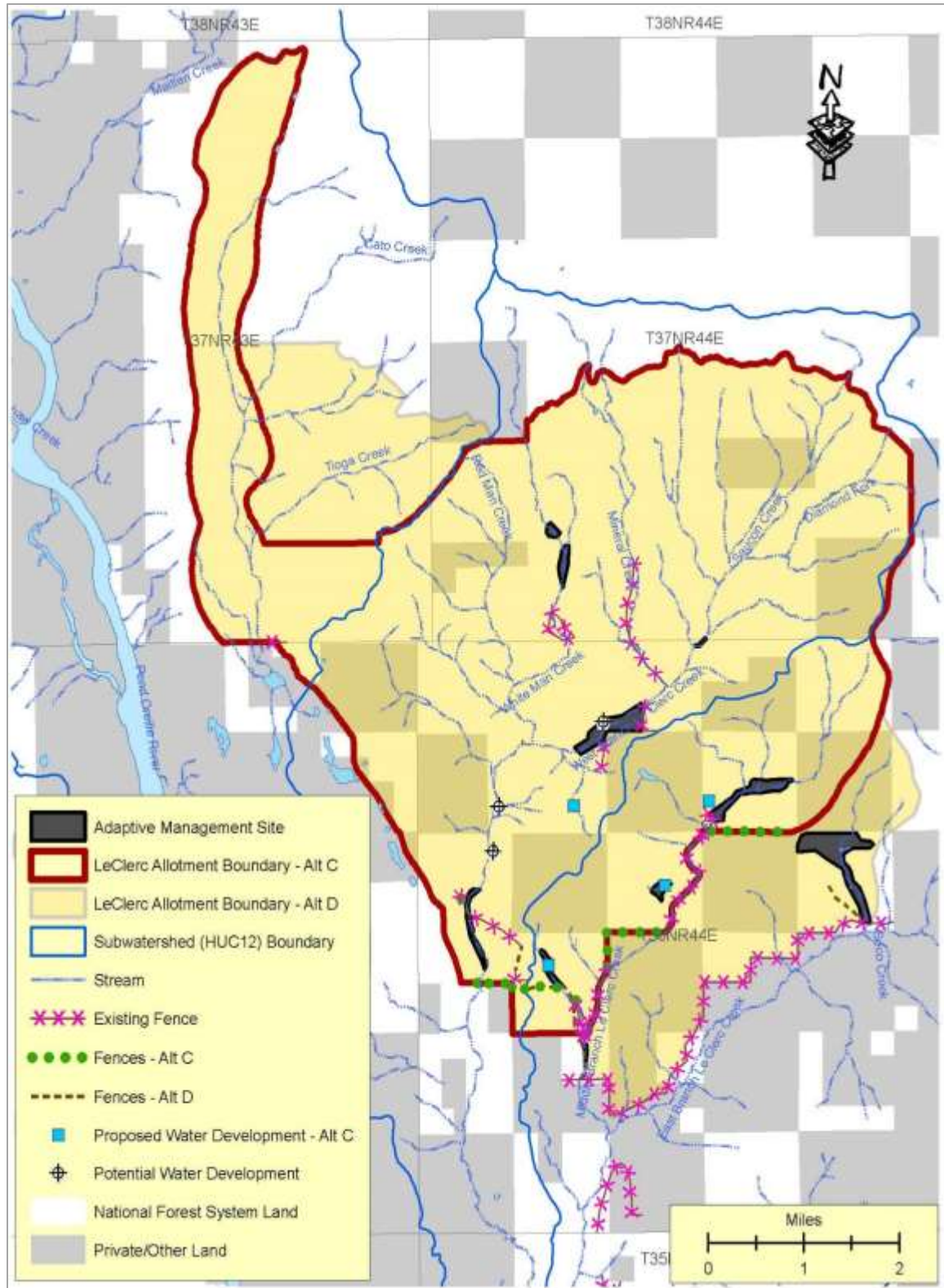


Figure 2. Potential adaptive management monitoring sites, Alternatives C and D

Alternative D addresses issues brought forward by the current permittee and would continue to authorize grazing within the project area. This alternative incorporates the elements of Alternative C, but with modifications to address operational concerns identified by the current permittee while still addressing resource and management concerns. One of the main operational elements driving development of Alternative D was the topographic barrier to cattle movement in the lower bunchgrass pasture imposed by the Alternative C allotment boundary and fence line running along the northwest corner of T. 36 N., R. 44 E., section 21 (Appendix A, Figure A-3).

Design Criteria

The following design criteria are accepted practices identified by the interdisciplinary team based on Forest Plan direction and policy, best available science, and site-specific evaluations. These design requirements would be applied during project implementation to avoid, minimize, reduce, eliminate, or rectify the effects of management activities (40 CFR 1508.22). Best management practices (BMPs) are methods, measures, or practices selected by the interdisciplinary team to meet nonpoint-source erosion control needs. The full BMPs are listed in Appendix B. Some criteria address conditions found on-the-ground during project activities, and are applied through the timber sale contract, which includes both standard and site-specific provisions.

Range Management

1. The construction of all structural range improvements would be as directed by Forest Service General Technical Report PNW-GTR-250, September 1990. Where certain types of projects are not covered by this report or site-specific locations cause difficulty with design characteristics, the forest range specialist would be consulted.
2. Construction of range improvements would follow local Forest Service standards to meet the needs of various resource specialists.

Vegetation Management

3. Methods utilized to create barriers may include directional falling of trees, brush barriers, placement of root wads or others. If conifers are used to create a barrier, the size and species to be cut would include:
 - a. Trees less than 7" diameter at breast height (DBH) where available; avoiding commercial sized trees. If trees greater 7" DBH are needed to create a barrier due to lack of smaller diameter trees then use the preferred species and spacing recommendations described below.
 - b. Preferred species to cut (in descending order) would be grand fir, lodgepole pine, Engelmann spruce, black cottonwood, quaking aspen, red cedar, Douglas-fir, white pine, ponderosa pine, maintaining a minimum leave tree spacing of 16 feet where available. Avoid cutting seral species, which are more fire tolerant when mature. Spacing requirement would aid in maintaining a fully-stocked stand,
 - c. Use trees that are suppressed with poor live crown ratios less than 30 percent, poor height to diameter ratios, have severe defects, or insects or disease problems, thereby leaving healthy trees for the future stand,
 - d. If near streams or wetlands ensure there is adequate shade remaining to prevent increase in water temperature,

- e. Any vegetative material cut but not utilized for the barrier would be lopped and scattered to a maximum depth of 2 feet, to reduce fire hazard,
- f. Utilize rocks, root wads, or similar material if creating barriers next to a road or within easy access distance from a road to help prevent chance of being used by firewood cutters.

Hydrology

- 4. All range improvements would be implemented using applicable BMPs as listed in Appendix B.
- 5. When creating brush barriers with live trees within the RHCA, as identified by INFISH, ensure canopy closure is retained to maintain stream shading within site potential if existing level is greater than site potential. If existing shade component is less than site potential, alternative barriers would be determined (e.g. fencing).
- 6. Cattle would be effectively managed to reduce or eliminate drift by pasture rotation as identified in the allotment management plan (AMP) to allow riparian areas in each pasture sufficient time to recover and provide adequate function and habitat to the streams and wetlands in the respective pastures.

Wildlife

- 7. Timing of grazing (Alternatives C and D only) - The present turn-on date for livestock in the allotment (June 1) would be pushed back to June 15 in the allotment management plan (AMP). Grizzlies would then have an extra two weeks of spring foraging opportunity free from competition and disturbance from domestic stock.
- 8. Range condition - The AMP would specify that the range condition class be good to excellent in order to achieve forage conditions favorable to grizzlies.
- 9. Sick or injured livestock - If the permittee discovers a sick or injured cow, he would remove the animal from the allotment as soon as possible, so that it is not targeted by large carnivores.
- 10. Livestock depredation - In the event of a suspected depredation by a large predator, the permittee would, as soon as possible, contact the Washington Department of Fish and Wildlife (WDFW), provide them with known details of the incident and its location, and discuss and take steps to improve the ability of investigators to determine the cause of depredation. If the depredation includes livestock mortality, the permittee would deal with the carcass using an agreed upon method. Steps would be taken to improve the ability of investigators to determine the cause of depredation; for example, avoiding walking in and around the area and keeping dogs away from the area to protect evidence, placing a tarp over the carcass, etc.
- 11. Livestock carcasses - If a livestock carcass is discovered on the allotment, the permittee would, as soon as possible, contact the WDFW and provide them with known details of the mortality and its location. The permittee would also provide information on livestock losses and depredation to their Forest Service range specialist. The permittee and WDFW would agree to a disposal method to minimize the opportunity for large predators to scavenge the carcass unless otherwise directed by a regulatory agency. The AMP would specify measures for the timely removal, destruction, or treatment of livestock carcasses to avoid positive conditioning of grizzly bears to livestock carrion as food.

12. Food storage - The AMP would require that human food, prepared livestock and pet food, and refuse associated with livestock operations be made unavailable to grizzlies through proper storage (normally in a hard-sided vehicle). A copy of the Forest's food storage order would be included in the AMP. Brochures on living and working in grizzly bear occupied habitat would be included in the AMP.
13. Closed road access - Each year the allotment is active, the district wildlife biologist would issue the permittee a written permit and gate key for motorized access on closed roads in the allotment. The AMP would require the permittee to limit his motorized entries to only those necessary for managing the allotment (i.e. salting, maintaining fences, moving stock, etc.). The AMP would require the permittee to track his motorized entries on closed roads in the allotment, and return the completed permit and key to the biologist within one month of the end of the grazing season.
14. Compliance - The AMP would specify that the permittee's full cooperation in meeting grizzly bear management goals and objectives would be a condition to his receiving and holding his permit. The AMP would include a clause for providing for cancellation or temporary cessation of activities if such are needed to resolve a grizzly-human conflict situation.

Sensitive Plants

15. Revegetate where soil is disturbed by project activities. The goal is to provide long-term soil cover and reduce the risk of weed infestation. Locally collected native plant materials are the first choice in revegetation, but nonnative, noninvasive plant species may also be used (USDA Forest Service 2008a and 2014b).
16. If sensitive plant species are found in the planning area while project activities and treatments are occurring, the forest botanist or their designee would be consulted as to measures required to protect the species and its essential habitat.

Heritage

17. Projects proposed for range improvements, cattle management, riparian habitat improvement, wildlife and fisheries habitat improvement would require consultation with the forest archaeologist who would determine the need for cultural resource inventory. The forest archaeologist or qualified heritage program personnel would identify sites on the ground and would coordinate with appropriate project personnel to provide location information as well as any additional protection measures that may be required.
18. Cattle trailing between pastures would occur on pre-existing roadways or established stock travelways. The permittee is reasonably required to keep the cattle within the disturbed road prism or established stock travelway to avoid potential damage to archaeological and historic sites.

Noxious Weeds

19. Seeding of approved desirable species with weed free seed in areas of soil disturbance related to construction such as cattle guard installation sites and hardened water crossing sites.
20. Use of noxious weed-free fill and barrow material at cattle guard installation sites and hardened water crossing sites.

21. Clean all motorized equipment that would be operating outside of a road prism such as hardened water crossing sites.

Recreation

22. The proposed fencing at Ball Park Meadow is a design criterion to reduce disturbance to campers at Ball Park Meadow. Newly constructed fence should be monitored at least once a year to prevent stock from entering Ball Park Meadow.
23. Road signing would be needed to redirect traffic to the new access route for Hanlon Meadow. Additionally, the motor vehicle use map (MVUM) would need to be updated to reflect the route changes.

Special Uses

24. If either Alternative C or D is selected, provide advance notification to the easement grantee regarding the timing of construction of the spur road off NFS Road 1935116. If damage occurs to NFS Road 1935116 during the construction of the spur road, the easement grantee would not be held responsible for repairs to 1935116.

Transportation

25. Use of a critical vehicle would be the yarder/lowboy standard vehicle from (FSH 7709.56). For the new access route to Hanlon Meadow, the new alignment would match traffic service level G. The new alignment would be a single lane forest road with operational/objective maintenance level meeting a 2/2 standard. The travel way would remain native surface with out-sloping to accommodate drainage. All current BMPs for road management/maintenance would be followed.
26. Check with Stimson Lumber Company progress with logging activities prior to any road maintenance or construction.

Mitigation Measures

Alternatives were designed with input from all resource specialists, and as such were created to reduce or eliminate potential adverse effects to resources. The DEIS identified several mitigation measures; however, upon review, the measures were more appropriately identified as design criteria.

After analyzing the potential effects of proposed activities and establishing design features, the project team determined that no mitigation measures are necessary because potential adverse effects have been addressed through design criteria, as discussed above.

Alternatives Considered but Eliminated from Detailed Study

Federal agencies are required by the NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the proposed action provided suggestions for alternative methods for achieving the purpose and need. Two alternatives were considered but dismissed from detailed consideration for reasons summarized below.

Alternative E – The Kalispel Tribe’s original boundary proposal (October 2012 comment letter) was to drop a substantial portion of the northern part of the allotment, and to adjust south and

southwestern boundaries away from the creek in order to protect the fisheries resource in this area.

This alternative was not considered further because the boundary adjustments would be unenforceable without many miles of new fencing, and the decrease in acres could have resulted in too few animal unit months (AUM) to make the allotment a feasible business venture.

Alternative F - During discussions between the range management specialist, the permittee, and the district ranger a proposal was made to remove all pasture boundaries and manage the allotment as a single pasture with season-long use, allowing the permittee to increase compliance with the direction provided by the Forest Service by making the prescribed grazing use more easily attainable.

This alternative was not considered further because best available science (Wyman et al. 2006) and professional knowledge have demonstrated that a rest-rotation pasture system allows livestock to graze forage to appropriate levels while still allowing for long-term health and persistence of vegetative communities. Season-long grazing can cause undesired changes to vegetation and does not provide adequate rest for plant communities to recover after being grazed, and the risks of having over-utilization or undesired effects to vegetation are greater than when a rest-rotation grazing strategy is implemented. It was determined that this alternative would potentially cause unnecessary environmental harm and was therefore not considered in further detail.

Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in the tables is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 6. Comparison of operation and administration, by alternative

Measures	Alternative A	Alternative B	Alternative C	Alternative D
Stocking Rate ¹ (cow/calf pairs)	101	0	101	101
AUMs ²	535	0	535	535
Increased Monitoring Needs	No	No	Yes	Yes
Costs of water developments	Not applicable	None	\$8,800	\$8,800
Costs of proposed fencing	Not applicable	None	\$94,500	\$54,600
Cost of proposed brush barriers	Not applicable	None	\$240	\$240
Suitable grazing lands (acres)	5,452	Not applicable	4,565	5,913
Estimated allotment size (acres)	23,412	0	20,644	25,865

¹ Based on monitoring information collected through the adaptive management and monitoring plan, livestock numbers could be adjusted in the future if there is a demonstrated need based on monitoring results of forage utilization, impacts to riparian or other natural or cultural resources.

² An AUM (animal unit month) is defined as the amount of forage required to feed a 1,000 pound cow for a one month period.

Table 7. Comparison of estimated effects, by issue and alternative

Significant Issue Number	Measures between alternatives (approx. values)	Alternative A	Alternative B	Alternative C	Alternative D
<u>Issue 1:</u> Effects of livestock grazing on riparian and aquatic functions	Miles of designated critical habitat for bull trout accessible to livestock	12.9	0	11.2	12.1
	Miles of fish-bearing streams accessible to livestock	32.8	0	24.8	27.5
	Wetland acres accessible to livestock	40	N/A	35	35
	Number of hardened stream crossings for livestock	3	0	5	5
	Number of upland water sources (water troughs)	0	0	4	4
	Adaptive management strategy	No	N/A	Yes	Yes
<u>Issue 2:</u> Lack of effective livestock movement controls potentially leading to increased duration of use and decreased opportunity for vegetative growth or regrowth	Miles of pasture and allotment boundaries with constructed barriers for effective livestock movement (fencing)	17.7 ¹	0	12 ²	19.25 ³
	Miles of boundaries with natural features intended to control livestock movement	48.5	0	43	45
<u>Issue 3:</u> Disturbance to wildlife during critical periods	Presence of livestock during the post-wintering and spring reproductive period for elk and large carnivores	No change	N/A	Decreased disturbance due to turning livestock onto the allotment two weeks later in spring	
<u>Issue 4:</u> Feasibility of successful allotment management	Number of pastures separate from the rest of the allotment	2	N/A	0	0
	Approximate miles of fencing the permittee must maintain	14.7	0	10.5 ⁴	13
<u>Issue 5:</u> Effects of changes in livestock grazing on social or cultural issues	Estimated effect to local economy	Possible slight decrease	Possible slight decrease	Possible slight increase or decrease	Possible slight increase or decrease
	Affected areas considered culturally, spiritually, or botanically important to Native American tribes within the allotment (traditional cultural properties)	Adverse effect	Beneficial effect	Beneficial effect	Potential for adverse effect
	Likely effect to significant cultural landscape for Native American uses and values	Adverse effect	Beneficial effect	Adverse effect	Adverse effect

¹ Includes 3 miles of enclosure fencing that would not be assigned to the permittee for maintenance. An estimated 2.5 miles of additional fencing is anticipated to be constructed/maintained by Pend Oreille County PUD per their FERC license.

² Includes 1.5 miles of enclosure fencing that would not be assigned to the permittee for maintenance; does not include 6 miles of fence along the East Branch road that would become obsolete under Alternative C and would be removed from the landscape.

³ Includes 1.5 miles of exclosure fencing that would not be assigned to the permittee for maintenance, as well as an estimated 4.75 miles of additional fencing anticipated to be constructed/maintained by Pend Oreille County PUD per their FERC license.

⁴ Does not include 6 miles of fence along the East Branch road that would become obsolete under Alternative C and would be removed from the landscape and no longer the permittee's responsibility for maintenance.

Chapter 3. Affected Environment and Environmental Consequences

Introduction

This chapter summarizes the physical, biological, social, and economic environments of the project area and the effects of implementing each alternative on that environment. It also presents the scientific and analytical basis for the comparison of alternatives presented in chapter 2.

- Issue 1 is primarily addressed in the Hydrology and Water Quality, Fish and Aquatic Habitat, and Terrestrial Wildlife sections of the chapter
- Issue 2 is primarily addressed in the Rangeland Management, Hydrology and Water Quality, and Terrestrial Wildlife sections of the chapter
- Issue 3 is primarily addressed in the Terrestrial Wildlife section of the chapter
- Issue 4 is primarily addressed in the Rangeland Management section of the chapter
- Issue 5 is primarily addressed in the Social and Economic Analysis section of the chapter

The resource specialist reports, which disclose the full analysis of the direct, indirect, and cumulative effects, are incorporated by reference and are available in the project record, located at the Newport-Sullivan Lake Ranger District office in Newport, Washington and on the Colville National Forest website. Each analysis and report represents best professional judgment based on data collection and observations of the project area, consultation with other resource professionals, and a review of the best available scientific information.

Assumptions and Limitations

The effects analyses assume compliance with the allotment management plan, the Term Grazing Permit, and the annual operating instructions, as well as adequate and appropriate oversight and compliance actions taken by the permit administrator and designated line officer.

Analysis Process

The consequences of implementing each alternative are summarized in terms of changes in the affected environment from the current situation. The environmental consequences discussion centers on direct, indirect, and cumulative effects of the alternatives.

Direct effects are caused by the action and occur at the same place and time as the action.

Indirect effects are caused by the action and are later in time, or further removed in distance, but are still reasonably foreseeable. The area used to determine direct and indirect effects for each resource was the planning (allotment) area unless otherwise stated.

Cumulative effects are those that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions (40 CFR 1508.7).

Also addressed are unavoidable adverse effects (those that cannot be avoided due to other constraints) and irreversible effects (permanent or essentially permanent resource use or losses) and irretrievable effects (losses of use or productivity for a period of time). Irreversible and irretrievable effects are disclosed in the direct and indirect effects analyses for relevant resources.

For the purposes of this analysis, the terms ‘effects’, ‘impacts’, and ‘consequences’ are used interchangeably.

The cumulative effects analysis area is described for each resource, but in most cases is the existing LeClerc Creek Allotment including private and other public lands that lie within the Forest boundary. Cumulative effects are projected for a 20-year timeframe, unless stated otherwise. This time period is expected to capture the time needed for the effects of the majority of known ongoing or reasonably foreseeable future projects to recover to the point where they are no longer measurable. In addition, unforeseeable future projects, demographic changes, and resource responses to climate change make assumptions about anticipated effects beyond this period speculative.

For all resources, past activities are considered part of the existing condition and are discussed in the Affected Environment (existing conditions) and Environmental Consequences section under each resource as appropriate. Relevant present and reasonably foreseeable future activities are identified and analyzed in the cumulative effects analysis for each resource. An inventory of past, present and reasonably foreseeable actions potentially contributing to cumulative effects is available in Appendix C: Recent or Reasonably Foreseeable Activities.

Rangeland Management

Data Collection

Existing conditions and historic data for the LeClerc Creek Allotment was gathered using archived range permit files, GIS data, field review, photos, and monitoring data; see the Range Report and supporting information in the project record.

Framework and Desired Future Conditions

Where consistent with other multiple use goals and objectives there is congressional intent to allow grazing on suitable lands (*Multiple Use Sustained Yield Act of 1960, Forest and Rangeland Renewable Resources Planning Act of 1974, Federal Land Policy and Management Act of 1976, National Forest Management Act of 1976*).

It is Forest Service policy to continue contributions to the economic and social well-being of people by providing opportunities for economic diversity and by promoting stability for communities that depend on range resources for their livelihood (FSM 2202.1).

Broad-scale management direction for Colville National Forest grazing allotments is contained in the 1988 Forest Plan (pages 4-46, 4-47) as amended by the Inland Native Fish Strategy (INFISH) Environmental Assessment (1995). Individual direction regarding the implementation of grazing in the LeClerc Creek Allotment is found in the allotment management plan (AMP) that was last issued in 1982. Grazing instructions and direction are provided to permittees annually and specify the pastures to be grazed, the season of use, numbers of authorized livestock as well as other items.

In describing the desired future condition, the Forest Plan states that livestock grazing will be more intensively managed, livestock use will stay within the established use rates, permittee control will be at an adequate level, and all allotments will emphasize riparian habitat protection and/or recovery (Forest Plan page 4-63).

The desired future conditions specific to range resources and infrastructure on this grazing allotment are:

- Management of the grazing operations on National Forest System lands using a system that is responsive to changing climate or environmental conditions;
- Management for fair or better range condition ratings with stable or upward indicators of long-term trend in range vegetation and soil stability;
- The installation and maintenance of structural improvements, such as water-supply systems, that enhance management control and flexibility and allow for effective distribution of forage use; and
- The most efficient allotment configuration that facilitates both management by permittees and administration by the Forest Service.

Affected Environment

Historic Management

The National Forest System lands that make up the LeClerc Creek Allotment were purchased through the Resettlement Administration during the Great Depression in 1935 and 1936 and given National Forest status in 1938. The area was extensively logged in the early 1920s and experienced extensive fires in 1929. The LeClerc Creek Allotment has documented grazing use back to 1940, but livestock grazing likely occurred in the area long before that since homesteading in the area occurred from approximately the 1890s to the 1930s. Prior to 1940 sheep grazed the allotment, and afterwards range inspections determined that the allotment was better suited to cattle use and has been grazed by cattle since. In the past, the allotment was jointly grazed by multiple permittees, but is currently managed by only one permittee. The allotment was originally one large, contiguous unit but in 1966 the East Branch was excluded from the allotment because all the primary range within that portion of the allotment was privately owned. Fourth of July Creek was then managed as a separate allotment until approximately 1977 when it was added back to the LeClerc Creek Allotment as a pasture. The Dry Canyon Pasture was originally administered as two allotments, with the upper portion of the pasture being a cattle allotment and the lower portion being a sheep allotment. The two were combined in approximately 1945, and managed as a cattle allotment until approximately 1977 when Dry Canyon was incorporated into the LeClerc Creek Allotment as a pasture.

While Forest Service Term Grazing Permits authorize a specified stocking rate of livestock, the way forage production of the ecosystem is measured is by the animal unit month (AUM). An AUM is defined as the amount of forage required to feed a 1,000-pound cow for a one month period. Stocking rates are determined by assessing the production capacity of the lands within the allotment, and are then set so that forage consumption will not exceed the production capability of the ecosystem. Historic stocking rates were somewhat variable, especially during the 1930s through the 1950s. These variations were due to changes in the allotment size that occurred over the years, which affected the carrying capacity (the maximum stocking rate possible while maintaining or improving vegetation or related resources).

There was a Term Private Land Grazing Permit for the LeClerc Creek Allotment until 2000. At that time, the private land owner (Stimson Lumber Company) chose not to continue to lease their lands to the Forest Service grazing permittee, which voided the Term Private Land Grazing Permit. Prior to cattle turn-out for the 2001 grazing season, the Forest Service rangeland

management specialist at the time conducted an analysis of vegetation and past grazing use and determined that the NFS portion of the allotment was capable of sustaining the full permitted numbers, which were 101 cow/calf pair for the Term Grazing Permit and 37 cow/calf pair on the Term Private Land Grazing Permit for a total of 138 cow/calf pair. A permit modification was executed authorizing 138 cow/calf pair to be grazed under the Term Grazing Permit, with the condition that this increased stocking rate would be monitored and re-evaluated in 4 years to determine if the effects were within acceptable limits. When the reevaluation period arrived in 2005, the rangeland management specialist position had been abolished and the terms of the permit modification authorizing the temporary increase in stocking rate were not understood. This error was realized in 2010 when the Term Grazing Permit was being evaluated for renewal with a new permittee. At that time the decision was made to continue to authorize grazing at only the level of the previous Term Grazing Permit (101 cow/calf pair).

Historic permitted stocking levels for the lands that make up the current LeClerc Creek Allotment are summarized in Table 8. Note that these numbers are the permitted levels, which includes both private and NFS lands within the allotment. Also of note is that some years full or partial non-use may have been authorized; however the years that non-use was authorized are difficult to determine with the available records. Records for years prior to 1964 are not available.

Table 8. Historic use summary

Year	Stocking Rate	AUMs
1964-1965	152	805
1966	154	815
1967-1977	147	778
1978	187	990
1979	147	778
1980	115	609
1981	197	1,043
1982-1989	191	1,011
1990-1991	131	694
1992-2009	138	731
2010-2017	101	535

This allotment is likely experiencing legacy effects from historically higher stocking rates, and may also be experiencing legacy effects from having different classes of animals (sheep) graze on the allotment in the past. Though it is known that some of the lands within the LeClerc Creek Allotment were historically grazed by sheep, it is not known how many animals were permitted or the number of years sheep grazing was authorized. These legacy effects may include, but are not limited to: altered vegetative communities or decreased productivity due to high grazing pressure, areas of high soil compaction, altered hydrology, or altered stream morphology.

Current Management

Operations and Management

National Forest System lands (NFS) contained within the boundaries of the LeClerc Creek Allotment are grazed under permit, which grants grazing privileges to the permit holder. There is

private property, both fenced and unfenced, within or adjacent to the boundaries of the LeClerc Creek Allotment. The lands within the project boundary have been determined to be “range areas,” also sometimes referred to as “open range” by Pend Oreille County.

Currently the allotment is authorized for 101 cow/calf pair or 535 AUMs. The season of use for the LeClerc Creek Allotment was changed from June 1-September 30 to June 15–October 15 by annual agreement between the permittee and district ranger. Delaying turnout of livestock by two weeks reduces the overlap between livestock grazing and the spring grizzly bear foraging season, which is beneficial to grizzly bears (see wildlife section in this chapter).

Several homestead meadows provide valuable forage for livestock and wildlife within the LeClerc Creek Allotment. Homestead meadows are areas that were cleared of timber during the homestead era to provide a home site, then tilled and planted to provide forage for livestock. These homestead meadows are generally located adjacent to water sources such as streams. Some of the homestead meadows on the Forest were maintained into the 1980s by removing encroaching trees, burning, tilling, and reseeding these areas to maintain their productivity. Conifer tree encroachment on the original cleared area of homestead meadows is occurring at varying degrees within this allotment, and is decreasing the amount and quality of upland foraging areas provided by meadows. Additionally, noxious weeds are present in many of the homestead meadows within the allotment, further decreasing the amount and quality of available forage (see noxious weeds section in this chapter).

There are no developed water sources within this allotment, so cattle water at streams and undeveloped springs within the allotment. This lack of off-stream water causes cattle to concentrate in riparian areas, which is exacerbated later in the grazing season as upland forage cures and becomes less palatable. This has led to areas with undesirable impacts to stream banks and riparian and/ or wetland soils, such as a decrease in riparian plants and an increase in exposed soil that often washes into the stream. Refer to the Soils Report (Jimenez 2015) and Hydrology Report (Lawler 2015) for more information.

Pastures

The LeClerc Creek Allotment is managed using a deferred rotation grazing strategy with five pastures (Table 9 and Figure 3).

- Lower Bunchgrass Pasture: Lower Bunchgrass pasture has the majority of meadows (both natural and man-made) that provide readily accessible grazing areas desirable to livestock. Natural barriers to livestock drift have decreased over time (since approximately the 1970s), largely as a result of timber harvest activities on both NFS and private lands, resulting in livestock drift back to the Lower Bunchgrass pasture and increased duration of grazing of the forage. Lower Bunchgrass pasture also contains the majority of the privately owned acreage within the existing allotment boundary.
- Dry Canyon Pasture: The Dry Canyon Pasture was originally administered as two allotments, with the upper portion of the pasture being a cattle allotment and the lower portion being a sheep allotment. The two were combined in approximately 1945 and managed as a cattle allotment until approximately 1977 when Dry Canyon was incorporated into the LeClerc Creek Allotment as a pasture. This pasture has had limited utilization of forage in the past approximately 10 years due to lack of effective barriers to drift on the southern end of the pasture allowing cattle to drift out of this pasture.

- **Fourth of July Pasture:** The allotment was originally one large, contiguous unit but in 1966 the East Branch was excluded from the allotment because all the primary range within that portion of the allotment was privately owned. Fourth of July Creek was then managed as a separate allotment until approximately 1977 when it was added back to the LeClerc Creek Allotment as a pasture. Management of this pasture is also complicated because road access is limited; the only roads that access this pasture are in the Grizzly Bear Recovery Area (see Wildlife Report for more information) and require the permittee to have a road use permit and track each vehicle entry on roads within the Recovery Area.
- **Upper Bunchgrass and Mineral Creek Pastures:** Some of this pasture is not receiving livestock use due to dense stands of timber, steep topography, and a lack of good forage. While there is a large area near the top of Molybdenite Ridge that meets the criteria for capable and suitable grazing lands, this area is largely inaccessible to cattle due to dense timber and steep topography between the ridge and lower elevation areas in these two pastures. This has resulted in very little documented livestock use of the upper part of Molybdenite Ridge.
- **Hanlon Meadow:** This is an existing fenced enclosure of the northern half of Hanlon Meadow (T. 36 N., R. 44 E., section 20, SE¼). Presently the permittee uses this enclosure as the site where cows are first transferred to the allotment at the start of the grazing season and allowed to pair up before they are released to the greater Lower Bunchgrass Pasture. The permittee also uses the Hanlon Meadow pasture to stockpile groups of cows as he rounds up his herd for transfer to Dry Canyon Pasture in the fall. Livestock are only in the pen for a number of days at the start and then again toward the end of the grazing season.

Table 9. Current pastures in the LeClerc Creek allotment

Current Pasture Designations	Acres	Percentage of Allotment	Dates of Use	Approximate Use Level
Lower Bunchgrass	5,621	28	6/15 – 7/15	Moderate to Heavy ¹
Upper Bunchgrass ²	6,691	11	7/16 – 9/30	Moderate
Mineral Creek ²	5,603	24	7/16 – 9/30	Moderate
Dry Canyon ³	3,037	13	10/1 – 10/15	Light
Fourth of July ³	2,460	24	10/1 – 10/15	Light
TOTAL	23,412	100		

¹ Lower Bunchgrass pasture as a whole has moderate use. However, isolated areas of high use can result when cattle drift back to this pasture after the pasture off-date.

² In the past Upper Bunchgrass and Mineral Creek pastures were grazed separately. Over time as fences became difficult to maintain and vegetation changed, the permittee started managing these pastures as one unit.

³ Late season use was split between the Dry Canyon and Fourth of July pastures prior to 2012. Starting with the 2012 grazing season use in Fourth of July pasture was discontinued due to limited access, making it hard to get cattle off the pasture at the end of the season.

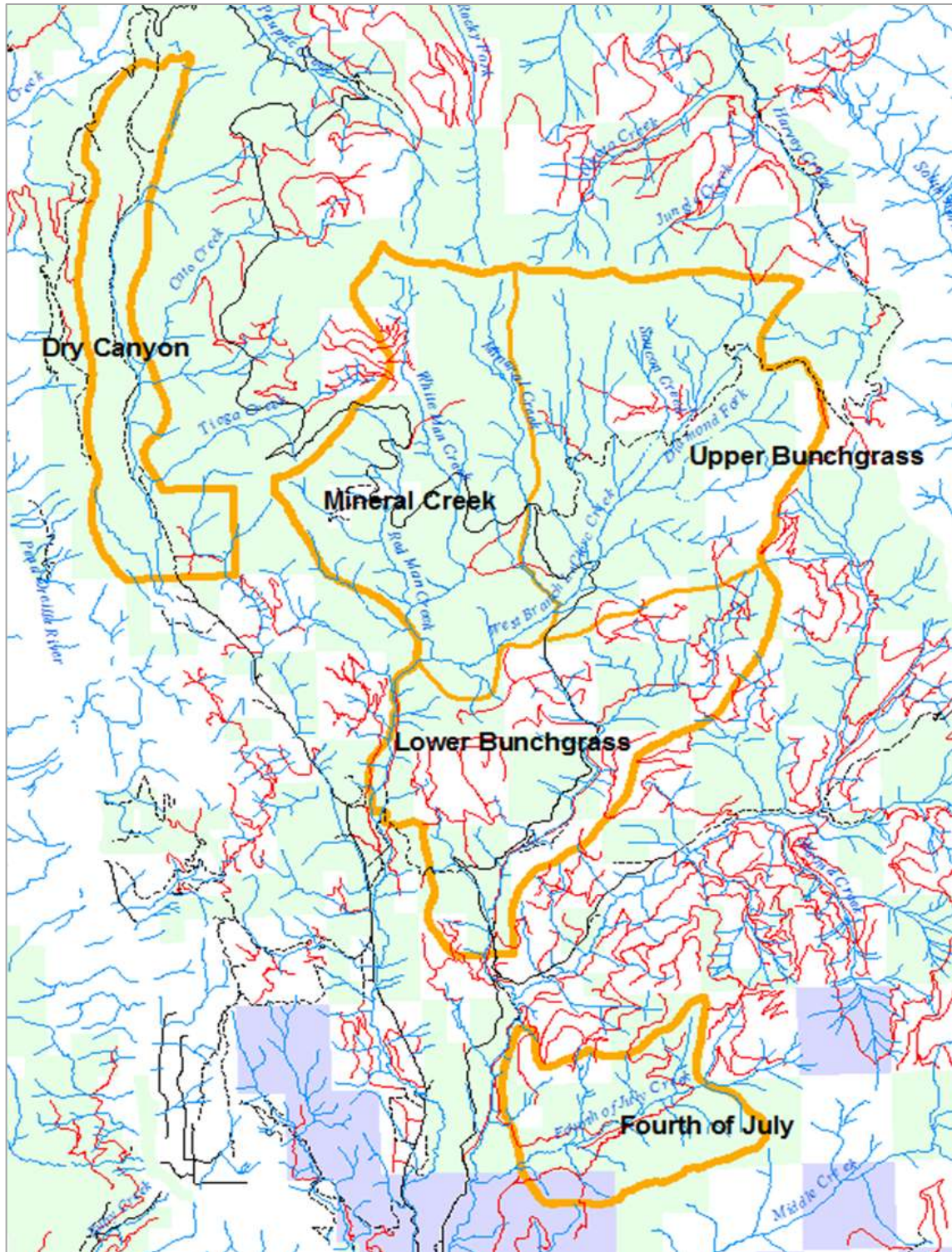


Figure 3. Current LeClerc Creek Allotment pastures

In the figure above, the color green represents NFS lands, white represents private lands, and purple represents lands managed by the Washington Department of Natural Resources (DNR).

Rangeland Infrastructure and Improvements

Grazing permittees are responsible for maintenance of range improvement projects; project maintenance is a term and condition of their grazing permits. Existing range improvements for the LeClerc Creek Allotment consists of ten livestock management fences totaling approximately 14 miles and two corral and loading chute facilities (shown in the table below). The fencing was put in place to create allotment and pasture boundaries. The first range improvements on this allotment were constructed in 1975, and construction and reconstruction of improvements continue as the need arises. Range improvements identified in the Term Grazing Permit are maintained annually by the permittee. All range improvements deteriorate as they age and may require reconstruction when annual maintenance is no longer capable of keeping them in working order.

Table 10. LeClerc Creek Allotment improvements

Improvement Name	Type of Improvement	Condition Rating	Length (ft.)
Dry Canyon Drift Fence	Fence	Good	0.2
Caldwell Lake Drift Fence	Fence	Good	0.5
Diamond City Drift Fence	Fence	Good	1.5
Hanlon Mtn Drift Fence	Fence	Fair	0.75
Hanlon Meadow	Fence	Good	0.75
Middle Branch Drift Fence	Fence	Fair	0.75
Lower Bunchgrass Drift Fence	Fence	Fair	1.5
Mineral Creek Drift Fence	Fence	Poor	1.5
Old 4th of July Drift Fence	Fence	Poor	1.25
E Branch LeClerc Drift Fence	Fence	Good	5.75
Dry Canyon Corral/Loading Chute	Handling Facility	Good	N/A
Diamond City Corral/Loading Chute	Handling Facility	Good	N/A

There are also two enclosure fences not represented in the above table that are maintained by ranger district wildlife staff and the Kalispel Tribe of Indians, as well as two sections of newly constructed fence along the west side of Middle Branch LeClerc Creek in T. 36 N., R. 44 E., section 20 and T. 36 N., R. 44 E., section 16 that are not included in the above inventory of range improvements.

Despite the existing fencing on the allotment that was intended to discourage cattle drift (movement of cattle into an area that is undesired or uncontrolled, such as into a previously grazed pasture), there are areas on the allotment where cattle drift is a recurring problem. For the life of the allotment, lack of natural barriers and timber harvest activities on private lands within and adjacent to the allotment and pasture boundaries have also contributed to the drift problem, which makes keeping the cattle in the prescribed pasture during the prescribed season of use difficult at times. The permittee has been diligent in locating cattle that have drifted out of the pasture identified in the rotation schedule on the annual turnout letter and moving them back to the correct pasture. Stray cattle have been located equally as often by the permittee through routine allotment inspections and by Forest Service personnel working in the area.

Drift between pastures and off the allotment has been an ongoing concern that affects canopy cover in riparian areas where cows prefer to forage and water. A weak pasture boundary intersected by a well-used cattle trail located in section 8 of T. 36 N., R. 44 E. has been identified. The cattle trail utilizes an old railroad grade, closed road, and trail which is predominantly located within the RHCA management zone of upper West Branch LeClerc Creek. Portions of this railroad grade, road, and trail are located on unstable slopes along West Branch LeClerc Creek which have failed post-Diamond Match Company era. In the past, this trail has been used for driving cows to the Diamond City corral. Current use (past 5 years) on the lower portion of the trail downstream of the crib dam appears to be minimal (seven cows were observed in the area in October 2013 and were picked up at the Diamond City corral). Current cattle use on the upper portion of this trail (upstream of crib dam) occurs along West Branch LeClerc Creek between Mineral and White Man Creeks and along Mineral Creek. Cattle presence throughout the summer and fall and hunting activity in the fall in this area is regular enough to keep a travelable path present.

Other areas of drift occur off of the east side of the allotment via NFS Road 1935011, on the west side of the allotment between the Dry Canyon and Mineral Creek/Lower Bunchgrass pastures, and south of the allotment in the East Branch LeClerc Creek drainage. Dry Canyon pasture has been scheduled for use during the last two weeks of the grazing season in recent years and 4th of July pasture was dropped from use in 2013. Cattle were present in both the Mineral Creek (seven observed) and Lower Bunchgrass (four observed) pastures at end of 2013 season (October 31). Due to the drift of cattle between pastures and off the allotment, season end round up of the cattle occurs at various points throughout the allotment, with several head of cattle being picked up at the Hanlon Meadow pasture located within the Lower Bunchgrass pasture.

Current Vegetation Conditions

The LeClerc Creek Allotment has a mix of many habitat types and aspects. There are areas of denser timber on north facing slopes that provide few foraging areas for livestock. Most livestock foraging areas in the allotment are found in naturally open areas, homestead meadows, and open canopy timber stands that provide transitory rangelands. Elevation within the allotment ranges from approximately 2,500 to 6,700 feet.

Most of the allotment is timbered with major tree species being ponderosa pine, lodgepole pine, white pine, Douglas-fir, grand fir, western red cedar, hemlock, Engelmann spruce, and western larch.

Principle forage species within the allotment include Idaho fescue, Bluebunch wheatgrass, Kentucky bluegrass, redbud, orchard grass, timothy, and pinegrass. Shrubs found on the allotment which appear to furnish browse for livestock and wildlife are redstem ceanothus, serviceberry, snowberry, ninebark, and oceanspray.

Usable forage available for wildlife and livestock is 50 percent of the total forage produced (Forest Plan 2-12, 1988). Of the 50 percent available to livestock and wildlife, 45 percent is available to livestock. This equates to 22.5 percent of the total forage produced being available to livestock. Private lands within the boundary of the LeClerc Creek Allotment (or any grazing allotment) are not included in carrying capacity calculations since the Forest Service cannot authorize grazing on private lands. There are currently 5,452 acres of land that are suitable for grazing within the LeClerc Creek Allotment (calculated by taking the total 6,693 acres of suitable grazing for the existing allotment and subtracting 1,241 acres of the upper elevations of

Molybdenite Ridge that receive little to no grazing use and therefore do not contribute greatly to the carrying capacity of the current allotment, despite meeting the criteria for being suitable for grazing).

There is a lack of sufficient data to allow a quantified, best-available science based analysis of rangeland vegetation condition or trend. Due to this lack of data the only assessment method available to determine rangeland condition or trend must be based on professional judgement, which is drawn from a combination of knowledge and observations made in the field. For this project, a coarse-scale assessment was used, based on the Parker 3-step assessment methodology. The Parker 3-Step Method is a means of assessing trends in vegetation over time and consists of three steps - establish a permanent monitoring transect, establish a photographic record for each transect, and record rangeland condition (and over time trend) at the transect site.

Table 11. Parker 3-step assessment methodology

Condition Class	Percent of Potential ¹ Natural Community
Poor	0-25%
Fair	26-50%
Good	51-75%
Excellent	76-100%

¹ Potential Natural Community is defined as the biological community an area could support given adequate time for succession without anthropogenic influences, and is otherwise known as the climax community.

As determined by the rangeland management specialist, rangeland vegetation in the LeClerc Creek Allotment appears to be in fair to good condition, with no apparent trend. Trend is not able to be evaluated without at least three data points available and is difficult to determine based solely on professional judgement.

Current Monitoring

According to past and recent monitoring information, grazing use over most of the area is occurring at acceptable levels and within the specified use levels. This monitoring information includes: greenline stubble height, stubble height, streambank alteration, and woody species browse. Monitoring is conducted in accordance with transects and methods established by the Forest for the LeClerc Creek Allotment in 1998 or by using Multiple Indicator Monitoring (MIM) as described in Technical Reference 1737-23 (USDI 2011). Monitoring is conducted either at the end of the grazing season or the end of the growing season. All monitoring information for the LeClerc Creek Allotment is retained as part of the project file at the Newport Ranger District office.

Effects

Range Analysis Considerations

Vegetation is the primary component assessed in the range resource analysis. Grazing can alter composition and cover through forage utilization and the physical actions (trampling) on vegetation and soils. Vegetative composition and cover is monitored in uplands and riparian areas. Grazing management techniques (i.e., range structures or improvements, adaptive management, and administration to implement) affect how livestock graze and the overall effects to resources.

In combination with utilization levels, livestock impacts to upland and riparian vegetation are dependent on the season of use as it relates to timing of grazing during the growth cycles of plants. The LeClerc Creek Allotment covers a range of aspects and elevations which leads to vegetation maturing at different times throughout the growing season.

Effects of livestock grazing include impacts directly to individual plants and alteration of their physical environments. Direct impacts from livestock include trampling and removal of plant materials. Indirect impacts such as soil compaction and related reduction in soil and water infiltration, soil erosion, invasive or noxious weed introduction and spread, changes in seed bank, reduction in soil litter, and effects to pollinators may occur under some grazing regimes in some areas (Stoddard et al. 1975).

Dry to moist meadow types are most likely the first plant communities to experience impacts from cattle, and have been affected by cattle grazing more than any other vegetation communities. Early in the season, when water is more abundant, cattle generally stay out of the wet meadow areas, concentrating on the dry to moist meadow vegetation. The dry/moist and wet meadow type is an important portion of the analysis area and cattle have a tendency to collect in the meadows, especially wet meadow environments. It has been shown that cattle spend more time in the riparian areas mid-late summer season than in the late spring or early summer season when they distribute their time more evenly between the uplands and riparian areas (Parsons et al. 2003).

Meadows are often comprised of different dominant plant species. Although drier types are sometimes closely associated with wetter types, livestock may use drier areas at different times. Livestock use in spring and early summer tends to begin on the dry to moist meadow sites earlier because of accessibility. The wetter meadows are saturated at this time and inaccessible to livestock.

If livestock are in meadow communities early and for extended periods of time, soils can become compacted and less able to absorb and store water. This can result in the phasing out of plants that require more water for longer periods of time, and establishment of plants that can take advantage of greater depths-to-water later in the season. An increase in bare ground and an undesirable change in grasses and forbs increase the potential for the establishment of weedy species.

In analyzing grazing impacts, the physical and physiological effects on vegetation are considered in the context of grazing season, grazing intensity, and the duration of grazing. The analysis of grazing impacts focuses on controlling the grazing intensity, duration of grazing and/ or the frequency of grazing to mitigate grazing impacts and sustain healthy, productive plant communities (Mueggler 1975).

In the range analysis, cumulative effects are temporally bound to the time frame within 5 to 10 years of implementation, and spatially bound by the existing allotment boundary. The effects of grazing and livestock could be present throughout the allotment boundary but are most realized in riparian and wetland areas, since upland sites tend to be drier and less susceptible to detrimental impacts such as exposure or compaction of soil (see Soils Report for more information).

For additional discussion of current range conditions and analysis considerations, refer to the Range Report and supporting information in the project record.

Consideration of Past, Present and Reasonably Foreseeable Actions

A list of past, present and reasonably foreseeable actions within and adjacent to the LeClerc Creek Allotment is provided in Appendix C. The following addresses those activities relevant to the rangeland management analysis.

Vegetation management projects such as Hanlon and Scotchman Stewardship projects have or will implement prescribed burning, thinning, and overstory vegetation management activities that overlap the allotment boundary for LeClerc Creek Allotment. These projects would implement design criteria and/or mitigation measures to protect range structures from damage, increasing their effectiveness to disperse livestock over the landscape. This results in sound range practices which retain desired vegetative composition. The forage analysis for these vegetation projects did not show a great increase in forage production. The slight increase in available forage created by the timber sale projects and prescribed burning would not change vegetative composition or cover related to grazing. This alternative and the respective vegetative project mitigations are designed to not increase livestock use in riparian areas and increase livestock distribution to uplands.

Fuels reduction and prescribed burning may change species composition or cover in areas where severe or higher temperature burns alter soil productivity or noxious weeds establish. Those sites are usually patchy and small in size (often 1/10 acre or less) within large-scale underburns. Frequently, those sites are seeded against noxious weeds. Therefore, the overall composition and cover typically is not affected.

Noxious weed treatments would continue on the allotment. Noxious weed best management practices (BMPs) would continue to be implemented in the grazing strategies. If grazing is permitted, the Early Detection Rapid Response (EDRR) measures may be completed by the permittee. There would also be more EDRR through Forest Service range inspections. Treating noxious weeds helps recover the desirable plant composition and cover in areas where weed populations are established as well as helps prevent noxious weeds from further displacing desirable plants in new sites. Overall, the forestwide weed control measures, BMPs, and active permittee participation leads to desirable plant composition and cover in the analysis area.

Firewood gathering is likely to have little to no effect with grazing on understory vegetation composition or cover. Rarely, a wood cutter may fell a tree across a fence, corral, or trough. When this happens, sometimes the wood cutter fixes the fence. If not, and the permittees or Forest Service finds it, the structure would be repaired as soon as possible. The time from the event to the discovery may affect the grazing plan effectiveness short-term, a couple of weeks to a month. The effect is likely minor given that a more important structure is likely to be discovered promptly or at the time of its use.

Road maintenance or culvert replacement upgrade activities have little to no effect on grazing. The machinery could temporarily displace livestock for a brief time, usually less than one hour. It is not likely to displace them into areas they cannot already access.

Within the last 10 years, recreation related uses have increased in the LeClerc Creek area. Recreation has been observed as having measureable impacts to riparian areas and may increase the amount of sediment in streams. Due to recreation use combined with livestock use, some riparian areas and streams may demonstrate characteristics that are less than desirable, but impacts to these areas are likely to remain within allowable standards.

Recreation use such as camping is also having an impact to primary range areas within the project boundary. Many of the homestead meadow sites, which are considered semi-permanent primary range areas are increasingly used as camping locations by Forest visitors. Use of these homestead meadows by campers is causing areas of soil compaction, which in turn reduces infiltration and productivity. Heavily used areas are also less desirable to livestock.

Alternative A

Direct and Indirect Effects

Operation and Management

This alternative would authorize grazing under the existing management plan for the LeClerc Creek Allotment. Stocking rate would remain at 101 cow/calf pair (535 AUMs) and livestock would be rotated through the allotment as described in Table 9 and the associated Current Management discussion.

Without addressing known deficiencies in range improvements (allotment and pasture boundary fences), livestock drift between pastures and off the allotment will continue to be a management concern and will require considerable input from the permittee to locate and move cattle which have drifted back to areas previously grazed (in particular the Lower Bunchgrass pasture) or off the allotment.

This analysis does not detail optional management strategies the permittees can use to attain improved resource conditions. Some management strategies are not mandated, but are administratively available to implement. These measures include, but are not limited to: increased riding (locating and moving cattle) and strategic placement of supplements, (i.e., salt or nutrient blocks) which attract livestock away from riparian areas. Proper placement of mineral supplements can be an effective method for improving distribution. Livestock usually go from water, to grazing, then to salt; therefore, it is not necessary to place salt near watering areas. Livestock can be drawn to areas they would otherwise avoid by placing salt away from water (Holechek et al. 2001).

The flexibility to promptly implement one or more of these measures allows management to take actions improving livestock distribution and forage utilization, which would lead to improved vegetative conditions. However, without a comprehensive adaptive management strategy, certain actions are not allowed without additional analysis.

Monitoring related to range management for Alternative A would follow the methods, procedures, and frequencies currently being implemented for the LeClerc Creek Allotment.

Vegetation Cover and Composition

Alternative A is expected to continue to maintain upland and riparian vegetation when compared to existing conditions, since plants should not show a loss of vigor or reproduction activity.

Lack of off-stream water does contribute to livestock spending more time in riparian areas, particularly in the fall as upland vegetation cures and becomes less palatable and seasonal water sources dry up. This can lead to increased utilization of both herbaceous and woody riparian vegetation. Woody species that are below browse height may be suppressed and limited in growth due to browse from livestock. Monitoring data collected for the LeClerc Creek Allotment shows that neither greenline stubble height standards or woody species browse utilization have

been exceeded on this allotment when measured (documentation in the project files). Therefore, riparian composition and cover are expected to be maintained under this alternative.

Continued grazing should not degrade the ecological trend in this allotment. Plant ecological trend is comprised in part, by plant percent composition and cover. Therefore, if the ecological trend is static or improving, it generally indicates the status of composition and cover is improving. However, localized areas of high livestock impacts would be expected to persist and may show a stable or downward trend over time.

Infrastructures and Improvements

No new improvements would be installed under Alternative A. Additional fencing or reconstruction of degraded fencing that is needed to reduce livestock drift would not be implemented under Alternative A. A riparian enclosure on the lower Middle Branch LeClerc Creek that was planned and approved prior to this project would still be installed.

Cumulative Effects

Because Alternative A would not change operation or management of the allotment and would not change the infrastructure or propose any new improvements, there would be no direct/indirect impacts to range management in the LeClerc Creek Grazing Allotment, therefore there would be no cumulative effects.

Alternative B

Direct and Indirect Effects

Operation and Management

Under Alternative B, the Term Grazing Permit would be cancelled within 2 years of implementation of the decision. No permits would be issued for the LeClerc Creek Allotment until, or unless, there was a subsequent NEPA analysis and a decision made to restock the allotment. Permittees would be given two years written advance notice of cancellation of their permits as provided for under 36 CFR 222.4 (a)(1). During the two years notice prior to cancellation of the permits, livestock would continue to be managed under the current management regime for the existing permit. All other activity in the assessment area not connected to grazing would continue.

Private, state, and other federal lands within or adjacent to the project area would not experience incidental livestock use from Forest Service-permitted livestock as a result of Alternative B, since livestock grazing would not be authorized.

The amount of resource monitoring occurring on NFS land within the LeClerc Creek Allotment would decrease under Alternative B, because livestock monitoring and compliance inspections that normally occur in association with the grazing permit would not take place.

Vegetation Cover and Composition

Under Alternative B, health of upland and riparian vegetation would be expected to be maintained or improved slightly. Livestock use in riparian areas and wet meadows would cease and cattle would no longer graze or trample some areas along wetlands. The expected result would be a continued stable or improving trend in both upland and riparian vegetation sites, based upon the current trends in grazing monitoring. There would still be some grazing and browsing by wildlife and by recreational livestock.

The rate of improvement may accelerate because more plant material would be left onsite rather than being consumed; however, elimination of domestic livestock grazing may not lead to rapid improvement on areas that were most heavily impacted by historical livestock use. Areas where livestock gathered on moist soil types for prolonged periods and where nondesirable plant species were established may take more time to recover.

In the absence of livestock grazing, more herbaceous vegetative material would remain on the landscape. Plant productivity, diversity, and species composition may change over time. Preferred plants with low tolerance to grazing may increase in abundance. Plants that are grazing tolerant may become decadent and overgrown. The no grazing alternative would allow an increase in deep-rooted perennial grasses within the allotment. Research by Ganskopp, Svejcar and Vavra (2006) near Burns, Oregon found that light grazing decreased fall standing crop by 32 percent, while heavy grazing reduced standing crop by about 67 percent when compared to ungrazed stands. However, the nutritional quality of the grasses increased with grazing, which provided superior forage for fall and winter use. The no grazing alternative would allow forage to develop residual growth resulting in “wolfy” plants, which are not as palatable to wild ungulates (Ganskopp, Svejcar and Vavra 2006). As these plants age and continue to develop residual growth, some of that growth would become a dense mat on the soil surface known as thatch. The presence of thatch can reduce biodiversity and increase bare soil by shading out other types of vegetation. Additionally, the establishment of older non-palatable plants would occur over time, unless some type of disturbance such as fire occurred. Some wildlife prefer to feed in areas where livestock grazing has already occurred. Research indicates that early spring and winter cattle grazing may improve forage conditions for elk. Results of habitat selection analysis demonstrated that elk preferred selected feeding sites where forage residue was reduced by summer cattle grazing and avoided un-grazed sites in all three seasons. Therefore, wildlife foraging behavior and plant preference may be altered in the absence of livestock grazing since forage quality may decrease.

Coniferous tree encroachment would continue in the homestead meadows within the project area. In the future, many of these areas would become dominated by timber and likely unrecognizable as the open grass and forb dominated areas they are and once were. As trees continue to repopulate these homestead meadows, the herbaceous vegetation would become less dominant to the point it may be virtually absent due to shading produced by the tight canopy of an even-aged timber stand.

Eliminating livestock grazing use within the project area may result in more bare soil in homestead meadows. Many of these areas are dominated by Kentucky bluegrass, and in the absence of grazing, or mowing, this species becomes less abundant and bare soil may appear in the interspaces. This bare soil could be susceptible to erosion and noxious weed invasion (see noxious weeds section in this chapter). Over time, other forms of perennial vegetation may become established in the niche formerly occupied by Kentucky bluegrass and provide positive benefits such as soil and streambank stabilization and decreased bare ground.

Range Infrastructure and Improvements

Range improvements, including fences and corrals, would remain on the allotment but would no longer be the permittee's responsibility to maintain. Range improvements would be allowed to deteriorate or be removed (dependent upon available funding) and stock trails would not be maintained.

Cumulative Effects

While the most notable effect of Alternative B on rangeland management would be the cessation of cattle grazing in the LeClerc Creek Allotment; environmental effects to rangeland in the area would be gradual and slight, as the absence of domestic livestock grazing would cause upland and riparian vegetation in the allotment area to remain stable or improve slightly over time. Past, present and reasonably foreseeable actions do not impact operation and management of the allotment area, and would have limited effects to rangeland vegetation; therefore cumulative effects of Alternative B would be limited to the LeClerc Creek Allotment, and the intensity of cumulative effects to rangeland vegetation would likely be negligible or a slight improvement over time.

Alternatives C and D

As described in chapter 2 (Alternatives Considered in Detail), both Alternatives C and D would continue grazing within the LeClerc Creek Allotment area, with proposed modifications to the permit terms and conditions to address current management and resource concerns. Alternative D would include additional modifications (beyond those proposed in Alternative C) to address the permittee's operational concerns.

As described in chapter 2, both Alternatives C and D incorporate an adaptive management strategy, in an ongoing effort to meet, or trend toward desired conditions (page 7 and by resource in chapter 3, as appropriate).

Due to the similarity of the alternatives, the description of effects is combined, highlighting those effects the alternatives have in common and those that differ between the alternatives.

Direct and Indirect Effects

Operation and Management

Alternatives C and D would both be beneficial to range management by producing upland foraging sites for livestock and wildlife to utilize through homestead meadow retention efforts. This forage would allow livestock to graze in upland sites and thereby have a reduced impact to riparian resources.

Developing off stream water developments to support livestock grazing would act to lessen associated impacts to water quality, stream banks, and riparian vegetation since livestock preference is to drink from water troughs compared to streams. This concept is well supported in the peer-reviewed literature and professional knowledge of rangeland managers, as well as through application on the Colville National Forest. With the construction of water developments in nonriparian areas livestock would not be accessing streams as much to drink, therefore bank trampling and stream widening would lessen.

The construction of fencing would act to protect streams and sensitive areas that are being impacted by livestock grazing. Improved riparian areas adjacent to streams would likely result in improved water quality in some locations, specifically Middle Branch LeClerc Creek.

This analysis does not detail optional management strategies the permittees can use to attain improved resource conditions. Some management strategies are not mandated, but are administratively available to implement. Some permittees have already expressed their desire to use these wherever possible to limit the amount of future fencing that could occur if adaptive management strategies are implemented to the fullest extent. These measures include, but are not

limited to increased riding, self-monitoring (e.g. utilization measurements), and strategic placement of supplements (i.e., salt or nutrient blocks), which attract livestock away from riparian areas. Proper placement of mineral supplements can be an effective method for improving distribution. Livestock usually go from water, to grazing, then to salt; therefore, it is not necessary to place salt near watering areas. Livestock can be drawn to areas they would otherwise avoid by placing salt away from water (Holechek et al. 2001).

Under Alternatives C and D, monitoring related to range management would follow the methods, procedures and frequencies described in the Monitoring and Adaptive Management section in Chapter 2. Monitoring would allow the Forest Service to determine if the increased suitable acres are allowing for accelerated recovery or reducing undesired impacts in areas that currently receive high levels of grazing pressure.

Modifying the grazing system is an administrative action which provides flexibility to improve range health on the allotments. Incorporating changes by altering patterns of livestock use, pasture deferment, pasture rest, altering the trailing or livestock movement routes, may reduce grazing effects in areas identified through monitoring as not moving toward or maintaining desired conditions at a stable or improving rate. Modifying grazing systems may also be implemented where fire, flood, etc., detrimentally impact resource conditions or where treatment activities require a rest period to provide for site recovery. Where “rest” occurs, specific recovery criteria for grazing re-establishment would be specified (such as plant vigor, ground cover, etc.) The effect of changed grazing systems is anticipated to be beneficial. Matching grazing use to actual resource conditions and productivity allows grazing to stay in compliance with Forest Plan direction and site specific desired conditions.

Vegetation Cover and Composition

Alternatives C and D would implement multiple range infrastructure changes and adaptive management strategies to meet desired conditions for the allotments.

Multiple water developments, fencing, and improved corrals would improve livestock distribution away from riparian areas. Proposed changes to allotment and pasture boundaries would facilitate more effective movement of livestock between pastures by having spatially connected pastures, as well as making allotment and pasture boundaries more resistant to livestock drift.

As a result, both alternatives would be expected to improve riparian vegetation cover and composition in the allotment. Upland vegetation already exists at a desirable state or trend, which would be expected to continue. Other management options (salting, supplement placement, additional riding) are also available for the permittee to use.

If monitoring indicates these are not improving the riparian conditions, then the subsequent actions described in the Adaptive Management Strategy (Table 4 and Table 5) would be implemented, adding additional range improvements where needed. Emphasis would be placed on areas where monitoring shows the most need, and would utilize logistically and economically feasible methods.

Additional fences, new water developments with water source protection, and other livestock handling facilities (example: improved corrals at Diamond City) are management methods to improve the vegetative cover and composition. Continued grazing should not degrade the ecological trend in this allotment. Plant ecological trend is comprised in part, by plant percent

composition and cover. Therefore, if the ecological trend is static or improving, it generally indicates the status of composition and cover is improving.

Maintaining the ecological trend meets the goal of improving vegetative cover and condition. Rationale for grazing effects on vegetation are described based upon observations within the analysis area and standard rangeland management science.

New water developments attract livestock away from resource sensitive areas. Clawson found that the installation of a water trough in an Oregon mountain meadow pasture dramatically reduced the amount of time cattle used a stream and spring in the pasture (Clawson 1993). Where feasible new and upgraded water developments would be installed outside of Riparian Habitat Conservation Areas (RHCAs) and the spring sources fenced off, the forage would be better utilized within Forest Plan Standards and Guidelines. The proposed water development improvements help livestock distribution.

Unmanaged or improperly managed grazing can be detrimental to plant communities. Alternatives C and D have been developed to address known deficiencies in infrastructure and management that contribute to improperly managed grazing. Therefore, plants would not show a loss of vigor or reproduction activity in either the upland or riparian vegetation. Thus, riparian composition and cover are expected to improve under these alternatives.

Using a grazing strategy in riparian areas that provides for regrowth of riparian plants should leave an adequate amount of vegetation at the time of grazing to maintain plant vigor and provide stream bank protection. Allowing forage plants to regrow should provide vegetation cover for stream bank protection during the following winter and early spring high flow periods (Clary and Webster 1989). Maintaining appropriate use indicators can help preserve plant vigor, reduce browsing on willows, stabilize sedimentation, and limit stream bank trampling.

If livestock are in meadow communities early and for extended periods of time, soils can become compacted and less able to absorb and store water. This can result in the phasing out of plants that require more water for longer periods of time, and establishment of plants that can take advantage of greater depths-to-water later in the season. An increase in bare ground and an undesirable change in grasses and forbs increase the potential for the establishment of weedy species. This effect can be mitigated by grazing these areas for a shorter duration of time, with less grazing intensity, or both. The adaptive management process would allow for areas with undesired impacts to be identified and addressed in order to maintain or improve resource conditions.

Compared to Alternative C, Alternative D would increase the size of the Lower Bunchgrass pasture by expanding the southeast pasture and allotment boundary from the Middle Branch LeClerc Creek to existing fence along the East Branch LeClerc Creek Road (NFS Road 1934000). This expansion includes approximately 335 acres of additional suitable grazing lands on NFS land. These additional suitable acres, when considered in conjunction with water developments and management actions such as salting or herding of cattle, may reduce grazing pressure and impacts from livestock in sensitive riparian and wetland areas near Middle Branch LeClerc Creek. Monitoring would allow the Forest Service to determine if the increased suitable acres are allowing for accelerated recovery or reducing impacts in areas that currently receive high levels of grazing pressure.

Alternative D would also increase the size of the Mineral Creek pasture by including acres in the Paupac area. This change from Alternative C is proposed to allow livestock to utilize roadside

forage along NFS Road 1936000 as well as some forage adjacent to the road in old harvest units. This may reduce the grazing pressure on areas more sensitive to livestock, such as wetland and riparian plant communities adjacent to White Man and Red Man Creeks.

One of the concerns identified by the interdisciplinary team when analyzing this project was the impact of livestock on a wetland plant community south of the Hanlon Meadow. As discussed in chapter 2, this area is of particular interest to rangeland management because it also contains a PIBO monitoring site that is used to evaluate the effectiveness of grazing management. This site is excluded from the allotment under Alternative C (due to proposed boundary changes), but would be included in the allotment boundary under Alternative D. Alternative D would allow for future monitoring to occur at this site to help determine if impacts from livestock grazing are allowing the associated riparian area to be maintained or improved, or are causing it to become degraded. If it is determined through monitoring that the monitoring site is being degraded, under the Adaptive Management Strategy (Table 4 and Table 5) it would be excluded and an alternate monitoring site identified.

Range Infrastructure and Improvements

Both Alternatives C and D would utilize permit administration and adaptive management with regard to range infrastructure and improvements.

Administratively modifying a permit to improve existing water developments is part of adaptive management. Grazing permit modifications (improving range structures) increase management effectiveness. It is expected to be beneficial to resources by protecting the water source and improving livestock distribution away from riparian areas, thereby reducing livestock impacts. This also reduces the time required by permittees to implement other livestock distribution strategies, allowing them more time to manage the grazing and attain goals of improved livestock distribution which leads to improved vegetative conditions.

Overall, range improvement project maintenance is expected to increase with Alternatives C and D. Increased efforts to complete project maintenance based on the number of water developments and miles of fence would have an impact to permittees by requiring more time to complete such work. Usual maintenance for projects that are in good or satisfactory condition generally requires minimal work each year. Each improvement would have to be visited at least annually to ensure it is functioning properly and maintenance would occur as needed prior to and throughout the grazing season. Therefore, the increase in the number of projects to maintain would likely have a relatively small impact on the permittee over time.

Reducing impacts to areas of concern would benefit the resources, such as vegetation, by allowing more time for permittees to monitor other areas and spend more time on other allotment needs, such as livestock movement, implementing self-monitoring utilization measurements, and tending to range improvements.

Though several new range improvements would be implemented under Alternatives C and D, using livestock management strategies would still be necessary to improve distribution. These include riding, active herding, and strategic salt placement. Skovlin found that herding cattle and pushing them to areas with poor accessibility but adequate forage improved uniformity of use in mountainous terrain (Sowell et al. 1999). The strategies are expected to be effective livestock distribution tools and thereby improve vegetative cover and composition.

Livestock trails exist on the landscape in several areas within the current allotment boundary. Currently one of the primary trails used by livestock in the Lower Bunchgrass pasture is NFS Road 1935000. Under Alternative C, two additional cattle guards would be installed in NFS Road 1935000 that could complicate trailing of livestock along the road. This may necessitate cattle being trailed across the landscape in areas that are currently low disturbance when compared to a road bed. This trailing may lead to increased impacts to soils, hydrology and vegetation (see Soils and Hydrology Reports for further information).

Under Alternative D, livestock would be able to continue to use road 1935000 as a trail facilitating quicker, more efficient movement of livestock as compared to having to trail in an unroaded area. This may also reduce soil and vegetation impacts by trailing livestock in an area that is already highly impacted. This is a benefit when compared to alternative C, which would place two additional cattle guards in road 1935000 road and greatly complicate the movement of livestock along the road.

Adjustments to improve attainment of desired resource conditions within an allotment are beneficial to vegetative cover and composition. Where vegetation conditions are healthy, they would be maintained, and expected to improve where monitoring indicated a need for change. The result is expected since these modifications include shortening the period of use to reduce, or eliminate, grazing impacts during periods where plants or other resources are most susceptible to damage, or avoid conflicts. Again, this is considered beneficial since it is responsive to monitoring results or seasonal climatic fluctuations such as drought. Before approval, proposed changes would be evaluated to ensure they fall within the scope of the current NEPA analysis (i.e., keep within the scope of analyzed animal unit months, limited riparian vegetative resource impacts are within standards and guidelines, etc.)

The effect of permit modifications is anticipated to be beneficial to vegetative cover and composition. Modifications could result in decreased bare ground and an increase in species composition where an overall decrease in grazing use on the allotments occurs. Changes would keep the trend in upland and riparian vegetation static to upward and desired conditions would continue to be attained. Therefore, vegetative composition and cover is expected to improve.

The effect of administrative changes is anticipated to be beneficial. For example, changing the season of use to avoid grazing impacts or conflicts with critical resource needs eliminates the conflict. Adapting the grazing season in response to seasonal variations in climate and productivity, such as during periods of drought would reduce impacts to vegetation. Matching grazing use to actual resource conditions and productivity allows grazing use to stay in compliance with Forest Plan direction and site-specific desired conditions.

Cumulative Effects

Both Alternatives C and D would be expected to improve riparian vegetation cover and composition in the allotment, and the current condition of upland vegetation (which is already in a desirable state or trend) would be expected to continue. Alternative D would have the added benefit of continuing to use road 1935000 as a trail, facilitating livestock movement. Under either alternative, if monitoring indicated that operational options are not maintaining or improving conditions, the adaptive management strategy described in chapter 2 would be implemented, adding range improvements where needed.

Past, present and reasonably foreseeable actions do not impact operation and management of the allotment area, and would have limited effects to rangeland vegetation; therefore cumulative

effects of Alternatives C and D would be limited to the LeClerc Creek Allotment, and the intensity of cumulative effects to rangeland vegetation would likely be negligible or a slight improvement over time.

Forest Plan Compliance

The Forest Plan identifies rangeland management requirements related to development of allotment management plans, livestock stocking levels, coordination requirements, and forage utilization.

Alternatives A, C and D would meet Forest Plan requirements, because the capable AUMs would exceed the permitted AUMs, meeting resource needs and management area direction. Each of the alternatives is designed to improve riparian conditions and an allotment management plan is a product of each alternative.

Overall, the effect of modifications is anticipated to be beneficial due to their design in direct response to monitoring and management. Reducing the amount of time grazed, or reducing utilization levels, would result in reducing the overall grazing impacts and improve attainment of desired conditions through grazing within the affected area of the allotment.

Under Alternative B, no grazing would occur, therefore there would be no need for an allotment management plan or coordination, and no standards for livestock use or forage utilization would be exceeded, meeting resource needs and management area direction.

Social and Economic Analysis

Data collection

An economic literature search was conducted on the proposed project area and discussions were held with the current and former permittees. The range management specialist collected the most recent data along with help from an economist from the Washington Office, Ecosystem Management Coordinator Kawa Ng and the Region 6 Social Scientist Elizabeth Grinspoon.

Framework and Desired Future Conditions

Scoping for this project highlighted social and economic concerns related to potential disturbance of historic range use, and the potential effects on local economies and lifestyles due to changes in livestock grazing practices.

The Forest Plan does not include any standards or guidelines relating to range economics. However, the Forest Plan does identify a goal to “produce forest goods and services in the most cost efficient way consistent with providing net public benefits. Generate revenues, from permits, leases, user fees, and product receipts” (Forest Plan 4-2).

Some comments were received that asked about “the likelihood of adequate funding” being “available to monitor allotments and where environmental degradation associated with livestock grazing is identified in the allotment, to repair such degradation.” It is impossible to forecast the financial situation the Forest will be working under and, therefore, the question of whether budgets will provide what is needed to perform these duties cannot be answered. However, this

analysis does compare estimates of some administrative costs between alternatives so that the impacts to administrative duties can be considered.

Other comments received expressed concern about how fencing would be paid for or completed. FSM 2240 establishes allowable uses for Forest appropriated funds and identifies allotment infrastructure management cost responsibilities. In summary, costs of materials, labor, and maintenance of infrastructure is the onus of the benefiting party or activity. As such, permittees are responsible for costs associated with infrastructure supplies, labor for installation, and maintenance needed for allotment management, while the Forest retains cost obligations associated with all resource protection fences identified. This analysis compares the costs for fence infrastructure across alternatives.

Some comments received expressed support to continue grazing because of the concern of the impact the loss of this practice would have on the local rural economy. Conversely, comments received also expressed concerns regarding additional costs for the small ranching operation. This analysis evaluates estimated operational costs and employment needs to compare across alternatives.

Affected Environment

Many communities are closely tied to the Colville National Forest in both work activities and recreation. The local communities that are anticipated to be directly or indirectly affected by the alternatives of the LeClerc Creek Allotment include Newport (population 2,116), Cusick (population 207), and Ione (population 447). The nearest larger towns or city where many people go to shop and buy supplies are Colville (population 4,668) and Spokane (population 210,721). Colville is approximately a 1.5-hour drive from the project area and Spokane is approximately a 1-hour drive from the project area. The affected grazing permittees live near the listed local communities including Cusick, WA.

As of 2014, Pend Oreille County had a population of approximately 12,980 (Ng 2014c). With an increase in population of 10 percent between 2000 and 2014, Pend Oreille County's percent of population change was less than the state's percent of population change (an increase of 17 percent). Pend Oreille County's median age has increased faster than the state average. Between 2000 and 2014 the County's median age increased from 42 to 49. The state's median age is 37. This increase in median age highlights the number of retirees coming into the area, attracted to the quality of life and lifestyle amenities the area offers.

Nationally, regionally, and locally, the social values and demands are changing on the National Forests. A 2002 national survey has shown there is wide support for management of public lands to provide a diversity of uses, including grazing (Shields et al, 2002). In 2013, the National Forest Foundation bipartisan survey found that 7 in 10 American voters from across the political spectrum agreed that one of the things the U.S. government does best is protect and preserve the country's natural heritage through National Forests (National Forest Foundation 2013).

The Forest Service has consistently voiced its concern about the four threats that include the loss of open space and invasive species. Former Chief Dale Bosworth stated that, "Sustainable ranching operations have been and continue to be an important part of how we manage the National Forests and Grasslands, and are inextricably linked to the open space issue. Properly managed rangelands are also essential to our efforts to address invasive species" (USDA Forest Service 2003).

Minority and Low Income Populations

In 1994, President Clinton issued Executive Order (EO) 12898. This order mandates that all Federal agencies analyze the potential for their actions to disproportionately affect minority and low-income populations. The Council on Environmental Quality (CEQ) issued supplemental guidance to assist agencies' compliance (CEQ 1997). The CEQ suggests the following criteria for identifying potential environmental justice populations:

“Minority population: Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis...”

“Low-income population: Low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect” (USDA 2016).

According to census data, Pend Oreille County is not very diverse racially or ethnically compared to the state or nation. Table 12 highlights the percent of the total population (2014) in the basic race categories from the American Community Survey for the U.S., Washington, and Pend Oreille County. With the Kalispel Tribe reservation within the county the American Indian population in Pend Oreille County is higher than both the state and national averages. Native American populations meet the environmental justice criterion as a minority population meaningfully greater than the general population. Therefore, decision makers should give particular consideration to the potential impacts of management actions on Native American populations. Ethnically, the Hispanic and Latino population in Pend Oreille County (3.4 percent) is less than the state (11.7 percent) and nation (16.9 percent).

Table 12. Percent of total population by race, 2014

Race Category	U.S.	Washington	Pend Oreille County
White	73.8%	78.2%	91.1%
Black or African American	12.6%	3.6%	0.2%
American Indian	0.8%	1.4%	3.6%
Asian	5.0%	7.5%	0.1%
Native Hawaiian & Other Pacific Islander	0.2%	0.6%	0.2%
Some other race	4.7%	3.8%	0.6%
Two or more races	2.9%	4.9%	4.3%

The data in this table are calculated by American Community Survey using annual surveys conducted during 2009-2014 and are representative of average characteristics during this period.

When proposing activities on public lands, the analysis must consider whether people who are economically disadvantaged could experience disproportionately high and adverse effects under EO 12898. Table 13 below highlights the percent of the population below the poverty level in

2014 at the national, state, and county level. Pend Oreille County appears to have a greater percentage of individuals and families living under the poverty level than both the state and national averages.

Table 13. Percent of total population by poverty level, 2014

Poverty level	U.S.	Washington	Pend Oreille County
People Below Poverty	15.6%	13.5%	21.9%
Families below poverty	11.5%	9.1%	16.4%

The data in this table are calculated by American Community Survey using annual surveys conducted during 2009-2014 and are representative of average characteristics during this period.

Kalispel Tribe

The federally recognized Kalispel Tribe of Indians (Tribe) are the aboriginal inhabitants of the Pend Oreille Valley. Collectively the Tribe reveres the Pend Oreille River and its tributaries as having sustained its way of life and as vital to the future health of its members. The Tribe has stated that, “The LeClerc watershed is the Kalispel Tribe’s most cherished cultural landscape within the Colville National Forest”. They go on to state, “Current tribal members provide this cultural bridge by following ancestrally prescribed behaviors within the LeClerc ecosystem. . . What this means is that no other landscape on the CNF provides a stronger connection between past and future generations” (Osterman 2012). Additional discussion of cultural interest of the Kalispel Tribe are documented in the heritage section of this FEIS.

As a result, the Tribal Government has invested and continues to invest time, energy, and funding to restore their ancestral lands including the Leclerc watershed, to a healthy condition that supports the hunting, fishing, gathering and spiritual needs of contemporary Kalispel people and their future generations. For example, the Tribe (in conjunction with the U.S. Department of the Interior (DOI) was and still is highly engaged with development and implementation of the DOI’s 4(e) conditions for both Box Canyon and Boundary Hydropower Licenses to restore and enhance fish and wildlife habitat in tributaries to the lower Pend Oreille River, develop and install fish passage at both dams, and establish a fish hatchery to reestablish native fish species. See further discussion of Federal Power Act implementation later in this section.

The Tribe has repeatedly stated they desire an outcome in this grazing allotment decision that would satisfy the interests of both the Tribe and the grazing permittee, and in their comment letter on the DEIS admonished the Forest Service for only offering alternatives that “pit neighbor against neighbor and beckons the rest of the community to choose sides”.

Hydropower Projects

Box Canyon Project (#2042)

Box Canyon Dam is downstream of the project area on the Pend Oreille River. It is owned and operated under a FERC-issued hydropower license by the Pend Oreille Public Utility District (PUD) and provides county residents some of the lowest electric rates in the State. Following over a decade of negotiations, a new FERC hydropower license to operate the Box Canyon project for 50 years was issued to the PUD in 2005. Due to the detrimental effects to environmental resources, the Box Canyon project had and has on natural and cultural resources along the mainstream of the Pend Oreille River, the USDA Forest Service and the USDI Bureau of Indian Affairs exercised their authority to prescribe mandatory 4(e) conditions to mitigate

these effects. Development and implementation of the Trout Habitat Restoration Program (THRP) fulfills this mandatory license condition (2010 Box Canyon FERC License Amendment Order, Revised 4(e) Condition 6). This 4(e) condition was instituted by the U.S. Department of the Interior on behalf of the Kalispel Tribe as a result of ongoing impacts caused by the Box Canyon Project on Kalispel Tribe Reservation lands (e.g., permanent inundation of 400 acres of Reservation lands and 164 miles of stream).

The Colville National Forest is a member of the Technical Committee that directs and approves the PUD's aquatic and fisheries restoration actions in the tributaries to the Box Canyon Reservoir on and off NFS lands under the THRP. Members of the Technical Committee are also responsible for considering the effects of associated managerial decisions and minimizing possible detrimental effects of those decisions on the long term success of restoration efforts in fulfillment of the PUD's License requirements.

Albeni Falls Dam

Albeni Falls Dam is a U.S. Army Corps of Engineers (USACOE) Dam upstream of the project area on the Pend Oreille River that was authorized for construction under the Flood Control Act of 1950. The dam is part of the Columbia River System under the direction of Bonneville Power Administration (BPA) to help meet federal system electric needs. Because Albeni Falls (and other Columbia River System dams) have restricted native fish migration, the Kalispel Tribe of Indians joined the growing ranks of Northwest states and tribes that are working in partnership with BPA, the USACOE and U.S. Bureau of Reclamation in a set of agreements designed to improve habitat and strengthen fish stocks in the upper Columbia River Basin over the next 10 years. The Tribe has identified habitat projects to benefit Endangered Species Act listed bull trout as well as westslope cutthroat trout and mountain whitefish. In addition, the new agreement provides for the Tribe, USACOE, and BPA to work together on improving water management actions in late summer and early fall to improve downstream water temperature for bull trout and other aquatic species. The state of Washington recognizes the Tribe as a co-manager for the Pend Oreille River watershed area (SalmonRecovery.gov 2017).

Economics and Public Lands Grazing

Federal rangelands are critical to the economic viability of the livestock industry in 11 western states, including Washington (USDI BLM and USDA Forest Service 1994). An estimated 21,000 federal permits have been issued in the western states, representing roughly 22 percent of all livestock producers in the region (USDI BLM and USDA Forest Service 1994). Locally, within the project area and the Forest as a whole, this value is probably higher since almost all the producers on the Colville National Forest are dependent on the forage produced on Federal lands to support their livestock operations.

The cost of grazing on federal lands is far less than that charged for private grazing lands. Forest Service grazing fees can fluctuate annually, with the 2016 grazing fee being \$2.11 (up from 2015 at \$1.69) per animal unit month (AUM). Before 2016, the rate was less than \$2.00 per AUM for the last decade. It has been found that although grazing fees on private land are higher than National Forest Service lands, these savings are most likely offset by the higher operating costs on National Forest System (NFS) lands. The increased expense associated with grazing on public land is due to the cost of transporting animals to and from NFS land, livestock management, maintenance of range improvements and higher death loss (Obermiller 1992). Current stocking rates for LeClerc Creek Allotment equate to a total of 405 AUMs per year. Total grazing fees collected for this allotment in 2015 amount to \$684.45 based on the rate of \$1.69 per AUM.

Of the fees collected annually from Forest Service grazing lands, 50 percent are returned to the Forest for range betterment purposes. A portion of these dollars are used to purchase materials for range improvements and to hire local workers to complete projects on public land. This amount for the entire Colville National Forest has ranged between \$10,000 and \$14,000 in recent years. Of the remaining fees, 25 percent are deposited in the national treasury, and 25 percent are paid to the county where the grazing lands exist.

Livestock grazing within the LeClerc Creek Allotment has occurred since the homesteading era of the 1890s through the 1930s. Documented livestock use under Forest Service permits has occurred since 1940. When compared to the total economic opportunity for Pend Oreille County, cattle ranching is a minor to moderate contributor to the local economy, though it is important to individual livestock producers (Headwaters 2009). Most of the farms that raise beef in Pend Oreille County also raise hay. In 2012 there were 65 beef cattle production farms in Pend Oreille County, selling an average of \$19,000 in beef, and 131 farms selling an average of \$17,000 in hay per farm (USDA-NASS 2014).

The economics of the grazing program has evolved over time. Generally, stock animals, mainly cattle, spend the winter and early spring months on lower elevation private lands where they can be fed stored hay. This land is owned by the grazing permittees. The animals are moved to higher elevation private lands and National Forest System lands as these lands become range ready in the spring. It is necessary for the cattle to be moved off their winter feeding areas and pastures so these private lands can be irrigated and/or allowed to grow for forage production. Many of these low elevation private lands are cut for hay and grain crops that sustain the livestock through the winter and early spring months.

This system of moving cattle to other pastures in the spring through fall maximizes the use of prime rangelands for forage production. It allows for a larger herd size than can be supported by keeping the stock just on private low-elevation lands. The longer livestock are kept off privately owned prime rangelands and farmlands, the greater the opportunity to produce two or more hay crops. More forage produced means more cattle can be held over the winter, and the rancher or permittee is better able to time the selling of their stock to take advantage of market prices.

In the current grazing system, calving occurs early, mostly between mid-January and March. This allows the calves to be born near ranches where they can be watched and the birth assisted when necessary by the ranchers, thus reducing mortality rates. The calves develop by mid-spring to a size when they can be safely transported to new pasture areas and are large enough to be protected from most predators, mainly coyotes, though wolves have also been observed in the project area recently.

The project area is grazed seasonally by one local ranching operation as a permittee. The National Forest provides the majority of the summer pasture for this operator. The total livestock numbers under permitted grazing for this allotment is 101 cow/calf pair. This ranch is a cow/calf operation with an estimated 101 calves grazing on National Forest allotments. In an average summer of grazing on federal pasture, these calves would each gain approximately 3 pounds per day per calf. Therefore, each calf would gain approximately 411 pounds in live weight during the grazing season. If there are 101 calves on the allotment, approximately 41,511 pounds of live weight beef production would be gained. Based on current market conditions, this gain could equate to \$65,990.95 based on \$1.45 per pound live weight (cattle market price, 2013). If federal land grazing were not available for these calves, approximately \$600 per animal may not be realized. These amounts do not take into account the costs to care for and maintain the herd throughout the year, which were estimated by USDA in the 2012 Census of Agriculture for the

average farm (this data does not differentiate between farms with federal grazing permits and those without) in Pend Oreille County as about \$12,900.00 per year (USDA-NASS 2014).

Worldwide concerns over the safety of food sources, such as “mad cow disease,” has made the beef market very volatile. Combined with the influx of foreign beef, there have been significant highs and lows in the domestic market. Financial institutions and the Internal Revenue Service have recognized the economic value of federal grazing permits and long-term permittees have been able to capitalize this permit as part of total ranch value for loans and property sales. However, the Forest Service does not recognize the permit as having additive financial value to an individual’s property because there is no guarantee that the permit will remain with the current permittee in perpetuity and that the sale of the base property will automatically give the permit to the new owner.

Annual adjustments to the permit may be made in conjunction with the results of the end-of year monitoring of forage utilization and stream bank alteration. Based upon this information, annual adjustments may be made in the timing, intensity, and duration of livestock grazing. Wildfires and prescribed fires may cause portions of allotments to be rested for a period of time. Therefore, when mitigating for ecological concerns, there are both direct and indirect economic impacts to the permittees and the local economies. Economic impacts have a social impact to rural lifestyles.

Economic Environment of Pend Oreille County

According to the U.S. Department of Commerce (Headwaters 2017) over half of the personal income in Pend Oreille County (55 percent in 2012) is received from non-labor sources (retirement, transfer payments, etc.). The remaining labor income is derived from the following sectors: 25 percent non-services (farm, forestry, manufacturing, mining, construction); 35 percent services (finance, health care, transportation, retail, etc.); 34 percent public administration and government. Pend Oreille County is somewhat diversified economically, but appears to be less resilient during periods following recessions compared to Washington State and the United States (Headwaters 2009). According to Washington State Employment Security Department, in 2016 Pend Oreille County’s unemployment rate (7.9 percent) was higher than Washington State (5.3 percent) and the nation (4.6 percent) (State of Washington 2016).

Average annual pay per job provides an indication of the wage contribution of jobs in the analysis area. In 2015, average income for Pend Oreille County was below the national and state averages: United States \$58,228.00, Washington \$58,339.00, Pend Oreille County \$44,143.00 (Headwaters, 2017). The average household income for Pend Oreille County is also below the Washington state average with household income in Pend Oreille County being \$42,638.00 and Washington State being \$64,129.00 according to data provided by <http://www.city-data.com/> (2015).

Farming and ranching has played a defining role in the establishment of the western United States and these local areas since they were homesteaded in the 1890s. The activities associated with livestock production are often reflected in local cultures and economies. Many public land permittees consider the ranching way of life vital to maintaining traditional values and their cultural heritage. This unique lifestyle has endured and evolved throughout generations. Ranchers express a strong sense of responsibility to their families, the land, their livestock and the community (Raish and McSweeney 2003). For Pend Oreille County, farm related work consists of approximately 7 percent of the total employment for the county (Ng 2014b) with

cattle ranches comprising approximately 21 percent of farms within Pend Oreille County (Ng 2014a).

Ranchers in Pend Oreille County, with federal permits in the analysis area, are highly dependent on forage from federally managed lands. The number of cattle grazed on forage from federally managed lands within the project area (202 animals, based on the permitted stocking rate of 101 cow/calf pair) represents approximately 8 percent of the total number of cattle within Pend Oreille County which is 4,572 (USDA Census of Agriculture 2007). Increased operating costs due to national markets, international market, fuel, fertilizer, feed and seed costs has increased the importance of federal grazing permits to permit holders. The impact of increased operational costs has had varied effects on the local economy according to the adjustments that local ranchers have to make within their ranching operation. In Pend Oreille County, total gross farm income has been on a declining trend since the mid-1970s, with production expenses exceeding gross income in 2004 and 2005 (Headwaters 2009). Income generated by agriculture in Pend Oreille County is approximately 4.5 percent below the national average (Ng 2014b). Current Pend Oreille County agricultural profit margins are small and income is limited despite the overall value of a ranch.

Cattle production and forest products provide employment in Pend Oreille County. Most of the farms and ranches are family run businesses and are not corporately owned. In 2007, the number of cattle and calves in Pend Oreille County was 2,011 (USDA-NASS 2012). Of these, 101 cow/calf pairs graze within the LeClerc Creek Allotment during the summer and fall months. In 2015, farm business income for Pend Oreille County totaled \$5.9 million. Livestock and products sales were \$1.9 million (32 percent) and crops sales were \$3.3 million (56 percent) of the total. (Headwaters 2017).

According to a letter to the Colville NF from Pend Oreille County (Pend Oreille County 2016), County Commissioners established the following Resolution (2015-45):

Increased availability for grazing of livestock is in the public interest of Pend Oreille County residents and is to be continually sought after; that reductions of grazing on publicly held lands can only damage the culture and economy of Pend Oreille County.

To implement this resolution, County Commissioners have been facilitating efforts with the permittee and other interested parties to aid in finding mutually acceptable solutions throughout this project analysis.

Analysis Considerations

When making administrative or operational changes to address ecological concerns, there are both direct and indirect economic impacts to the permittee and local economies. Economic impacts have a social impact to rural lifestyles.

If a federal allotment needed to be rested or closed and a permittee needed to replace federal grazing lands with other private or public lands to hold their cattle, they would need to incur the expense of transporting cattle to other grazing lands, purchasing or leasing private pasture land and feed, or they could reduce their total livestock numbers. Transportation and day-to-day management (herding, etc.) costs are a part of doing business on federal grazing lands, but clearly the closer the base ranch is to the grazing lands the less costs are incurred. It must be noted that these costs are highly variable based on the individual permittee's situation (owning or leasing transport, type of labor, etc.) It is estimated (based on an internet search) that the cost of

hiring transportation for live cattle typically ranges between \$2.40 and \$3.60 per mile (cattlerange.com).

Buying and shipping forage from outside sources is also a possible cost. During the winter of 2013 and 2014, hay prices in the local area were approximately \$150 to \$180 dollars per ton plus shipping costs. An average cow consumes approximately 2.5 tons of hay per winter, therefore if a livestock producer were to purchase all of the hay needed to maintain their livestock for an entire winter it would have cost approximately \$375 to \$450 per cow for the winter of 2013-2014. In many cases, reductions in total livestock numbers would also make some family-owned businesses uneconomical.

Economic strains intensify as operational costs increase without associated increases in the prices received for livestock products. The average 300 cow/calf operation in the western United States typically yields a two percent investment return. In other words, a million dollar ranch with investments in land, grazing permits, livestock and equipment would typically have an annual return of \$20,000.00. This return is often too low to support a ranching family. Under these conditions, many family members must seek employment outside of the ranch (Knight et al. 2002). Studies have shown that services provided by local governments are significantly less to farms and ranches than the ranchettes and subdivisions that often replace them. Agricultural lands provide more in tax revenues than they demand in services. Likewise, residential lands generally incur greater service costs than they provide back to the county in tax revenue (Knight et al. 2002).

Due to increases in fuel prices and inflation, costs have increased for all agricultural products and practices, such as growing crops, feeding livestock, managing livestock, and maintaining range improvement projects. Merely continuing existing practices would result in increased costs given current conditions, and adding additional maintenance responsibilities further burdens permit holders. Input costs for cattle production, such as feed, and transportation costs for transporting cattle to market, have drastically eroded profit margins for livestock producers. Therefore, the importance of the Forest Service grazing permit to permit holders has become more valuable due to the relatively low grazing fee charged for permitted use.

An economic analysis based on identifiable and quantifiable cost is presented in this section. In order to complete this analysis, the following assumptions were made.

1. The economic impact of grazing was estimated using authorized levels. However, actual use is permitted annually based on various factors, such as current forage conditions.
2. Permittees have family members that assist with operations on a regular basis and may or may not draw a wage. This assistance may include range riding, livestock round up, or maintenance of improvements.
3. The evaluation of economic costs for allotment infrastructure discussed below is based on current market estimates. These estimates are not intended to establish the final costs of proposed improvements, but instead are meant to allow a comparison across alternatives and were estimated using the following assumptions:
 - Fence materials are for 4-strand barbed wire fence.
 - Costs for monitoring and range management labor displayed in each alternative are in addition to normal annual operating costs for range permit administration and monitoring (FS) and range and herd management and monitoring (permittee).

- Costs described for adaptive management would be implemented as needed over the life of the permit (10 years). These costs should not be considered annual. Therefore, the total sum of adaptive management costs could range from \$0 to an unknown amount each year.
- Federal employee labor rate (specifically for adaptive management monitoring): average \$200 per 8-hour day.
- Estimated cost for increased range management of \$300 per 12-hour day includes labor, transportation, and associated costs.
- Labor costs for FS employees or range management are calculated for one year in the total costs. These costs are expected to be similar each subsequent year for the term of the permit
- In an average summer of grazing on federal pasture in the project area, calves would gain approximately 3 pounds per day per calf for total estimated increase of approximately 411 pounds in live weight during the grazing season. If federal land grazing were not available, approximately \$600 per calf would not be realized (based on \$1.45 per pound live weight).
- Water development materials include trough, pipeline, head box, and associated plumbing parts.

Contributions of public land ranching go beyond those expressed with dollar figures. The low intensity economic activity on ranches also provides open space, biodiversity, wildlife habitat scenic vistas and control of invasive and exotic species (Knight et al. 2002). All of these attributes are dwindling in the local area due to the amount of subdivision and home construction that has and is continuing to occur.

Hydropower Related Restoration Investments

Box Canyon

As a publicly owned and operated company, the PUD has a mission to keep power costs as low as possible for its customers. Costs to fulfill hydropower License conditions are a key component in the PUD's expenditures and affect overall costs to ratepayers. Condition 6 of the Box Canyon License requires the PUD to restore 164 miles of tributary (to the Pend Oreille River) stream habitat. The THRP was developed by the PUD and Technical Committee as a guiding document for implementation of aquatic restoration measures in Box Canyon tributaries and specifies that restoration efforts must be focused in seven priority watersheds, of which LeClerc is the highest priority. To date, approximately three million dollars in Pend Oreille PUD, Federal, State, and Kalispel Tribe funds have been invested to protect and restore the LeClerc watershed over the past 20 years. Restoration projects have included road relocation away from streams, fencing along streams, culvert replacements to improve fish passage, and wood placement in streams. A portion of these investments are directly related to mitigating the effects of current and past livestock grazing on ecological conditions and watershed function.

It can be argued that the original investments and continued maintenance of these improvements (fencing) by the PUD, the Forest Service, and the Kalispel Tribe results in a subsidy to the permit holder to maintain or improve ecological conditions needed to meet acceptable standards for continued grazing operations at the current levels. If these ecological conditions are not maintained to the standards prescribed in the THRP, the PUD may remain responsible for ongoing maintenance and/or reinvestments to continue to meet the required restoration of 164 miles of stream habitat for the remaining term of the License. Through the THRP, the Box Canyon License Technical Committee has identified the LeClerc Creek drainage as the highest

value Box Canyon tributary where investments made in ecological restoration are most likely to result in the highest value habitat improvements.

Several members of the THRP Technical Committee (Kalispel Tribe, USFWS, Pend Oreille PUD, WDFW) are responsible under the Box Canyon License to direct and approve the licensee's expenditures for restoration efforts in these watersheds, and provided comments on this EIS about their concerns that allowing livestock grazing to continue in the LeClerc watershed would compromise the substantial investments made to date to restore the native trout habitat under Box Canyon License requirements. On a larger scale, these agencies also expressed concern that continued livestock grazing may also undercut the efficacy of investments being made in the Columbia River Basin to restore native fish species. The cost of monitoring the effectiveness of watershed restoration treatments is required to be performed and reported by the PUD under the License. The Colville NF monitors watershed health conditions using additional protocols. Protocols and data from this monitoring can be found in the fisheries, hydrology and range section of the EIS.

Albeni Falls

Agreements designed to improve habitat and strengthen fish stocks in the upper Columbia River Basin over the next 10 years make available approximately \$39.5 million, including \$2.5 million for land acquisitions for wildlife habitat (SalmonRecovery.gov 2017).

USFS, Permittee, and Kalispel Tribe Improvement/Restoration Investments in LeClerc Creek

According to the *Accomplishment Report: Riparian Protection/Restoration work in the LeClerc Creek Grazing Allotment* (Borysewicz 1999), the estimated economic investments made each year to improve cattle management (address cattle drift) and restore ecological conditions in the LeClerc Creek Allotment (drift fences, cattle enclosures, native vegetation plantings, hardened stream crossings and stream bank repair) were:

Table 14. Estimated past investments to improve cattle management in LeClerc Creek Allotment

Year	Cost	Approximate hours or dollars
1999	FS labor costs	\$11,000
	Partner costs (Trout Unlimited)	\$3,000
	FS supplies cost	\$8,500
	Permittee labor hours	425 hours
	Kalispel Tribe labor cost	\$2,000
	FS Contractor Cost	\$1,000
2000	FS labor costs	\$11,500
	FS equipment and supplies cost	\$3,500

Future Costs

To continue grazing in the LeClerc Creek Allotment, there may be future costs associated with implementing conservation measures recommended by U.S. Fish and Wildlife Service (USFWS) in their Biological Opinion (USDI 2016). These recommended measures may or may not be implemented based on conditions and are mostly associated with additional enclosure fencing of bull trout critical habitat. It is unknown how these costs would be paid for.

USFWS 2016 Biological Opinion recommended conservation measures include:

- approximately \$444,000: construct and maintain riparian exclosures along 24 miles of critical bull trout habitat within the allotment and construct and maintain exclosures of all wetlands (about 9 to 13) determined to be functioning at risk that have not been included within bull trout critical habitat exclosures.
- unknown cost: reconfigure or move the Hanlon Meadow stock handling facility and pasture to exclude cattle use from the riparian area.

Social and Economic Effects

Effects Common to All Alternatives

Disproportionately high and adverse impacts are not expected to be predominately borne by the low-income population in Pend Oreille County under any alternative, because the economic effects of this project are not likely to increase or decrease a substantial number of jobs within the county.

Effects Common to Alternatives A, C, and D

Under the alternatives that would continue grazing in the LeClerc Creek Allotment, there is a potential for disproportionately high and adverse impacts on a minority population (Kalispel Tribe of Indians). The Kalispel Tribe has been engaged with this project via government-to-government consultation with the Colville National Forest at every stage to ensure tribal issues and concerns were identified and addressed throughout the planning process. Based on these ongoing discussions, including identification of multiple and cumulative effects, continued grazing on this allotment would diminish or eliminate their uses and values of this cherished landscape.

The Box Canyon Hydropower License implementation efforts under the THRP may decrease or stop watershed restoration efforts and investments in the LeClerc drainage, which may result in not meeting license requirements to offset ongoing impacts caused by the Box Canyon Project on Kalispel Tribe Reservation lands.

Because grazing would continue in the allotment, there would be no change to Pend Oreille County customs and culture and land use goals.

Although these three alternatives would bring in revenue from grazing fees, the costs of permit administration and monitoring would be greater than the revenue.

Alternative A

Direct and Indirect Effects

Alternative A would continue with the current management strategy for the LeClerc Creek Allotment. There would be no implementation of adaptive management practices. No new range improvements would be constructed without separate NEPA analysis to approve those projects, such as water developments or expanded drift fencing. This would result in no expenses being incurred to construct new range improvements. Maintenance of existing improvements would continue similar to previous years.

Operational costs would be expected to have no net change for the permittee or for the Forest Service. The amount of time spent on the allotment ensuring compliance with provided

directions for both the permittee and the Forest Service would remain relatively consistent with previous years.

Continuing livestock grazing on the LeClerc Creek Allotment would result in the permittees operating their farms and ranches in a similar manner to that experienced currently. Existing traditions and lifestyles would continue under this alternative. Permittees would continue to produce beef in Pend Oreille County and generate revenue and jobs, which leads to the diversified economy of the area. Annual payments to Pend Oreille County resulting from grazing fees would be approximately \$217 (from 2016 data).

Costs such as fuel prices, inflation, agricultural products and practices, feeding livestock, managing livestock and maintaining range improvement projects are expected to increase. Market values for beef are unpredictable and may increase or decrease. Therefore, continuing existing practices as prescribed in Alternative A are not expected to have a measurable economic effect in Pend Oreille County.

Because cattle grazing would continue in the LeClerc drainage, the Kalispel Tribe would likely feel as though this cherished landscape is diminished for their uses and values.

Cumulative Effects

Continuing to permit the current number of livestock on the LeClerc Creek Allotment would allow for a sustained level of livestock production for the permittees, which equates to sustaining the local economy. For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek Allotment analysis areas, refer to Appendix C.

There are no direct or indirect economic effects, therefore there would be no cumulative effects to the county economy from other current or reasonably foreseeable future activities on National Forest System lands within this assessment area. There would be no cumulative effect to the social condition of the local farming community.

Because it is presumed Box Canyon Hydropower License watershed restoration efforts (current or reasonably foreseeable activities) in the LeClerc drainage would not resume (based on the THRP Technical Committee's concern that continued investments would not realize the full restoration benefits with continued cattle grazing), the rate of recovery of uses and values important to the Kalispel Tribe would be prolonged or not met. This would result in an adverse cumulative social effect to the Native American people within the project area.

Alternative B

Direct and Indirect Effects

Alternative B would eliminate livestock grazing and the Term Grazing Permit on the LeClerc Creek Allotment. There would be no disproportionately high or adverse impacts on a minority population (Kalispel Tribe of Indians) associated with this alternative because cessation of grazing, along with continued ecological restoration efforts to more fully recover native species habitat and populations, would result in reestablishment of members and elders uses and values of this cherished landscape.

No grazing fees would be collected on the allotment, therefore approximately \$434 fewer range betterment dollars collected from associated grazing fees would return to the Colville National

Forest and annual payments to Pend Oreille County resulting from grazing fees would be reduced by approximately \$217 (from 2016 data).

The agency would receive no revenue from grazing fees and incur no permit administration costs on these allotments. The adverse economic effects to Pend Oreille County from alternative B are expected to be greater than Alternatives A, C, and D, but are not expected to have a measurable effect when compared to the county economy as a whole.

Reducing permitted livestock levels would likely affect economic viability of ranch operation. Operational costs would change for the permittee. It is expected there would be increased costs for transportation, feed, rental of private pasture land, and there could be disruption of current marketing strategies. It is anticipated there could be decreased costs for labor for livestock management and maintenance of range improvements, and decreased death loss. Even so, it is expected that these changes would translate to an adverse social and economic impact on the permittee.

There are currently federal grazing lands on the Colville National Forest available in northern Ferry County. It is estimated that additional transportation of approximately 80-100 miles and additional labor costs would be incurred to utilize these grazing lands. An estimate of these additional costs is not known.

Suitable grazing lands within Pend Oreille County are limited and becoming more scarce due to subdivision of lands and development. It could be difficult for permittees to locate additional grazing lands within the county that would be large enough and/or productive enough to support 101 cow/calf pairs. If the permittee was able to replace the federal grazing land with private pasture in the County, it could result in little change to the local economy. If federal or private grazing land outside the County was procured or the permittee reduces the number of livestock they are able to produce, it could have a slightly adverse impact on the amount of revenue generated and spent in Pend Oreille County.

If the permittee was unable to maintain an economically viable farming and ranching operation as a result of the no grazing alternative, the large acreages of private property used as their base of operations may be at risk of disposal and subdivision. Desirable attributes associated with permittee's private property, such as open-space, biodiversity, wildlife habitat, and scenic vistas, could be reduced or lost if subdivision of affected farms and ranches were to occur.

Based on the minor contribution cattle ranching has to boost local employment, impact to the local economy is expected to be less than 7 percent of the total employment for the county. Under Alternative B, operational cost to the Forest Service may decrease, and activities necessary to maintain livestock grazing on public land would no longer be necessary. However, these effects would be limited to only the acres currently within the LeClerc Creek Allotment; other allotments would still incur operational costs resulting in no net change. Forest Service administration would not be as expensive on an allotment that is no longer grazed. Under the no grazing alternative, there would be no mitigation measures related to livestock management.

Existing range improvement projects, including fences and corrals, would remain on the allotments but would no longer be the responsibility of the permittee to maintain. The Forest Service would be responsible to compensate for permittee interests in range improvements in this alternative (USDA FSM 2230 and FSH2209.13 chapter 70). It is unknown what these investment costs are at this time. Subsequent decisions would be needed regarding construction of new improvements for other resource needs such as wildlife or recreational use. If existing

structures are to be maintained, alternative funding sources for maintenance would need to be secured. If private landowners wished to graze the private lands adjacent to the allotment, it would be necessary for them to fence the boundaries to insure their livestock would not trespass on National Forest System lands.

Because cattle grazing would not continue in the LeClerc drainage but alternative options for grazing on the CNF would be offered, the Kalispel Tribe would likely feel as though this cherished landscape is enhanced for their uses and values. There would be a localized change to Pend Oreille County Customs and Culture and Land Use Goals, but it is unknown how substantive the change would be because it would hinge on business decisions made by the affected ranch family. The Box Canyon Hydropower License THRP would likely resume watershed restoration efforts and investments in the LeClerc drainage.

Cumulative Effects

There are many outside influences that affect the economic viability of ranching operations including livestock market conditions, weather patterns, governmental regulation, occurrence of diseases, and international trade policies. If there was complete loss of grazing for 101 cow/calf pair (the option to graze on other federal lands was not accepted or no private grazing lands were procured) it is expected there would be a loss of income and one to two jobs. Because the overall volume of livestock related jobs is quite small in Pend Oreille County, the economy-wide impacts of this alternative is small. However, within the rural communities of the surrounding area, particularly in very small communities, the loss of a single job and the second tier expenditures (housing, food, etc.) may be very important to that community, even though it may be barely noticeable within the larger economy. Within the county, this and other permittees would continue to produce beef, provide jobs, and generate revenue which leads to the diversified economy of the area.

Because the direct or indirect economic effects are not measurable in the context of Pend Oreille County, there are not expected to be cumulative effects to the county economy from other current or reasonably foreseeable future activities on National Forest System lands within this assessment area. Other than the direct and indirect effects described, it is not expected there would be a cumulative effect to the social condition of the local farming community.

Because it is presumed Box Canyon Hydropower License watershed restoration efforts in the LeClerc drainage would resume, these foreseeable projects are likely to increase the rate of recovery of the uses and values important to the Kalispel Tribe, therefore there would be a positive cumulative social effect to Native American people within the project area.

Alternatives C and D

As described in Chapter 2 (Alternatives Considered in Detail), both Alternatives C and D would continue grazing within the LeClerc Creek Allotment area, with proposed modifications to the permit terms and conditions to address current management and resource concerns. Alternative D would include additional modifications (beyond those proposed in Alternative C) to address the permittee's operational concerns.

As described in Chapter 2, both Alternatives C and D incorporate an adaptive management strategy, in an ongoing effort to meet, or trend toward desired conditions (page 7 and by resource in Chapter 3, as appropriate).

Due to the similarity of the alternatives, the description of effects is combined, highlighting those effects the alternatives have in common and those that differ between the alternatives.

Direct and Indirect Effects

Although Alternatives C and D would bring in revenue from grazing fees, the costs of permit administration and monitoring would be greater than the revenue.

Both alternatives would continue livestock grazing on the LeClerc Creek Allotment with the addition of range improvements (design criteria and conservation measures to decrease or eliminate effects to natural and/or cultural resources), adaptive management measures that would be applied if and when needed to meet natural or cultural resource standards, and possibly conservation measures recommended by the USFWS Biological Opinion (USDI 2016) to further minimize or avoid adverse effects to bull trout critical habitat. Expected costs of these range improvements and adaptive management expenses are described in Table 15 and Table 16.

Both alternatives identify several new fences, water developments, hardened stream crossings, cattle guards, and brush barriers. They also require an increased level of livestock management and monitoring by the permittee. Emphasis in this alternative involves changing cattle use and distribution within the LeClerc Creek Allotment. The permittee and the Forest Service would be cooperatively involved in the implementation of these activities. Due to the increased management requirements, operational costs may increase and result in a slightly adverse economic impact on the permittee and the Forest Service compared to alternative A (current operations), though long-term viability of livestock grazing would improve.

Based on assumptions described in this report, the estimated implementation cost (within the first few years of permit reissuance) under Alternative C would be between \$113,040 and \$114,040 (Table 15). The costs of maintenance and monitoring would remain through the life of the permit. The maintenance costs are unknown. Operational costs for the Forest Service would increase slightly from the current management. The estimated cost to implement Alternative D would be between \$74,140 and \$160,240 or more.

It is unknown if adequate federal funding would be available for the initial range improvements, allotment administration and monitoring identified in Alternatives C and D, and it is impossible to predict future funding levels.

Adaptive Management Strategies and USFWS Recommended Conservation Measures

Alternatives C and D incorporate adaptive management strategies, which are actions taken if and when conditions meet a trigger point (described in Chapter 2). When implemented, there would be economic and possibly social effects.

If the additional pasture fencing, cattle guards, or other structures to reduce livestock drift between pastures, altering pasture rotation and periods of use, increasing range riding, installing additional upland water developments, or exclosure fencing were to be implemented as adaptive management strategies in the next 10 years there would not be any foreseeable adverse or beneficial impacts to the local economy or the social system.

Because of the flexible nature of adaptive management, it is difficult to predict the impact to ranching operations. Some operators may be effective in monitoring and adjusting to adaptive management options, while others may be unable to adapt to the new conditions. As with the

other alternatives, outside forces play a large role in the ability of ranchers to maintain an operation's profitability.

Some ranches may not be able to adapt to the new management practices and/or profit margins could become too small to remain in business. Some ranching operations could possibly fail. If permittees are able to adapt to the increased costs of grazing implementation and improvements, all else equal, the economic contributions to Pend Oreille County derived from livestock grazing under alternative C would likely be sustained, given current AUM usage.

Because it is unknown when or if adaptive management actions (additional range improvements, increased range management, and/or decreased grazing) would be implemented, we have estimated the costs based on those described in the assumptions listed earlier in this section. As a result, costs when implemented would likely be higher due to inflation.

In addition, this report recognizes there may be costs associated with implementing the conservation measures recommended by USFWS in their Biological Opinion (USDI 2016). These recommended measures may or may not be implemented based on conditions and are mostly associated with additional exclosure fencing of bull trout critical habitat.

USFWS 2016 Biological Opinion recommended conservation measures include:

- Construct and maintain riparian exclosures along 24 miles of critical bull trout habitat within the allotment.
- Reconfigure or move the Hanlon Meadow stock handling facility and pasture to exclude cattle use from the riparian area.
- Construct and maintain exclosures of all wetlands (approximately 9-13) determined to be functioning at risk that have not been included within bull trout critical habitat exclosures).

The permittee and the Forest Service would be cooperatively involved in the implementation of range improvements (Table 16). Costs associated with these actions would have an adverse economic impact on the permittee and the Forest Service. The permittee would bear the costs of increased range management (including maintenance of range improvements and herd management) and decreased grazing. The estimated cost would be between \$1,000 (per year) and over \$86,500 (due to the unknown cost of decreased federal land grazing and not including several hundred thousand dollars in additional costs if the USFWS recommended conservation measures were required to be implemented).

Table 17 displays total estimated costs over and above current allotment management (FS and permittee) for Alternatives C and D. Some would be one-time costs (range improvements) and some would be incurred annually (for example, increased monitoring, range management, decreased stocking). Values used to populate the table are approximations based on the best available data at the time of analysis.

Table 15. Estimated costs for range management and improvements, Alternatives C and D

Action	Responsibility for implementation costs	Responsibility for maintenance costs	Cost per unit	Number needed under Alternative C	Cost under Alternative C	Number needed under Alternative D	Cost under Alternative D
FS Monitoring (days/year)	FS	FS	\$200	2-5	\$400-1,000	2-5	\$400-1,000
Brush barriers (acre)	FS	Permittee	\$400	0.6	\$240	0.6	\$240
Fencing (mile)	FS	Permittee	\$18,200	5	\$94,500	3	\$54,600
New troughs	FS	Permittee	\$2,200	4	\$8,800	4	\$8,800
Cattle guard installations	FS	Permittee	\$1,500	5	\$7,500	3	\$4,500
Hardened crossings	FS	Permittee	\$800	2	\$1,600	2	\$1,600
Range management (days/year)	Permittee	Permittee	\$300	~10	\$3,000	~10	\$3,000
Total					\$116,040 - 116,640		\$73,140 – 73,740

Table 16. Estimated costs for adaptive management measures, Alternatives C and D

Action	Responsibility for implementation costs	Responsibility for maintenance costs	Cost per unit	Number needed under both Alternatives C and D	Cost under both Alternatives C and D
FS Monitoring (days/year)	FS	FS	\$200	5-10	\$1,000-2,000
New Trough (each)	FS	Permittee	\$2,200	0-5	\$0-11,000
Cattle guard installation (each)	FS	Permittee	\$1,500	0-1	\$0-1,500
Hardened Crossing (each)	FS	Permittee	\$800	0-3	\$0-2,400
Range Management (days/year)	Permittee	Permittee	\$300	0-30	\$0-9,000
Decreased grazing (calves)	Permittee	Permittee	~\$600/calf	0-101	\$0-60,600+
Total					\$1,000-86,500+

Table 17. Total estimated additional costs Alternatives C and D

Action	Alternative C	Alternative D
Initial Range Improvements, Increased Monitoring and Range Management	\$116,040-116,640	\$73,140-73,740
Adaptive Management Measures	\$1,000-86,500+	\$1,000-86,500+
Total	\$117,040-203,540+	\$74,140-160,240+

Cumulative Effects

The direct or indirect economic effects are not measurable in the context of Pend Oreille County, therefore there will be no cumulative effects to the county economy from other current or reasonably foreseeable future activities on National Forest System lands within this assessment area. There would be no cumulative effect to the social condition of the local farming community.

Because it is presumed Box Canyon Hydropower License watershed restoration efforts (current or reasonably foreseeable activities) in the LeClerc drainage would not resume, based on the THRP Technical Committee's concern that continued investments would not realize the full restoration benefits with continued cattle grazing, the rate of recovery of uses and values important to the Kalispel Tribe would be prolonged or not met. This would result in an adverse cumulative social effect to the Native American people within the project area.

There are many outside influences that affect the economic viability of ranching operations including livestock market conditions, weather patterns, governmental regulation, occurrence of diseases, and international trade policies. Within the local counties, the overall volume of livestock related jobs in the local economy is quite small. For this reason, despite the size of the differences between the alternatives, the economy-wide impacts of all the alternatives are small. However, the direct and indirect effects may be considerable for individual persons, families, or businesses within the analysis area. Continuing livestock grazing for the next 10 years on the allotment within the LeClerc Creek would allow the permittees to continue benefiting economically in a similar manner to that experienced currently. Existing traditions and lifestyles would continue under this alternative or until it is no longer economically feasible for the permittee to graze cattle on National Forest System land.

For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek Allotment analysis areas, refer to Appendix C.

Forest Plan Compliance

The Forest Plan does not include any standards or guidelines relating to range economics. However, Alternative B would not meet the forest plan goal to "produce forest goods and services in the most cost efficient way consistent with providing net public benefits. Generate revenues, from permits, leases, user fees, and product receipts" (Forest Plan 4-2). Alternatives A, C and D would be consistent with this goal, since they would all provide economic benefits to the permittee and the county.

Hydrology and Water Quality

Data Collection

The hydrologic impacts associated with grazing within the LeClerc Creek Allotment are located within the Maitlen Creek (Dry Canyon Catchment portion east of the Pend Oreille River), West Branch LeClerc Creek, and the East Branch LeClerc Creek subwatersheds. Rarely do cattle wander outside of these subwatersheds due to the topographical features (i.e., steep and high elevation watershed divides). This analysis, therefore, is limited to the three identified subwatersheds, which contain the five pastures of the current allotment.

Historical and current fieldwork, GIS-generated data, historical hydrology files, aerial imagery, published scientific literature, and current ongoing research and monitoring were used to assess the effects of this project based on the issues described in chapter 1.

Framework and Desired Future Conditions

The principle regulatory framework governing management of watershed resources on the Colville National Forest (CNF) for the analysis includes:

- National Forest Management Act of 1976 (NFMA)
- Colville National Forest Land and Resource Management Plan (USDA, 1988)
- Federal Water Pollution Act and amendments (33U.S.C.§§1251-1387, 18 Oct 1972)
- Washington State Water Quality Standards
- Executive Order 11988 - Management of Floodplains
- Executive Order 11990 – Management of Wetlands

Forest Plan Standards

The Forest Plan and its amendments (e.g. INFISH) outline standards that meet forestwide goals and desired future conditions and meet or exceed State water quality standards (Forest Plan, p. 4-51). It requires implementation of project-level standards and guidelines for water quality contained in the Soil and Water Conservation Practices Handbook (FSH 2509.22), including those defined by State regulation or agreement between the State and Forest Service. The Forest Service is required by law to comply with state water quality standards developed under the Clean Water Act. The Environmental Protection Agency (EPA) and individual States are responsible for enforcement of these standards.

Clean Water Act

The principal law governing pollution in the nation's streams, lakes, and estuaries is the Federal Water Pollution Control Act (P.L. 92-500, enacted in 1972), commonly known as the Clean Water Act (as amended in 1977, 1981 and 1987). The Clean Water Act (CWA) is the primary federal law that protects the nation's waters, including lakes, rivers, aquifers, and coastal areas. The Act's primary objective is to restore and maintain the integrity of the nation's waters.

Through the CWA, each state is required to provide guidance and direction to protect and restore water bodies (40 CFR § 131.12). The State of Washington has met this federal requirement through their state best management practices (BMPs) and water quality standards. The Forest Service is required to meet and/or exceed state best management practices to protect water quality (Forest Plan, p. 4-51). The anti-degradation provision of the Clean Water Act applies to

all waters including those waters that currently meet Washington State Standards as well as bringing impaired streams into compliance with State standards.

Beneficial Water Use

Washington adopts water quality standards to protect public health and welfare, enhance the quality of water, and protect biological integrity. A water quality standard defines the goals of a water body by designating the use or uses for the water, setting criteria necessary to protect those uses, and preventing degradation of water quality through anti-degradation provisions. The state may assign or designate beneficial uses for particular Washington water bodies to support. Designated uses within the project area include, but are not limited to: char spawning and rearing, core salmonid habitat, wildlife habitat, livestock, extraordinary primary contact and primary contact recreational use, domestic, industrial, agriculture, and stock water supply uses, harvesting (fish), navigation, boating, and aesthetics (DOE: WAC 173-201A-200/600/602).

Washington Water Quality Rules and Regulations

The State of Washington uses the term “designated uses”. In the Washington Administrative Code (WAC 173-201A-010) where there is a comprehensive discussion regarding water quality criteria and designated uses.

The designation of water bodies in the State of Washington is defined in WAC 173-201A-600 Use designations. According to this guidance, all freshwaters within the LeClerc Creek Allotment are to be

..”protected for the designated uses of: core summer salmonid habitat; extraordinary primary contact recreation; domestic, industrial, and agricultural water supply; stock watering; wildlife habitat; harvesting; commerce and navigation; boating; and aesthetic values.”

For the LeClerc, East Branch LeClerc Creek, West Branch LeClerc Creek including tributaries in or above the Colville National Forest (e.g., Middle Branch LeClerc Creek, White Man Creek, Mineral Creek, Diamond Fork, etc.), char spawning and rearing replaces core summer salmonid habitat (173-201A-602 WAC).

Water quality includes physical and chemical characteristics of water. Parameters commonly measured include turbidity, pH, Dissolved Oxygen (DO), alkalinity, hardness, specific conductance, nutrients, metals, fecal coliform, and water temperature. Those parameters affected by grazing are typically limited to sediment, nutrients, fecal coliform, and water temperature. Other water quality parameters such as dissolved oxygen (DO) and pH can be indirectly affected by grazing since added nutrients from manure and urine can alter the oxygen concentration and the breakdown of these nutrients requires an increase in biochemical oxygen demand. Analysis for the LeClerc Grazing EIS is limited to temperature and fecal coliform.

Table 18. Washington Department of Ecology water quality criteria

Parameter	Designated Use	Criteria
Temperature	Char spawning and rearing	12°C (53.6°) highest 7-day average daily maximum
Temperature	Core salmonid habitat	16°C (60.8°F) highest 7-day average daily maximum
Fecal coliform	Extraordinary primary contact recreation	Fecal coliform levels must not exceed a geometric mean value of 50 colonies/100 mL with not more than 10% of all samples (or any single sample when less

Parameter	Designated Use	Criteria
		than 10 samples exist) obtained for calculating the geometric mean value exceeding 100 colonies/100mL

303(d) Status

Under section 303(d) of the CWA and EPA regulation (40 CFR § 130.2(J), 130.7), States are given authority to list which waters do not meet water quality standards or have impaired beneficial uses. This list of impaired waters is commonly known as the “Section 303(d) list” or category 5. The individual states are directed by the EPA to improve the aquatic conditions of those streams not supporting beneficial uses. Once a water body is listed as impaired, it is the state’s responsibility to develop a Total Maximum Daily Load (TMDL) for each pollutant of concern. These TMDLs are then submitted to EPA for review and approval or disapproval. Once approved, they become category 4 impairments on the 305b list.

For the State of Washington, the 2015 water quality report has the most current 303(d) official list of streams not supporting beneficial uses (approved July 2016). The 2006 approved Colville National Forest (CNF) TMDL plan for Reducing Temperature in Impaired Streams recommends actions for reducing stream water temperatures by improving stream shading and reducing impacts from grazing. Washington Department of Ecology (WADOE) and the United States Forest Service Region 6 formalized a partnership in 2000 through a Memorandum of Agreement (MOA). The MOA clarified agency responsibilities for federal and state water quality laws, and both agencies are working together as the MOA is put into action. WADOE will also utilize its existing resources and authorities under RCW 90.48 to implement this TMDL. INFISH standards prevent the Forest Service from causing water quality degradation as a result of management activities. The Clean Water Act and Washington State Department of Ecology (WADOE) approved Colville National Forest Temperature and Bacteria TMDL Water Quality Implementation Plan for Water Temperature and Fecal Coliform (WADOE, 2006) states when natural levels of fecal coliform (from wildlife) cause criteria to be exceeded, no allowance exists for human sources (i.e. management activities) to measurably increase bacteria pollution further.

Executive Order 11988 – Protection and Management of Floodplains

Federal Executive Order 11988 provides for the protection and management of floodplains. The rules are also incorporated as BMPs in the Washington State Water Quality Standards.

Executive Order 11990 – Protection and Management of Wetlands

Federal Executive Order 11990 provides for the protection and management of wetlands. The rules are also incorporated as BMPs in the Washington State Water Quality Standards.

Desired Future Conditions

The desired future conditions for hydrology and water quality on this grazing allotment are:

INFISH amendment riparian goals are to maintain or restore (p. A-1):

- Water quality, to a degree that provides for stable and productive riparian and aquatic ecosystems;
- Stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) under which the riparian and aquatic ecosystems developed;

- Instream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route flood discharges;
- Natural timing and variability of the water table elevation in meadows and wetlands;

INFISH standards include the following (p. A-9):

- GM-1 Modify grazing practices (e.g., accessibility of riparian areas to livestock, length of grazing season, stocking levels, timing of grazing, etc.) that retard or prevent attainment of riparian management objectives or are likely to adversely affect inland native fish. Suspend grazing if adjusting practices is not effective in meeting riparian management objectives.
- GM-2 Locate new livestock handling and/or management facilities outside of Riparian Habitat Conservation Areas. For existing livestock handling facilities inside the Riparian Habitat Conservation Areas, assure that facilities do not prevent attainment of riparian management objectives. Relocate or close facilities where these objectives cannot be met.
- GM-3 Limit livestock trailing, bedding, watering, salting, loading, and other handling efforts to those areas and times that would not retard or prevent attainment of riparian management objectives or adversely affect inland native fish.
- WR-2 Design and implement watershed restoration projects in a manner that promotes the long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and contributes to attainment of riparian management objectives. Cooperate with Federal, State, local, and Tribal agencies, and private landowners to develop watershed-based Coordinated Resource Management Plans (CRMPs) or other cooperative agreements to meet riparian management objectives.

Affected Environment

Hydrologic Environment

The LeClerc Creek Allotment project area is primarily located within the West Branch LeClerc Creek, East Branch LeClerc Creek, and Maitlen Creek subwatersheds (Figure 4, Figure 5 and Table 20). Maitlen Creek subwatershed is divided by the Pend Oreille River. The portion of the subwatershed east of the Pend Oreille River can be further divided into two catchments: Maitlen Creek and Dry Canyon (Figure 5 and Table 20). Analysis of the Maitlen Creek subwatershed is limited to the Dry Canyon catchment due to the limited impacts associated with the Dry Canyon pasture.

Although the range management data concludes that the allotment is not over-utilized, some riparian areas with highly concentrated use demonstrate localized detrimental effects and stream bank instability. Other grazed areas of Middle Branch LeClerc Creek have good riparian health and stream bank stability. The difference in these reaches is most commonly due to accessibility (e.g., road side versus areas that have a barrier such as brush or topography).

The current LeClerc Creek Allotment consists of five pastures: Mineral Creek, Upper Bunchgrass, Lower Bunchgrass, Dry Canyon, and Fourth of July. While Mineral Creek, Upper Bunchgrass, and Lower Bunchgrass are contiguous pastures, Dry Canyon and Fourth of July are disconnected. Existing pasture and watershed statistics are displayed (under Alternative A) in Table 20.

Managing the allotment with a pasture rotation is consistent with the best available science (Wyman et al. 2006). George et al. (2011) found sufficient evidence to recommend an increase in herding, fencing, and appropriate water development and supplement placement where topography promotes and total exclusion is not required. George et al. further show that rest-rotation and fencing have been determined to have the greatest benefit for stream-riparian-related fisheries values. An increased effort to keep the cows in the respective pastures is expected to result in improved water quality. Rotating cattle between pastures can reduce detrimental impacts to wetlands and help maintain the integrity of ground water and surface water connectivity. To have operative pasture rotations requires pasture boundaries to be effective.

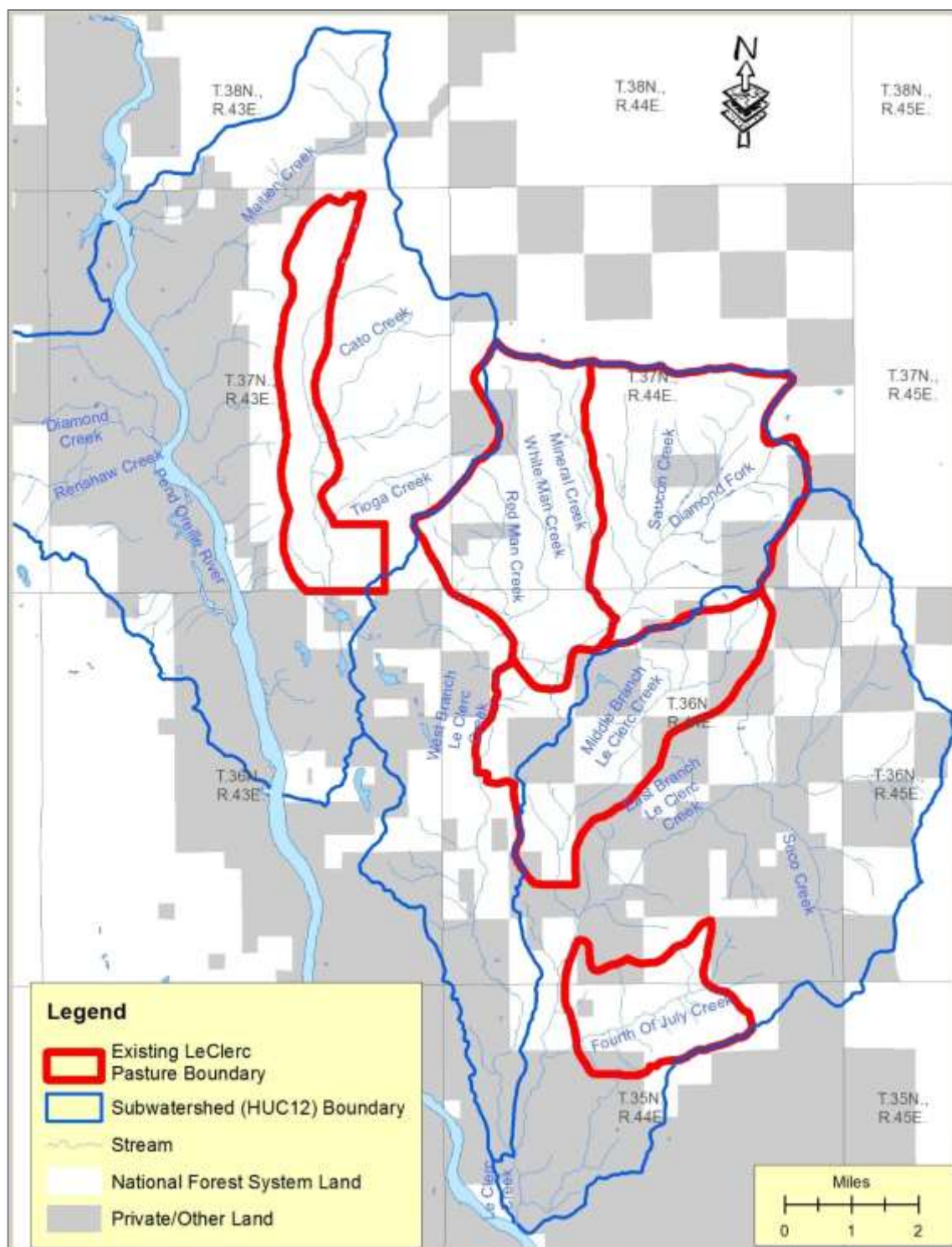


Figure 4. Existing LeClerc Creek Allotment pasture boundaries and subwatersheds.

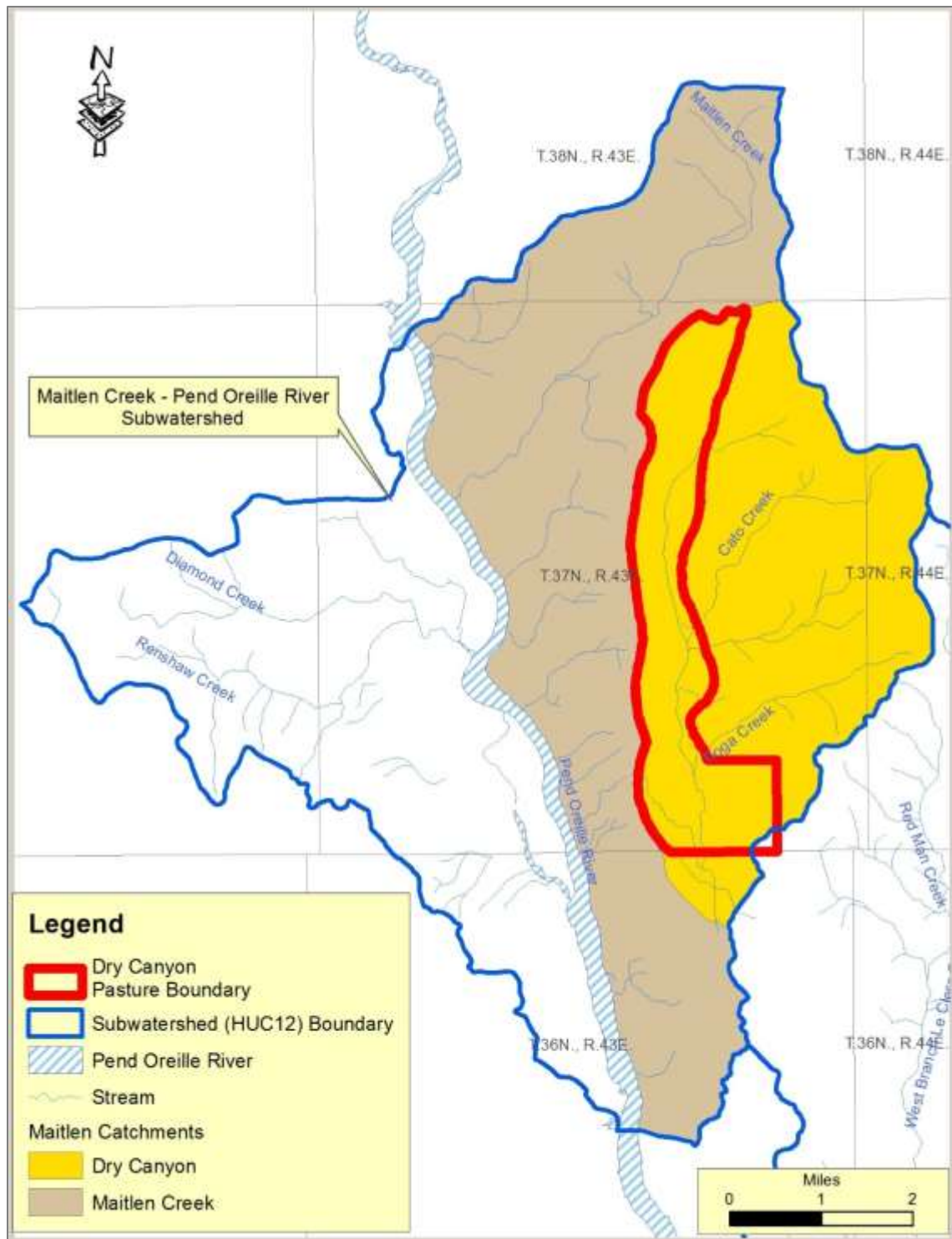


Figure 5. Maitlen Creek Subwatershed Catchments in relation to Dry Canyon Pasture.

Aquatic Restoration Efforts

Both the West and East Branch LeClerc Creek subwatersheds were identified as priority watersheds for restoration activities in the Watershed Condition Framework (WCF) process in 2011 (prior to that, LeClerc Creek watershed was identified as a focus watershed for restoration). Several essential aquatic restoration projects were identified in both subwatersheds. Projects that have been completed or are in progress include relocation of Middle Branch LeClerc Creek road to an upland location, instream habitat restoration in Middle Branch LeClerc Creek, partial enclosure of approximately two miles of riparian management area along Middle Branch LeClerc Creek, replacement of six fish barrier culverts with aquatic organism passage structures, 1.8 mile of road relocation designed and expected to be implemented in 2016 to include removal of three fish barrier culverts and restored channel function, and more than 5 miles of road decommissioning, including the removal of fish barrier culverts and restoring natural channel conditions in tributaries. Future projects include additional road decommissioning and West Branch LeClerc Creek channel restoration (including legacy dam removal, historic channel restoration, large wood placement, and replacing additional fish barrier culverts with aquatic organism passage structures).

Temperature-impaired stream reaches (e.g., Middle Branch LeClerc Creek) can be affected by multiple management actions, such as road proximity and cattle use. Recent efforts to reduce stream temperatures in this area include:

- Relocation and obliteration of about 2.5 miles of NFS Road 1935000. The road was entirely located within the RHCA management zone of Middle Branch LeClerc Creek prior to its relocation fall 2012.
- In-stream fish habitat improvements by Pend Oreille Public Utility Department (POPUD). Efforts in 2011 and 2012 included placing wood, hardened crossings, and fencing of the riparian area in the lower reaches of Middle Branch LeClerc Creek. The 2013 restoration work included large wood placement in upper reaches of Middle Branch LeClerc Creek and replacement of a culvert fish passage barrier on NFS Road 1935011.
- Efforts were made to move the cattle to higher ground in early July to decrease the amount of time cattle are present on Middle Branch LeClerc Creek but were confounded by drift as cattle (up to 30 head) find their way back to the Middle Branch LeClerc Creek in a relatively short period of time.

Despite ongoing efforts by the permittee to move cattle back to appropriate pastures during the season, drift between pastures and off the allotment has been an ongoing concern that affects canopy cover, which in turn affects water temperature in riparian areas where cows prefer to forage and water.

Hanlon Meadow, located on the Middle Branch LeClerc Creek, is designated bull trout critical habitat. This holding pen enclosure also includes an unnamed tributary to Middle Branch LeClerc Creek and a wetland area. Generally the cattle are kept here short term for staging during unloading and loading periods. Impacts to Middle Branch LeClerc Creek and to the wetland are found inside the holding pen. For the majority of the season, this holding pen acts as an enclosure and protects the portion of the stream and wetlands located within the fenced area.

Occasional use of the Hanlon Meadow pasture does occur during the grazing season, typically for short periods of time (1 to 3 days) to hold drifting cows for pick-up so they can be returned to the appropriate pasture or removed from the allotment. At end of season, cattle that have drifted

from the Dry Canyon, Mineral Creek, and Upper Bunchgrass pastures back into the Lower Bunchgrass pasture are placed in the hold pen for pick-up.

The placement and configuration of the Hanlon Meadow pasture potentially results in additional impacts to designated bull trout critical habitat and water quality concerns present in Middle Branch LeClerc Creek as well as the groundwater dependent wetland area within the Hanlon Meadow pasture. The current Washington State Department of Ecology (WADOE) 401 certification included with the 2012 U.S. Army Corps of Engineers (USACE) 404 RGP-8 permit, a programmatic agreement between Region 6 National Forests in Washington state and USACE/WADOE fulfilling federal and state Clean Water Act direction, states water gaps and ford type crossings shall not be constructed in critical fish habitat or where construction or animal use may impair fish habitat. Existing condition of hardened crossings in designated critical habitat were implemented prior to the completion of the USACE 404 RGP 8 and WADOE 401 letter of certification. The current RGP-8 permit and 401 letter of certification was reissued in April 2017 and expires in April 2022.

Water Quality

Water quality includes physical and chemical characteristics of water. Currently, the water quality parameter impairment in East, West, or Middle Branches of LeClerc Creek or their tributaries is water temperature (WADOE, 2016), and segments of East Branch, Middle Branch, and West Branch Leclerc Creeks are 303(d) listed as impaired or as waters of concern for temperature. Other parameters of concern include fecal coliform and sedimentation. These parameters are known to be influenced by grazing based on current research (Hudson 2008, Maloney et al. 1999).

Temperature

High water temperatures are commonly influenced by a lack of sufficient shade, over-widened stream channels (see Fish Report), and excessive sediment. Vegetation acts as a parasol for streams, shading them from the sun and keeping water temperatures cool. Shade controls direct solar radiation and thus heat influx in small forest streams. Variables other than vegetation, which influence the amount of solar radiation reaching the stream, include stream width, orientation, solar angles, surrounding topography, and upwelling groundwater. Protecting and improving riparian conditions can decrease the magnitude of seasonal stream temperature increases as well as fluctuations within the riparian microclimate. A literature review by George et al. (2011) found stream temperature dynamics can be moderated by management, which promotes healthy riparian woody plants. Hudson (2008) indicates stream temperatures are affected by grazing in several functions, including that a reduction in riparian vegetation can cause a stream to channelize and result in higher temperatures due to decreased interaction with the floodplain. Maloney et al. (1999) identify a correlation that exists between grazing and stream temperature where lower temperatures were documented in ungrazed watersheds and highest temperatures were documented in intensely managed watersheds.

The temperature standard for the LeClerc watershed is 12°C under Washington State water quality standards; the INFISH objective is for less than 15°C in adult holding habitat and 9°C in spawning and rearing habitats. Since this area is mostly spawning and rearing habitat, the objective of 9°C is what we need to move toward and achieve over time.

The Forest collected water temperatures in all three branches of Leclerc Creek since 2002. The trend in Middle Branch and East Branch LeClerc Creeks has been fairly consistent with

temperatures exceeding (not meeting) the state water quality standard of 12°C by early July and continuing to rise throughout the summer into late August.

The Kalispel Tribe has also collected water temperature data. Their data shows that East Branch, West Branch, and Middle Branch of LeClerc remain above 9°C, and are consistently over the 12°C standard for Washington State water quality.

This trend can be observed in Figure 7 where temperatures in Middle Branch LeClerc Creek did not meet the standard for core salmonid habitat by as much as 3 °C in 2010, 2013, and 2014. Previous year data consistently show exceedance as high as 6 °C in both East and Middle Branches of LeClerc Creek. Canopy cover data has been collected by the Pend Oreille Public Utility District (POPUD) on Middle Branch LeClerc Creek in 2012 and 2013. Spot data collected by the Kalispel Tribe shows the reach of West Branch LeClerc Creek above Ballpark Meadow and Diamond City ball field are also in exceedance during the summer months.

Canopy cover is a critical element and directly related function to maintaining appropriate water temperatures and other water quality parameters as identified in the Colville National Forest Temperature and Bacteria Total Maximum Daily Load Water Quality Implementation Plan (WADOE 2006) and Colville National Forest Temperature, Bacteria, pH, and Dissolved Oxygen Total Maximum Daily Load (Water Cleanup Plan) Submittal Report (WADOE 2005).

The percent of canopy cover on Middle Branch LeClerc Creek ranges from about 30 to 85 percent. The stream reach below and through the Hanlon Meadow pasture has the least canopy cover (i.e., about 30 percent). In 2005, the average canopy cover for Middle Branch LeClerc Creek was 60 percent with a site potential of 96 percent.

To meet the 12°C EPA approved state standard for native char spawning and rearing, full site potential for shade would be necessary. Middle and East Branches of LeClerc Creek are identified among the streams for highest priority to actively implement best management practices to bring water temperatures into compliance with state TMDL standards. Recommended practices include riparian exclusion from grazing and reestablishment of riparian vegetation (WADOE 2005).

The Department of Ecology 305b report (2012) listed West, Middle, and East Branches of Leclerc Creek as temperature impaired, as shown in Figure 6 (gray indicates a TMDL control plan is needed [303d], orange indicates EPA has accepted the reaches as impaired and a TMDL control plan has been approved [305b – category 4]).

Figure 7 shows the exceedance for temperature in Middle Branch LeClerc Creek occurring during the months of July and August of 2010, 2013, and 2014. Most of West Branch LeClerc Creek is still recovering from being straightened, dammed at multiple locations, used as a flume, and railroad and road construction alongside the streams in the early 1900s. As shown in Figure 7, one reach is temperature impaired in the West Branch LeClerc Creek. Temperature impairment is likely an artifact of the logging and related impacts that occurred during the early 1900s or a natural temperature regime of the stream. The stream travels through areas with steep side slopes, some of which are unstable and failing, likely accelerated by the road construction that occurred during the logging boom of the early 1900s. These impacts are likely to be an influence contributing to the impaired temperature state of the stream. There appears to be minimal existing cattle use along this reach of West Branch LeClerc Creek.

Additional discussion of stream temperature is provided in the Hydrology Report.

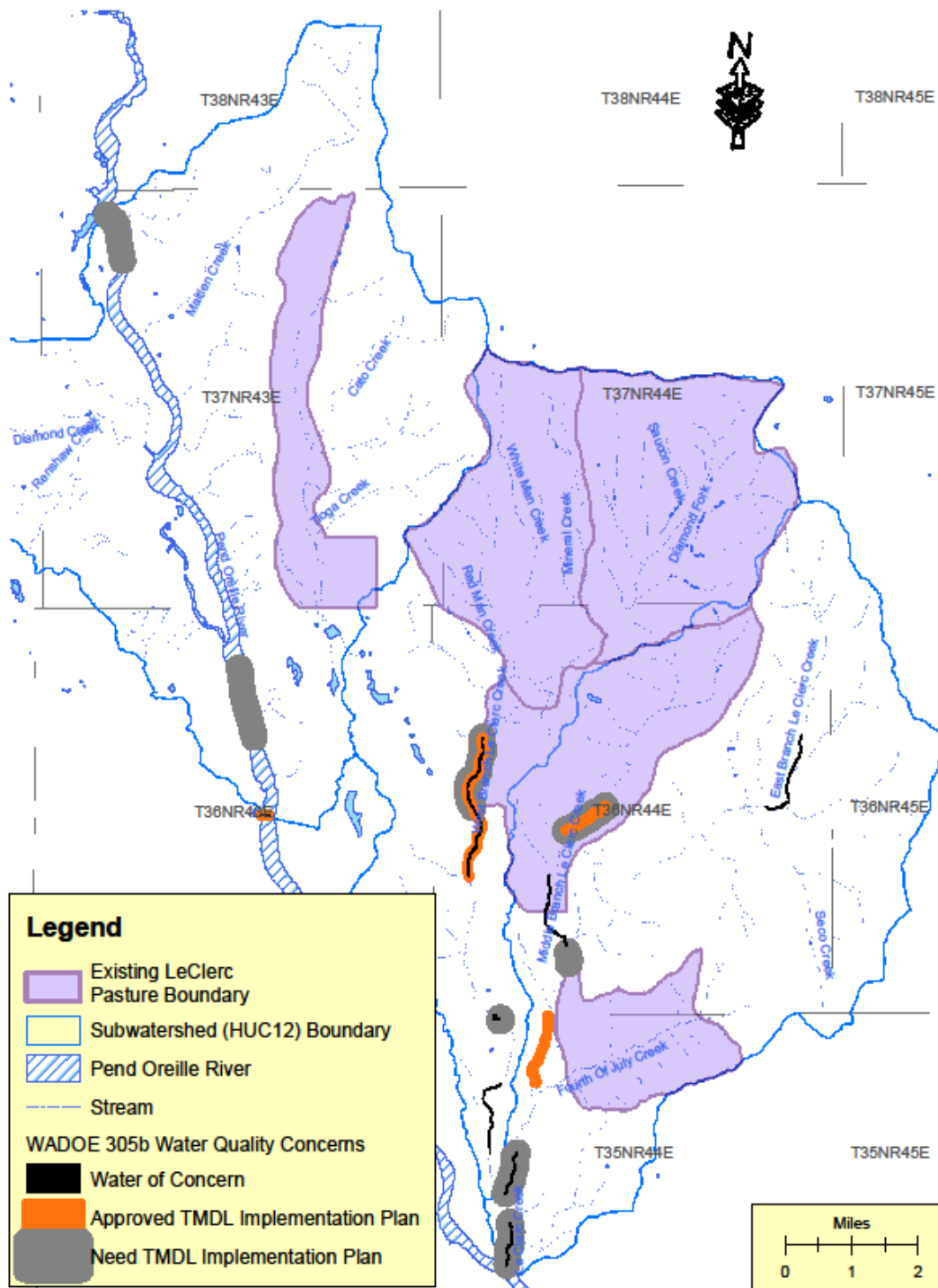


Figure 6. Temperature impaired stream reaches in the LeClerc Creek Allotment.

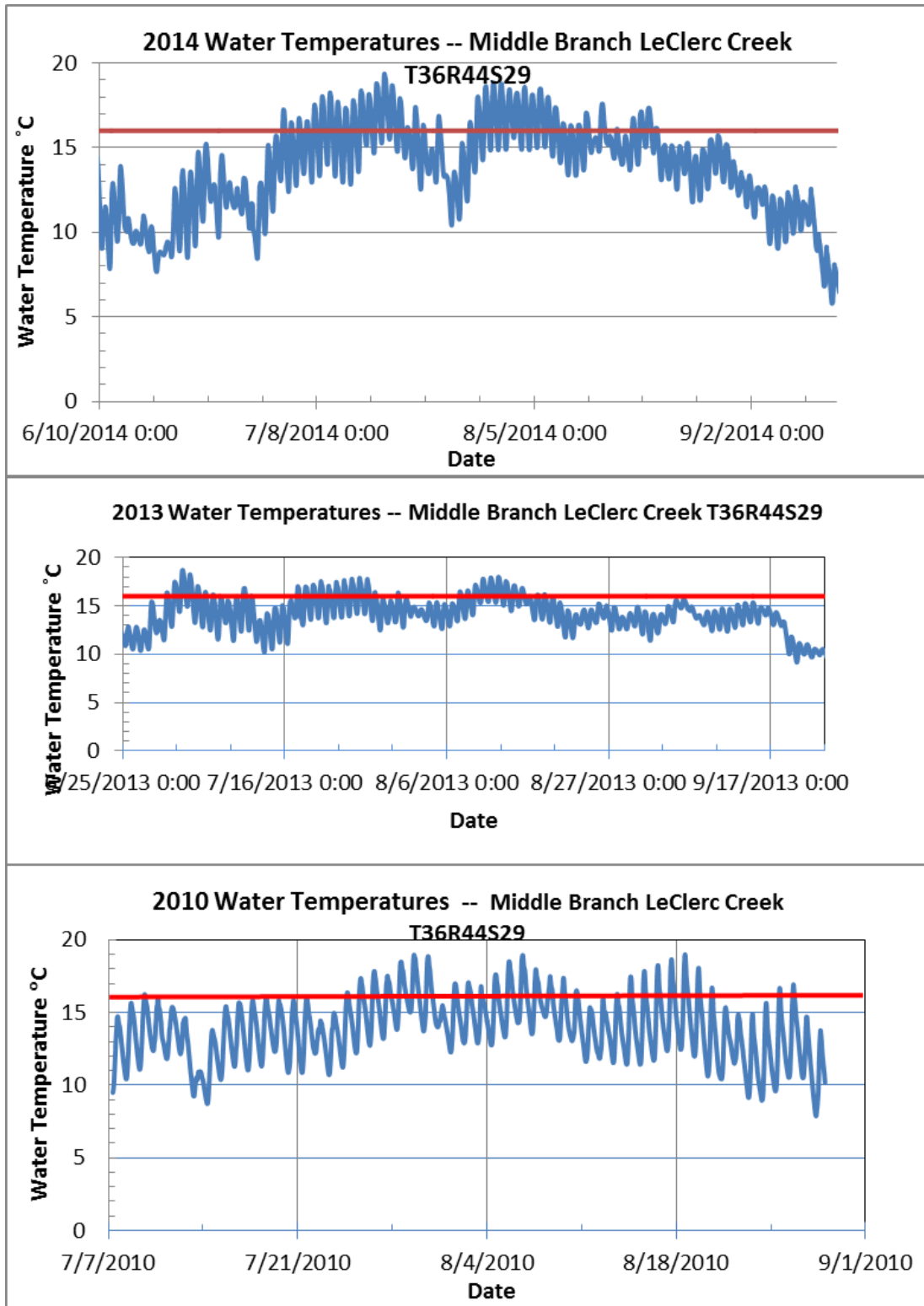


Figure 7. Water temperatures in Middle Branch LeClerc Creek in 2014, 2013, and 2010.

Temperatures above 16°C indicate exceedance of state water quality standard for core salmonid habitat. For native char (bull trout) spawning and rearing, the standard is 12°C.

Fecal Coliform

The presence of fecal coliform bacteria in aquatic environments indicates that the water has been contaminated with fecal material by humans, animals, or both. At the time this occurs, the source water may be contaminated by pathogens or disease producing bacteria or viruses, which can also exist in fecal material. Some waterborne pathogenic diseases include typhoid fever, viral and bacterial gastroenteritis and hepatitis A. The presence of fecal contamination is an indicator that a potential health risk exists for individuals exposed to this water. Fecal coliform bacteria can enter streams through direct discharge of waste from mammals and birds. Untreated fecal material, such as contains fecal coliform, adds excess organic material to the water. The decay of this material depletes the water of oxygen. In worst-case scenarios, this lowered oxygen may kill fish and other aquatic life.

Bacteria from fecal matter enter into streams by direct deposition or from a runoff event with overland flow. Bacteria can remain viable for months after fecal matter has been deposited (Stephenson and Street 1978). Fecal coliform monitoring on the Colville National Forest has shown that some stream reaches have fecal coliform levels that do not meet state standards. There are a mix of stream reaches not meeting state fecal coliform standards; some with cattle activity present and others with no cattle activity present. Research has shown positive correlations of fecal coliform on rangeland is directly related to cattle presence with bacteria levels in streams increasing soon after turn out of cattle and remained high for several months after cattle were removed (Darling and Coltharp 1973, Buckhouse and Gifford 1976, Stephenson and Street 1978, Johnson et al. 1978).

Elevated water temperatures are also known to increase levels of fecal coliform as well as fecal coliform contributions to streams from wildlife. In some instances, stream reaches with high FC levels also have high beaver/otter activity. Stream reaches that have fecal coliform levels that do not meet state standards due to wildlife activity would be considered to be a natural condition and per the WADOE approved Colville National Forest TMDL implementation plan, the Colville National Forest would not increase the fecal coliform levels through management activities. Analysis by Ellison et al. (2009) indicates implementation of effective livestock grazing BMPs had a positive correlation on improving water quality conditions. Monitoring data from 2014 found a West Branch LeClerc Creek reach met state standards in 2014, 2016 and exceeded (did not meet standards) in 2015. A Middle Branch LeClerc Creek reach did not meet state standards in 2014, 2015, or 2016².

Additional discussion of fecal coliform is provided in the Hydrology Report.

Hydrologic Function

Hydrologic function addresses the ability of a basin, watershed, and/or catchment to balance water and sediment yields. More specifically, it defines movement of water through the landscape as precipitation passes through the forest canopy, over and through the soil, and through lakes, rivers, and streams on its way to the ocean. Rosgen (1996) generalizes a “stable channel balance” as the appropriate proportion between sediment discharge, stream discharge, particle size and slope. A change in any one of these variables initiates adjustments in the other variables, thus resulting in a change to the channel.

² A site must have less than 10 percent of the samples in exceedance during the monitoring season to meet Washington State standards. In 2014, the West Branch Leclerc site in section 19 of T. 36, R. 44 met standards with one exceedance in 11 samples and the Middle Branch Leclerc site in section 29 of T. 36, R. 44 did not meet standards with four exceedances in 11 samples.

The water quality and hydrologic function in East and West Branch LeClerc Creek subwatersheds have been detrimentally affected by grazing, fire, and timber harvest for over 100 years. Restoration efforts over the past two decades have beneficially affected these same parameters. Impacts from grazing tend to be localized in meadows, stream reaches with wide floodplains, stream reaches with roads in the adjacent riparian area, and road-stream crossings. Stream reaches within the subwatersheds have localized areas that are in poor and fair condition and are functioning at risk (Table 19). There are multiple efforts by several federal, state, and local agencies to restore this watershed and improve the condition from poor/fair to good/excellent. Please refer to the Hydrology Report for more information on stream channel function, channel widening and hydrologic function.

Table 19. Number of surveys by watershed/catchment

Subwatershed	Named Streams	# stream Surveys	Condition per stream survey
East Branch LeClerc Creek	East and Middle Branches of LeClerc Creek, Fourth of July Creek	22	Excellent=0 Good=11 Fair=9 Poor=2
West Branch LeClerc Creek	West Branch LeClerc Creek, Mineral Creek, White Man Creek, Red Man Creek, Saucon Creek	19	Excellent=0 Good=9 Fair=9 Poor=1
Dry Canyon Catchment	Cato Creek, Tioga Creek	14	Excellent=0 Good=10 Fair=4 Poor=0

The surveys were conducted on main channels and tributaries. Channel morphology predominantly rated good or fair condition. There were zero excellent ratings and three poor ratings. One of the poor ratings is located downstream of a naturally unstable slope that is a source of sediment input for East Branch LeClerc Creek.

Approximately 50 percent of the reaches sampled in the East and West Branch LeClerc Creek subwatersheds are in poor and fair condition and functioning at risk. The fair rating is attributed to several restoration efforts completed over the last two decades.

The difference between grazed and ungrazed stream reaches on Middle Branch LeClerc Creek was observed at exclosures throughout the allotment. Inside (upstream) of a Middle Branch LeClerc Creek exclosure, abundant and diverse riparian vegetation are maintaining flood and erosion control. Outside (downstream) effects are apparent where overflow is spread out over a much larger area lacking in riparian vegetation, with bare soils common to the reach downstream. Forest Service PacFish/InFish Biological Opinion (PIBO) Implementation Monitoring has been collected on the Middle Branch LeClerc Creek just a few hundred feet below this site in 2008 and 2013. Although the data indicates the bank alteration is within the 20 percent forest plan standard at both collection periods, it also shows a downward trend from 15 percent to 19 percent over the 5-year period. In 2008, the allotment was permitting 136 cow/calf pairs. The 2010-2012 season stocking rates were 101 cow/calf pairs. In 2013, the allotment permitted 101 cow/calf pairs and authorized 85 cow/calf pairs for that grazing season because of partial non-use for personal convenience. This data seems to indicate that reduced stocking rates

did not reduce bank instability at the monitoring site though weather conditions and delayed response may also factor in to lack of change.

In some instances where existing fencing crosses streams, it becomes a barrier to the transfer of woody debris, particularly where topography has low relief adjacent to the stream. Where the fence and the road are adjacent, culverts and bridges may be at risk of failing, resulting in elevated episodic sediment delivery to the stream.

Although the range management data concludes that the allotment is not over-utilized, some riparian areas with highly concentrated use show evidence of impacts such as stream bank instability. Other areas of Middle Branch LeClerc Creek that receive appropriate utilization have good riparian health and stream bank stability. The difference in these reaches is most commonly due to accessibility (e.g., road side versus barrier components such as brush or topography).

The Lower Bunchgrass Hanlon Meadow pasture (12 acres) is located on Middle Branch LeClerc Creek. This Hanlon Meadow pasture also includes an unnamed tributary to Middle Branch LeClerc Creek (one-third mile) and wetland area (10 acres). Generally the cattle are kept here short term for staging during unloading and loading periods. Impacts to Middle Branch LeClerc Creek and to the wetland are found inside the Hanlon Meadow pasture. To access the Hanlon Meadow pasture at turnout, the cows are unloaded on the south side of Middle Branch LeClerc Creek and moved across Middle Branch LeClerc Creek into the pen on the north side of Middle Branch LeClerc Creek. For the majority of the season, the Hanlon Meadow pasture acts as an enclosure and protects the portion of the streams and wetlands located within the fenced area. Occasional use of the Hanlon Meadow pasture does occur during the grazing season, typically for short periods of time (1 to 3 days) to hold drifting cows for pick-up so they can be returned to the appropriate pasture or removed from the allotment. At end of season, cattle that have drifted from the Dry Canyon, Mineral Creek, and Upper Bunchgrass pastures back into the lower Bunchgrass pasture are placed in the Hanlon Meadow pasture for pick-up. Cattle that are on the south end of the Hanlon Meadow pasture are driven across Middle Branch LeClerc Creek to be moved into the Hanlon Meadow pasture area north of Middle Branch LeClerc Creek.

Loading cattle at end of season for transport requires the cattle to be moved back across Middle Branch LeClerc Creek to the loading chute on the south side of the creek. A cattle trail is present at the southern edge outside of the Hanlon Meadow pasture fence and crosses a tributary and wetland as well as the main stem of Middle Branch LeClerc Creek. The placement and configuration of the Hanlon Meadow pasture potentially results in additional impacts to water quality concerns present in Middle Branch LeClerc Creek as well as the groundwater dependent wetland area within the Hanlon Meadow pasture.

Overall, the Dry Canyon Catchment is in good condition. The Dry Canyon catchment is a narrow valley with a limited number of acres in meadow status; the pasture has had very little impact over the past few years (Figure 8).



Figure 8. Dry Canyon Meadow

Effects

Analysis Considerations

Potential Effects Related to Grazing

Management issues for protecting water resources as related to grazing include hydrologic function, riparian function, water quality, and cumulative watershed effects. Potential impacts from grazing include soil compaction reducing water storage capacity, infiltration, and productivity. This often results in localized primary, secondary, and tertiary aquatic ecosystem effects which result in impaired hydrologic processes (such as increased surface runoff and soil erosion, decreased water holding capacity and infiltration rates); reduced native plant community production and diversity; compromised stream morphology; and elevated sediment, nutrients, and pathogens inputs into streams (Kauffman and Pyke, 2001). Platts (1991) summarized the following potential effects of livestock grazing to the hydrologic environment:

- Higher stream temperatures from lack of sufficient woody streamside cover,
- Excessive sediment in the channel from bank and upland erosion,
- High coliform bacteria counts from upper watershed sources,
- Channel widening from hoof-caused bank sloughing and later erosion by water,
- Change in the form of the water column and the channel it flows in,
- Change, reduction, or elimination of vegetation,
- Elimination of riparian areas by channel degradation and lowering of the water table.

Consideration of Past Activities

A list of past, present, and reasonably foreseeable activities within the East and West Branch LeClerc Creek subwatersheds are provided in appendix C. Past actions within the West and East Branch LeClerc Creek subwatersheds and Dry Canyon Catchment include homesteading, grazing, timber harvest, road construction, firewood cutting, recreation, Native American gathering sites, and stream restoration (i.e., road relocations, road improvements, in-stream habitat improvements).

The impact of these diverse activities has varied in both context and intensity. Based on personal observations (Lawler 2011-2014) the trend for many of the localized impacted riparian areas within the allotment boundary appears to be static or downward. In the last 3 years, efforts to improve stream conditions and fish habitat have been implemented on Middle Branch LeClerc Creek and Upper Whiteman Creek. These efforts include relocation of 2.5 miles of riparian road and in-stream placement of large wood and are expected to result in measurable beneficial results within the next 5 to 10 years.

Cattle impacts to stream vegetation, water quality, bank stability, and wetland and meadow complexes are primarily in localized high use areas as identified in the LeClerc Range soils report (Jimenez 2015) (e.g., homestead meadows, low gradient stream segments with wide floodplains, above and below road crossings, roads located within the RHCA, and wetland meadows).

Present and reasonably foreseeable future actions on National Forest System (NFS) land in the West and East Branch LeClerc Creek subwatersheds that overlap in time and space with effects from LeClerc include the Hanlon Vegetation Management project, Box Canyon dam relicensing stream habitat restoration projects, fish passage projects (removing or replacing at least seven fish barrier culverts), West Branch LeClerc stream restoration activities such as rerouting a West Branch LeClerc Creek reach to its historic channel, relocating approximately 1.8 miles of NFS Road 1935000, a segment that has high sediment delivery to the West Branch LeClerc stream system, and removing legacy crib dams.

The Hanlon Vegetation Management Project is expected to treat approximately 7,400 acres. The Hanlon project has the potential to increase transitory range. Other planned management activities in this area would continue: Hanlon Vegetation Management Project which includes additional fencing, Fourth of July in-stream habitat restoration, channel restoration, culvert replacements, and road decommissioning and relocation projects. Completion of the Middle Branch LeClerc enclosure would result in beneficial improvements to riparian resource on Lower Middle Branch LeClerc Creek.

Recent restoration activities which have been completed include a reroute of the Middle Branch LeClerc Road 1935000 along the Middle Branch of LeClerc Creek, in-stream restoration by POPUD in Middle Branch LeClerc and Whiteman Creeks (large wood placement), and fish passage culvert replacement on NFS Road 1935011 in upper Middle Branch LeClerc Creek. In 2003, obliteration and relocation of approximately 2 miles of the East Branch road located within RHCA of East Branch LeClerc Creek was completed.

Other recent, current, or foreseeable future activities within or near the analysis area include Pend Oreille County road maintenance and improvements, Pend Oreille County land management (harvest), private land owner land management (harvest) and road improvements, Washington Department of Natural Resources (WADNR) land management (harvest), Pend Oreille Public Utility Department in-stream restoration and road improvement projects on

multiple ownerships, Stimson road improvements or abandonment, and Stimson harvest (see Appendix E).

Alternative A

Direct and Indirect Effects

Under Alternative A, no new improvements would be installed. Cattle drift would likely continue to impact hydrologic function and water quality as a result of compromised streambank stability, reduced vegetation complexity, over-widened stream channels, and elevated stream temperatures, sediment loading, and bacteria counts. Reduction in impacts to streams would not likely occur since upland water sources would not be developed to encourage cattle away from the streams and there would not be any additional hardened stream crossings for cattle to protect stream channels.

Water Quality

The direct effect of continued grazing on this allotment would be to continue to degrade certain wetlands and stretches of the streambanks that are presently sloughing, compacted, and lacking in vegetative cover. The width/depth ratio will remain too large for the channel type because of the bank degradation and aggradation of the streambed. The wider shallower channel and lack of canopy and shade increases the water temperature, especially in the critical summer months.

Cattle concentration and intensity has limited growth of riparian vegetation leading to reduced canopy cover as assessed in existing condition. At localized areas where riparian grazing is permitted or where cattle have access to the stream to drink at hardened crossings, water quality is expected to be impacted because grazing reduces riparian cover and modifies vegetation communities, which can lead to temperature increases. Temperatures would continue to not meet INFISH RMO and state water quality standards. The watershed would continue to be functioning at unacceptable risk, because of high water temperatures.

Cattle would continue to deposit fecal material near or in streams, so fecal coliform levels would continue to not meet the state water quality standards.

The sediment regime would continue to be negatively affected. Trampling and bank shear are likely to continue in localized areas, accelerating bank erosion, decreasing soil cover, and increasing sediment and turbidity levels.

Some hardened crossings are deteriorating from lack of maintenance or ineffective installation and would likely continue to release elevated levels of sediment and compromise bank stability. Reduction in impacts to streams would not likely occur since troughs would not be developed to encourage cattle away from the streams.

Excessive degradation of riparian vegetation exists particularly along the banks of the East and Middle Branches. Obliteration and rehabilitation of riparian roads along the East Branch are slowly improving floodplain connectivity. Conditions elsewhere including the West Branch, Fourth of July, Whiteman and Mineral Creeks are not in a similar state. The cattle have post holed small wetlands throughout the area, which has been documented to cause water tables to lower (Skovin 1984). Continued post holing would further degrade the water table.

Hydrologic Function

Existing stream and riparian habitat conditions are expected to remain at current levels under this alternative, so the LeClerc Creek drainage will continue to be functioning at risk.

This analysis does not detail optional management strategies the permittees can use to attain improved resource conditions. Some management strategies are not mandated, but are administratively available to implement. These measures include, but are not limited to: increased riding (locating and moving cattle) and strategic placement of supplements, (i.e., salt or nutrient blocks) which attract livestock away from riparian areas. Proper placement of mineral supplements can be an effective method for improving distribution. Livestock usually go from water, to grazing, then to salt; therefore, it is not necessary to place salt near watering areas. Livestock can be drawn to areas they would otherwise avoid by placing salt away from water (Holechek et al. 2001).

The flexibility to promptly implement one or more of these measures allows management to take actions improving livestock distribution and forage utilization, which would lead to improved vegetative conditions. However, without a comprehensive adaptive management strategy, certain actions are not allowed without additional analysis.

Under Alternative A, the watershed would continue to be functioning at unacceptable risk due to high water temperatures.

Cumulative Effects

The water quality and hydrologic function in East and West Branch Leclerc Creek subwatersheds have been detrimentally affected by grazing, fire, and timber harvest for over 100 years. Restoration efforts over the past two decades have beneficially affected these same parameters.

Overhead canopy has been reduced and is now lacking in riparian areas by fires, roads, timber harvest and grazing. Current road decommissioning and instream improvements work by PUD, Kalispel Tribe, and Forest Service is targeting reduced stream temperatures. Current grazing management will not contribute to attainment of this INFISH riparian management objective or state water quality standards.

Recent and future aquatic restoration efforts would be expected to continue and provide ecological integrity and obtainment of riparian management objectives (including stream temperature) more quickly; and cooperation with local tribe desires would be realized (INFISH, p. A.1-9).

Roads, recreation, and grazing all contribute to the change from a pulse regime to a chronic sediment regime. Recent restoration actions, including wood placement and road relocation have begun to address these chronic sediment sources. The sediment regime will still experience chronic sedimentation from roads and recreation. Current projects from the Forest Service and partners are addressing chronic sedimentation sources. Most of the sediment would come from natural events. Because beaver are attracted to wood complexes and the restoration actions include wood placement, the number of beaver dams may increase and improve sediment storage (Wildlife Report).

In addition, obliteration and rehabilitation of riparian roads along the East Branch are slowly improving floodplain connectivity.

A riparian enclosure on the lower Middle Branch LeClerc Creek that was planned and approved prior to this project would help reduce and possibly eliminate cattle impacts to stream reaches on Lower Middle Branch LeClerc Creek.

Cumulatively, stream and riparian habitat conditions would be expected to remain at current levels, and the LeClerc Creek drainage would continue to be functioning at risk.

Alternative B

Direct and Indirect Effects

Under Alternative B, the allotment would be vacated and the existing term grazing permit would be cancelled pursuant to Forest Service Handbook (FSH) 2209.13 part 16.24 which references Code of Federal Regulations (CFR) chapter 36, part 222.4(a)(1). Effects during those two years are covered under Alternative A.

Water Quality

Alternative B would eventually eliminate impacts from grazing through termination of the grazing permit. Over time, as wood builds up and floods deposit sediment on floodplains, the channels would narrow and the vegetation would shade the water, so temperatures would move toward the INFISH RMO. Removing grazing would contribute to attainment of the state water quality standard for fecal coliform. Cattle would no longer deposit fecal material next to streams.

Hydrologic Function

The direct effect of discontinued grazing on this allotment would be to allow the passive restoration of certain stretches of the streambanks that are presently sloughing, compacted, and lacking in vegetative cover. The width/depth ratio would overtime reduce. Shallow-rooted non-native species in RHCAs would be replaced by native deeper rooted native species, which can withstand higher flows. Areas with high cattle impacts would be expected to improve as vegetation and bank stability recover over the next few decades, some areas faster than others. This recovery is also expected to result in deeper, narrower, and healthier stream channels.

The impacts that cattle have on the sediment regime would lessen as streambanks heal. Beaver would be expected to move into areas, as willows, alder, and other riparian shrubs reach desirable size. The beaver dams created would improve sediment storage.

Removing cattle from the allotment would allow sensitive stream reaches, wetland meadows and riparian areas with high cattle use within the West and East Branch LeClerc Creek subwatersheds to improve and move toward a properly functioning condition.

Overall, the benefits of Alternative B, as compared to the other alternatives, would be the most advantageous to the hydrologic resource including the indicators of stream temperature, fecal coliform, stream channel function, sediment regime, and flows, wetlands, and water table.

Cumulative Effects

The water quality and hydrologic function in East and West Branch Leclerc Creek subwatersheds have been detrimentally affected by grazing, fire, and timber harvest for over 100 years. Restoration efforts over the past two decades have beneficially affected these same parameters.

Overhead canopy has been reduced by fires, roads, timber harvest and grazing, and is now lacking in riparian areas, affecting stream temperature. Current road decommissioning and instream improvement activities by PUD, Kalispel Tribe, and the Forest Service is working toward reduced stream temperatures. Removing grazing would contribute to attainment of the INFISH riparian management objectives for temperature.

Recent and future aquatic restoration efforts would be expected to continue and provide ecological integrity and obtainment of riparian management objectives (including stream temperature) more quickly; and cooperation with local tribe desires would be realized (INFISH, p. A.1-9).

Roads, recreation, and grazing all contribute to the change from a pulse regime to a chronic sediment regime. Recent restoration actions, including wood placement and road relocation have begun to address these chronic sediment sources. The sediment regime will still experience chronic sedimentation from roads and recreation. Current projects from the Forest Service and partners are addressing chronic sedimentation sources. Most of the sediment would come from natural events. Because beaver are attracted to wood complexes and the restoration actions include wood placement, the number of beaver dams may increase and improve sediment storage (Wildlife Report).

In addition, obliteration and rehabilitation of riparian roads along the East Branch are slowly improving floodplain connectivity, which would be further supported by removing cattle from the allotment under Alternative B.

A riparian enclosure on the lower Middle Branch LeClerc Creek that was planned and approved prior to this project would help reduce and possibly eliminate cattle impacts to stream reaches on Lower Middle Branch LeClerc Creek.

Cumulatively, the beneficial effects of removing cattle from the allotment under Alternative B in conjunction with the past, ongoing and reasonably foreseeable restoration efforts would eventually have a beneficial effect on water quality and hydrologic function.

Alternatives C and D

As described in chapter 2 (Alternatives Considered in Detail), both Alternatives C and D would continue grazing within the LeClerc Creek Allotment area, with proposed modifications to the permit terms and conditions to address current management and resource concerns. Alternative D would include modifications (beyond those proposed in Alternative C) to address the permittee's operational concerns.

Both alternatives incorporate an adaptive management strategy, in an ongoing effort to meet, or trend toward desired conditions (page 7 and by resource in chapter 3, as appropriate). In localized areas where grazing impacts (such as streambank sloughing, compaction, and lack of vegetation cover) continue to occur, adaptive management would be implemented, as described in chapter 2.

Due to the similarity of the alternatives, the description of effects is combined, highlighting those effects the alternatives have in common and those that differ between the alternatives. More detailed discussion of effects is provided in the Hydrology Report.

Direct and Indirect Effects

Water Quality

Under both Alternatives C and D, the changes in grazing management would generally improve the condition within the drainage, moving the watershed toward a properly functioning condition. Areas with high cattle impacts would be expected to improve as vegetation and bank stability recover over the next few decades, some areas faster than others. This recovery is also expected to result in deeper, narrower, and healthier stream channels.

Under both Alternatives C and D, the meadows adjacent to the north side of West Branch LeClerc Creek in T. 44, R. 36, section 8 N ½ (Figure 11) would be expected to continue to receive high use, which is likely to increase during the Mineral Creek pasture period of use after effective boundaries are implemented. As part of the project design criteria, operative pasture boundaries would support effective pasture rotations and recovery of stream channel morphology, ultimately improving water quality in this area. Confidence level is moderate to low that this would reduce drift of cattle back to the riparian areas particularly on Middle Branch LeClerc Creek that currently receive heavy cattle use throughout the grazing season as a result of the existing drift patterns.

Under Alternative D (but not Alternative C), there would be a 110 percent increase in streams that are within the proposed pasture and accessible to cattle, through the addition of the acres in the Coyote Pass area of the Mineral Creek pasture. Approximately 15 miles of streams would be added to the Mineral Creek pasture within the Dry Canyon catchment. These streams are predominantly intermittent streams that flow during spring run-off. Water quality effects to these streams are expected to be limited to none as long as the area is grazed in mid to late summer.

Proposed changes to the allotment and pasture boundaries under Alternative D are likely to have an increase in areas accessible within the East Branch LeClerc Creek subwatershed and Dry Canyon catchment. The area of Lower Bunchgrass pasture would be approximately double the area proposed in Alternative C.

Under Alternative D only, nearly 2,200 acres would be added to the Mineral Creek pasture within the Dry Canyon catchment. There would likely be an increase in access to glacial pothole lakes (such as Caldwell Lake) because effective pasture boundaries are not easily achieved on county roads and private land ownership. Streams located in this area (Cato, Tioga and unnamed tributaries), may have increased access to stream channels depending on the amount of active herding of the cows into this area during the pasture use period, and levels would be determined through monitoring. Increased access would be expected to reduce water quality due to a reduction in shade, increased bank trampling, increased sediment delivery, over-widening of the stream, and increased fecal matter. However, monitoring and adaptive management would be expected to provide protection to aquatic resources.

Also under Alternative D, the 13-acre Hanlon Meadow (located at the southern edge of Lower Bunchgrass pasture) is proposed to be a separate pasture available for grazing throughout the season until thresholds are met. Approximately half of the Hanlon Meadow pasture area is a wetland/stream complex, which drains into Middle Branch LeClerc Creek, designated bull trout critical habitat. An unfenced segment of about 150 feet of Middle Branch LeClerc Creek is located within the Hanlon Meadow pasture. This segment of stream must be crossed to move cattle in or out of the main body of the Hanlon Meadow pasture since the loading chute is located south of the creek and the main body of the pen is north of the creek, resulting in adverse

impacts to stream and critical habitat morphology at this location. If these adverse impacts continue, an adaptive management solution would be used to remove the impacts.

With the proposed change in allotment boundaries, cattle are expected to be drawn to areas which were less utilized previously (e.g. upland meadow habitat north of lower Middle Branch LeClerc Creek, Upper Bunchgrass and Mineral Creek pastures). Effective pasture boundaries are expected to be implemented and are highly likely to result in increased cattle activity along streams within the Mineral Creek and Upper Bunchgrass pastures because cattle drift would be negligible compared to the existing condition (e.g. West Branch LeClerc, Mineral, and Whiteman Creeks). Alternative D would add riparian monitoring trigger points and thresholds for streambank alteration, width to depth ratios, stubble height, and utilization (Table 4 and Table 5 in Chapter 2).

By modifying grazing practices when the monitoring trigger points and thresholds are met, INFISH RMOs will be maintained and/or improved, consistent with INFISH standard and guideline GM-1:

Modify grazing practices (e.g., accessibility of riparian areas to livestock, length of grazing season, stocking levels, timing of grazing, etc.) that retard or prevent attainment of Riparian Management Objectives or are likely to adversely affect inland native fish. Suspend grazing if adjusting practices is not effective in meeting riparian management objectives.

These areas are currently undergoing aquatic restoration efforts including large wood placement and bank stability.

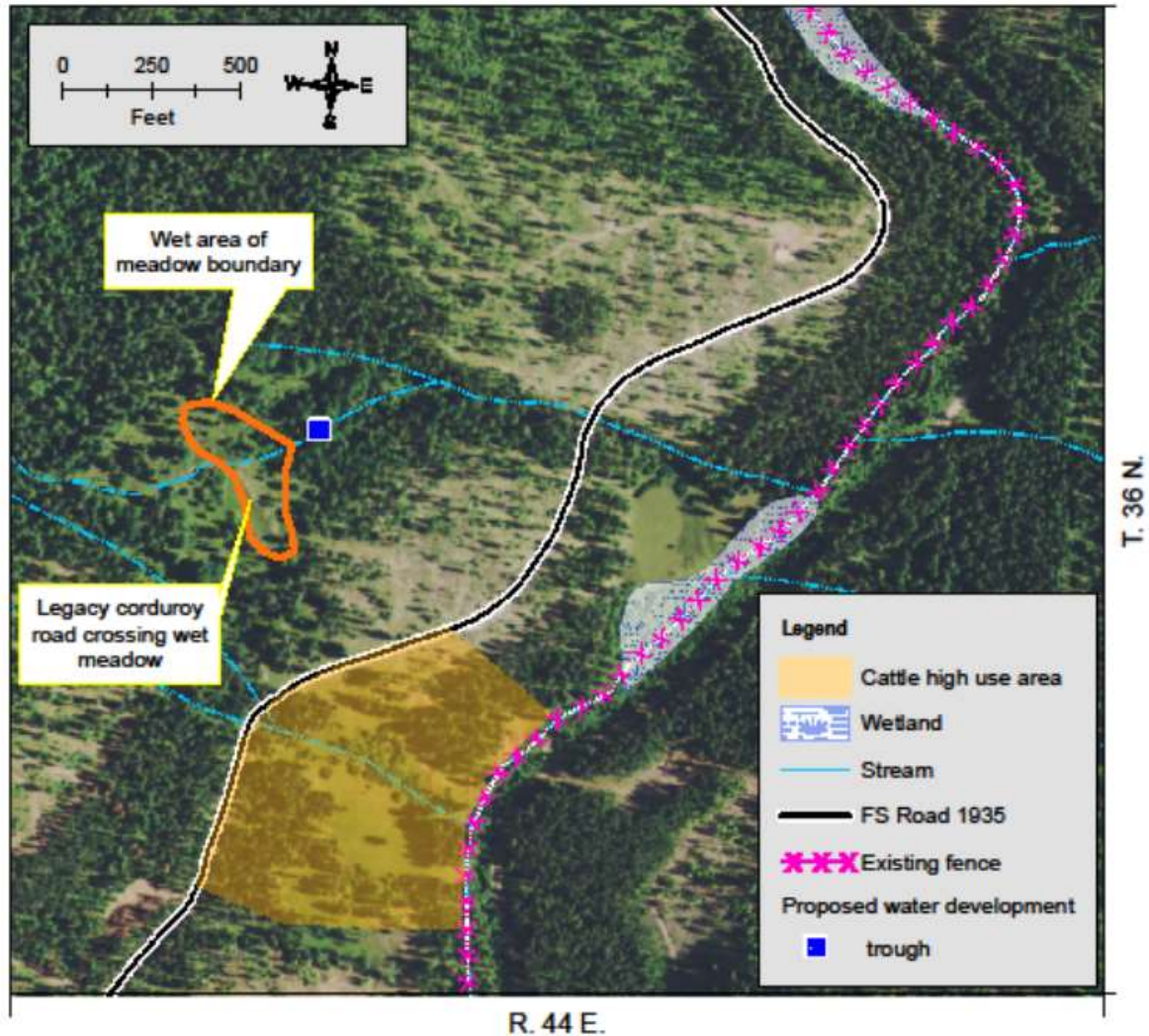


Figure 9. Meadow/wetland/tributary complex in Lower Bunchgrass pasture adjacent to the Middle branch LeClerc Creek road (NFS Road 1935) with high cattle use and proposed trough location.

Hydrologic Function

New improvements would be installed under both Alternatives C and D, likely resulting in a reduction in impacts to streams, since cattle drift would be minimized. Adding troughs and developed hardened crossings and improving two existing hardened crossings in the LeClerc Creek Allotment would likely reduce impacts to streams, since troughs would encourage cattle away from the streams. Overall, water developments and stock troughs are likely to reduce adverse impacts on streams and associated riparian areas (George et al. 2011, Hudson 2008), although they are not expected to remove all cattle use. Hudson (2008) references Miner et al. (1992) to suggest water tanks are effective at drawing cows away from riparian areas. Miner et al. (1992) studied cow behavior during a winter operation where cows were fed hay in close proximity to a water tank at 100 yards away from the stream. Per discussion on March 3, 2014 with Richard Bowman, owner-operator of Thousand Hills Ranch near Troy, ID, troughs for the purpose of improving riparian areas without fencing of the RHCA would not be expected to discontinue use of the riparian areas. Several studies have been performed regarding the use of stock troughs to draw cattle away from streams and riparian areas and in general the conclusion is they are likely to be effective when associated with temporary electric fencing, salting, and

other similar management activities (Chamberlain and Doverspike 2001, Goebel 1956, McInnis and McIver 2001, Porath 2002, and Wyman et. al. 2006). Goebel (1956) concluded that appropriate placement of troughs in areas previously receiving little or no utilization were effective in decreasing cattle concentration in overgrazed areas, increasing cattle use of areas with minimal to no utilization, reduction in trailing between food source and watering sites, and allowing regrowth of protective vegetation surrounding the previous high use water holes.

Under Alternatives C and D, there would be a reduction in the amount of localized areas within the LeClerc Allotment where cattle have access, therefore a reduction in trampling, substrate compaction, sedimentation, bank erosion, and improvement of the vegetation community would be expected. The sediment regime would continue to be negatively affected from the few localized sites that occur before adaptive management actions can remove the impact.

Another factor in the sediment regime is the loss of sediment storage from beaver dams. There has been a reduction of habitat quality for beavers. Evidence of recent and old beaver activity exists on the larger creeks in the allotments. On the LeClerc Creek Allotment, willows, alder, and other riparian shrubs are presently well browsed by livestock on certain local stream segments such as the lower portions of the Middle Branch LeClerc Creek (Borysewicz 2017). Reduction of late-season browsing should improve the density and diversity of existing plants and encourage regeneration on these sites.

East Branch LeClerc Creek

Under Alternatives C and D, the greatest beneficial effect to the East Branch LeClerc Creek subwatershed is expected from changes to the allotment and pasture boundaries (Figure 11). A 53 percent reduction in streams within the pastures of the East Branch LeClerc Creek subwatershed is proposed under both Alternatives C and D (see Table 20). Fourth of July pasture is proposed for removal from the allotment and is expected to reduce hydrologic impacts to 13 miles of streams within the East Branch LeClerc Creek subwatershed. The affected portion of East Branch LeClerc Creek is expected to reduce from approximately 26 percent to less than 14 percent of the subwatershed (see Table 20). The overall impacts to the East Branch LeClerc Creek subwatershed hydrology are expected to be minimal and located in the upper Middle Branch of LeClerc Creek and in the upland areas north of the lower reaches of Middle Branch LeClerc Creek.

Tributaries with the greatest potential to be impacted are those with proposed stock troughs; however, with proper implementation and adherence to BMPs, troughs would be placed outside of the RHCA management zone. If placement of a trough is determined to be not feasible outside of the RHCA management zone, concurrence between Range, Fisheries, Hydrology, and Soils specialists would occur to establish the best site as required by INFISH GM-3. Provided monitoring shows the need for adaptive management and troughs are the tool selected to address the adverse condition, appropriate placement of the trough would be expected to have a beneficial effect in the surrounding riparian management area. Continued monitoring after placement of the trough would determine if additional implementation is necessary to address adverse impacts to stream morphology and/or adjacent RHCA (e.g. fencing).

The hydrologic function in Lower Bunchgrass is expected to improve within the riparian area along lower reaches of Middle Branch LeClerc Creek. This expected improvement to the hydrologic system is due to change in allotment boundary, which removes the lower portion of Middle Branch LeClerc Creek from the allotment. Overall effects to the hydrology of the East Branch LeClerc Creek subwatershed are expected to be limited to upper Middle Branch LeClerc

Creek, a few tributaries on the north side of Middle Branch LeClerc Creek, a few wetland meadows, and a few dry upland meadows.

The concentration of cattle on the riparian area along lower Middle Branch LeClerc Creek is expected to decrease substantially with the proposed change in the allotment boundary and additional fencing. Appropriate placement of the fencing is critical to determining beneficial or adverse impacts to the wetland and tributary at this location. Adverse impacts would be expected to be addressed through monitoring indicators and management adjustments implemented in a timely manner. Further beneficial effects to streams and wetlands would be expected downstream from removal of two cattle crossings at southwest corner of the Hanlon Meadow pasture.

Stream reaches in the analysis area where potential impacts compromise the hydrologic environment and result in adverse effects include the upper Middle Branch LeClerc Creek reaches that are accessible in the area of NFS Road 1935011, the West Branch LeClerc Creek reach (T. 36 N., R. 44 E., sections 3 and 4) below the 1935000 crossing (T. 36 N., R. 44 E., section 33), west Branch LeClerc Creek reach in T. 36 N., R. 44 E., section 8 in the vicinity of a legacy crib dam, and the temperature impaired reach of West Branch LeClerc Creek in the Diamond City area (T. 36 N., R. 44 E., section 18 and 19). These areas would be monitored (see monitoring section of the Hydrology Report) and adaptive management actions applied to reduce impacts where determined to be necessary.

Impacts may continue from cattle drifting onto private land. About 3,700 feet of temperature impaired reach of Middle Branch LeClerc Creek, located on private ownership, would not be fenced in section 21. Cattle would likely move across the creek along this reach to graze and access the limited National Forest lands adjacent to the private sections south of Middle Branch LeClerc Creek. Cattle using this area to cross this impaired reach is likely to directly result in adverse effects to the TMDL impaired stream reach as compared to Alternative C.

West Branch LeClerc Creek: The overall impacts to the hydrology of West Branch LeClerc Creek subwatershed are expected to reduce adverse effects. A 12 percent increase in streams accessible by cattle is proposed by the changes to the pasture boundaries within the WBLC subwatershed (see Table 20). The most substantial increase of stream access is within the Dry Canyon pasture adjacent to West Branch LeClerc Creek and its tributaries to the west. Some of the stream reaches being included within the proposed allotment boundary are located in fairly steep terrain and may receive minimal to no cattle use. Although there is no change in percentage of subwatershed being utilized, the proposed changes in management practices may increase activity in the Diamond City area as well as riparian areas along West Branch LeClerc Creek, Mineral Creek, and upper Whiteman Creek. This increased activity in these areas would help to balance out higher use in other portions of the allotment. Within the proposed, and compared to the current, allotment boundaries in the West Branch LeClerc Creek subwatershed the allotment would be confined to the area with higher stream concentration, providing less upland area available for cattle grazing. If monitoring shows adverse effects to any INFISH RMO, adaptive management actions would be implemented in accordance with INFISH GM 1-3. On the ground, the majority of the use within the proposed allotment would likely be similar to the existing condition within the West Branch LeClerc Creek subwatershed. Monitoring road stream crossings and stream reaches with accessible meadows adjacent to them annually for adverse cattle impacts would assist the district ranger with information to know when and where to implement adaptive management tools to maintain or improve the hydrologic function of the streams and adjacent RHCA in the allotment area.

Grazing in Upper Bunchgrass pasture is predominantly limited to upland forage and road and stream crossings with a few small isolated streamside meadows. Effects to the West Branch LeClerc Creek subwatershed from grazing use in the Upper Bunchgrass pasture with current numbers permitted, effective boundary management, and rotational pasture use is expected to result in unmeasurable change to hydrologic impacts. Monitoring of the road and stream crossings along NFS Road 1935000 is recommended (see monitoring section of the Hydrology Report) and would determine whether adaptive management actions need to be implemented.

Dry Canyon Catchment: The overall impacts to the hydrology of Dry Canyon Catchment are expected to be a reduction in adverse effects. A 10 percent increase in streams located within the pastures of the Dry Canyon Catchment is proposed (see Table 20). Dry Canyon Pasture is likely to have limited use of up to two weeks, typically at the end of the season in October.

The effect of the additional 2,765 acres of land proposed to be added to the Dry Canyon pasture in the West Branch LeClerc Creek subwatershed would be the same as described in alternative C. The fencing around the proposed southwest pasture boundary between Lower Bunchgrass, Mineral Creek, and Dry Canyon pastures is to be reinforced to control drift in this area. Monitoring is expected to determine if additional fencing on National Forest System land is necessary to control the drift in the area between Diamond City and Dry Canyon, much of which includes privately owned land. Caldwell Lake would remain just outside of the allotment to the west of West Branch LeClerc Creek County Road 3503 and drift into the area may or may not continue at the current extent. Effective drift controls are expected to be pursued to contain the cattle within the allotment through monitoring and adaptive management implementation.

This area has very few streams that have running water after spring runoff. The streams are not connected to any surface outflow, but rather tend to subsurface and drain into the glacial pothole lakes south of Dry Canyon pasture. If cattle movement into the Dry Canyon pasture adversely affects stream reaches and RMOs, adaptive management actions would be implemented in accordance with INFISH GM 1. Adverse effects will be minimized by following design elements and INFISH.

Cumulative Effects

Timber harvest and associated road and skid trail construction in the past has occurred within the riparian area. Mixed effects result from timber harvest; there may be negative effects because stream access for cattle and recreation is often enhanced while at the same time there may be positive effects because that transitory range lands provide grazing opportunities away from the streams.

The water quality and hydrologic function in East and West Branch Leclerc Creek subwatersheds have been detrimentally affected by grazing, fire, and timber harvest for over 100 years. Restoration efforts over the past two decades have beneficially affected these same parameters.

Overhead canopy has been reduced by fires, roads, timber harvest and grazing, and is now lacking in riparian areas, affecting stream temperature. Current road decommissioning and instream improvement activities by PUD, Kalispel Tribe, and the Forest Service is working toward reduced stream temperatures. Improving grazing operation and management would contribute to attainment of the INFISH riparian management objectives for temperature.

Recent and future aquatic restoration efforts would be expected to continue and provide ecological integrity and obtainment of riparian management objectives (including stream

temperature) more quickly; and cooperation with local tribe desires would be realized (INFISH, pp. A.1-9).

Obliteration and rehabilitation of riparian roads along the East Branch are slowly improving floodplain connectivity.

Roads, recreation, and grazing all contribute to the change from a pulse regime to a chronic sediment regime. Recent restoration actions, including wood placement and road relocation have begun to address these chronic sediment sources. The sediment regime will still experience chronic sedimentation from roads and recreation. Current projects from the Forest Service and partners are addressing chronic sedimentation sources. Most of the sediment would come from natural events. Because beaver are attracted to wood complexes and the restoration actions include wood placement, the number of beaver dams may increase and improve sediment storage (Wildlife Report).

The reasonably foreseeable harvest activities planned by Stimson are predominantly located south and east of the Alternative C proposed allotment boundary and within the proposed allotment boundary for Alternative D. The harvest activities alone are expected to have little to no effect on the hydrology of the area due to best management practices and mitigation required by Washington State Forest Practices. However, these areas are typically known to result in cattle drift off the allotment or between pastures. The road maintenance, abandonment, and improvement activities are expected to have minimal short term impact to the hydrology as best management practices and mitigation requirements are in place per Washington State Forest Practices and are expected to be followed.

Under Alternatives C and D, pressure on riparian areas would be reduced, which may result in increased riparian vegetation health and increased shade. The overall effects of implementing adaptive management strategies to the aquatic environment and water quality condition of the subwatersheds analyzed would be dependent on the extent and frequency with which the strategies are implemented, and are expected to range between minimal/no change to beneficial in the long term. Short-term adverse effects are likely where in stream projects would occur. Riparian and stream habitats would be expected to maintain or improve and move toward a functioning condition that would maintain healthy populations of riparian and aquatic species. Our ability to effect change on private ownership would remain limited (i.e., TMDL-impaired reach of Middle Branch LeClerc Creek in section 21 of T. 36 N., R. 44 E.). The implementation of these tools would be temporally constrained by the monitoring data collection period essential to identifying where implementation of these strategies and tools is necessary.

Cumulatively, restoration projects would be expected to move the water quality of the subwatersheds in an upward trend; however, foreseeable harvest activities could result in additional cattle access to the streams resulting in a downward trend to water quality, and high use areas for cattle are left with continued adverse effects. The effects on the subwatersheds are adverse due to increased accessibility and limited improvements from aquatic restoration projects, which generally shift cattle impacts and do not stop impacts.

Table 20. Pasture and watershed statistics, by alternative.

Subwatershed	Pasture	Alt. A Stream miles in pasture	Alt. A Pasture size (acres)	Alt. A % of subwatershed in the pasture	Alt. C Stream miles in pasture	Alt. C % change in stream miles in pasture	Alt. C Pasture size (acres)	Alt. C % of subwatershed in the pasture	Alt. D Stream miles in pasture	Alt. D % change in stream miles in pasture	Alt. D Pasture size (acres)	Alt. D % of subwatershed in the pasture
East Branch LeClerc Creek	4 th of July	13	2,460	9	0	-53% (-18.5 miles)	0	0	0	-8% ¹ (-2.6 miles)	0	0
26, 641 acres	Lower Bunchgrass	23	4,415	17	17		3,478	13	33		6,520	24
	Upper Bunchgrass	0	0	0	0.5		157	<1	.05		157	<1
West Branch LeClerc Creek	Upper Bunchgrass	35	6,691	31	33	12% (+8 miles)	5,254	24	33	12% (+8 miles)	5,254	24
21,654 acres	Mineral Creek	27	5,603	26	25		4,838	22	25		4,847	22
	Lower Bunchgrass	5	1,205	6	2		894	4	2		894	4
	Dry Canyon	0	0	0	15		2,772	13	15		2,772	13
Maitlen (East of Pend Oreille River)	Dry Canyon ²	10	2,985	14	11	10% (+1 mile)	3,245	15	11	110% (+11 miles)	3,245	15
22,040 acres	Mineral Creek	0	0	0	0				10		2,176	10
Dry Canyon Catchment	Dry Canyon	10	2,985	31	0	0	0	0	11	110% (+11 miles)	3,245	34
9,500 acres	Mineral Creek	0	0	0	0	0	0	0	10		2,176	23

¹ Under Alternative D, the decrease in stream miles in the East Branch LeClerc Creek subwatershed is a balance between a 94% increase in 10 stream miles in Lower Bunchgrass pasture, and a 100% reduction of 13 miles of stream in the 4th of July pasture.

² An additional 52 acres of Dry Canyon pasture is located in the West Branch LeClerc Creek subwatershed (0.5%).

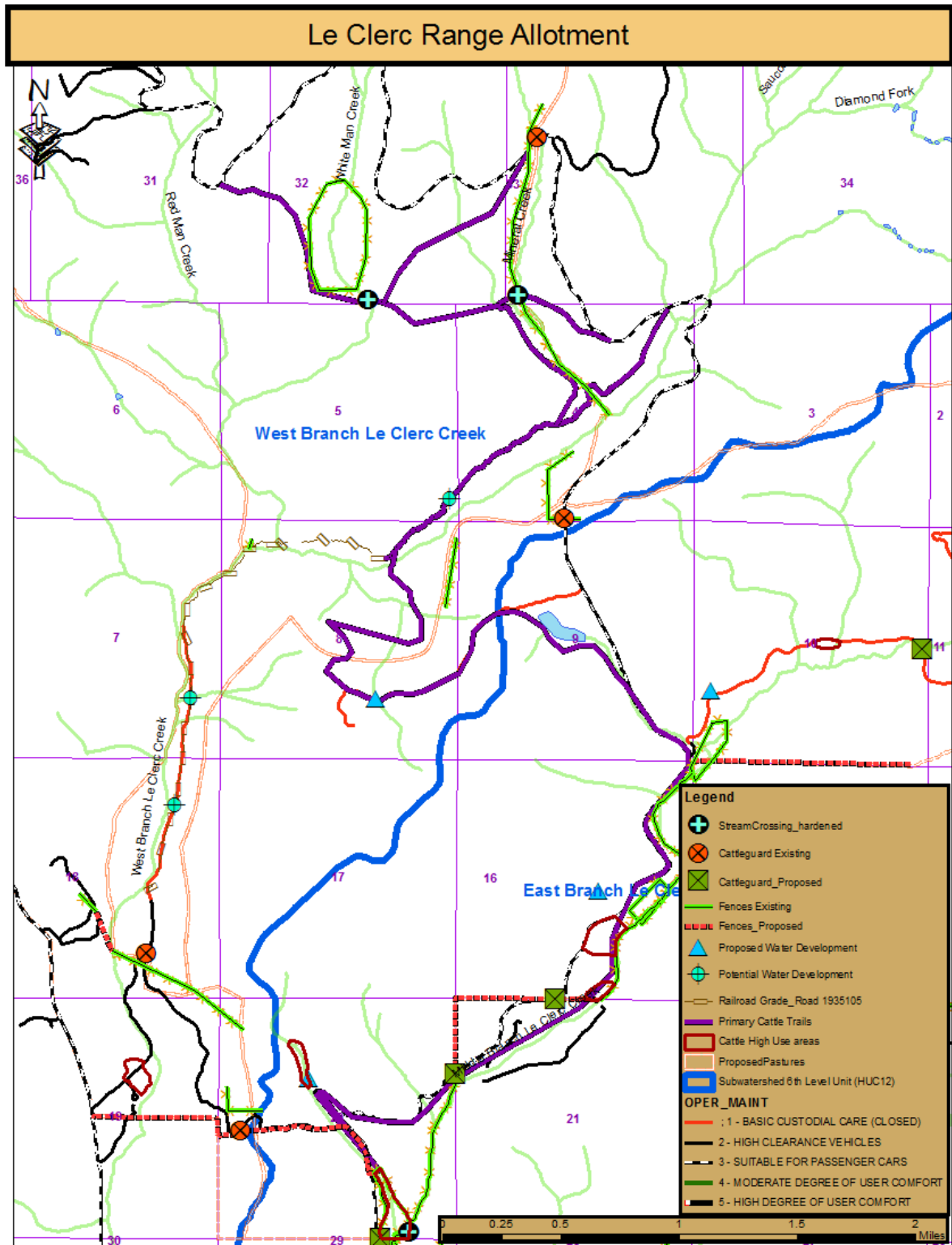


Figure 10. Primary route (purple line) cattle use in Lower Bunchgrass and Mineral Creek pastures.

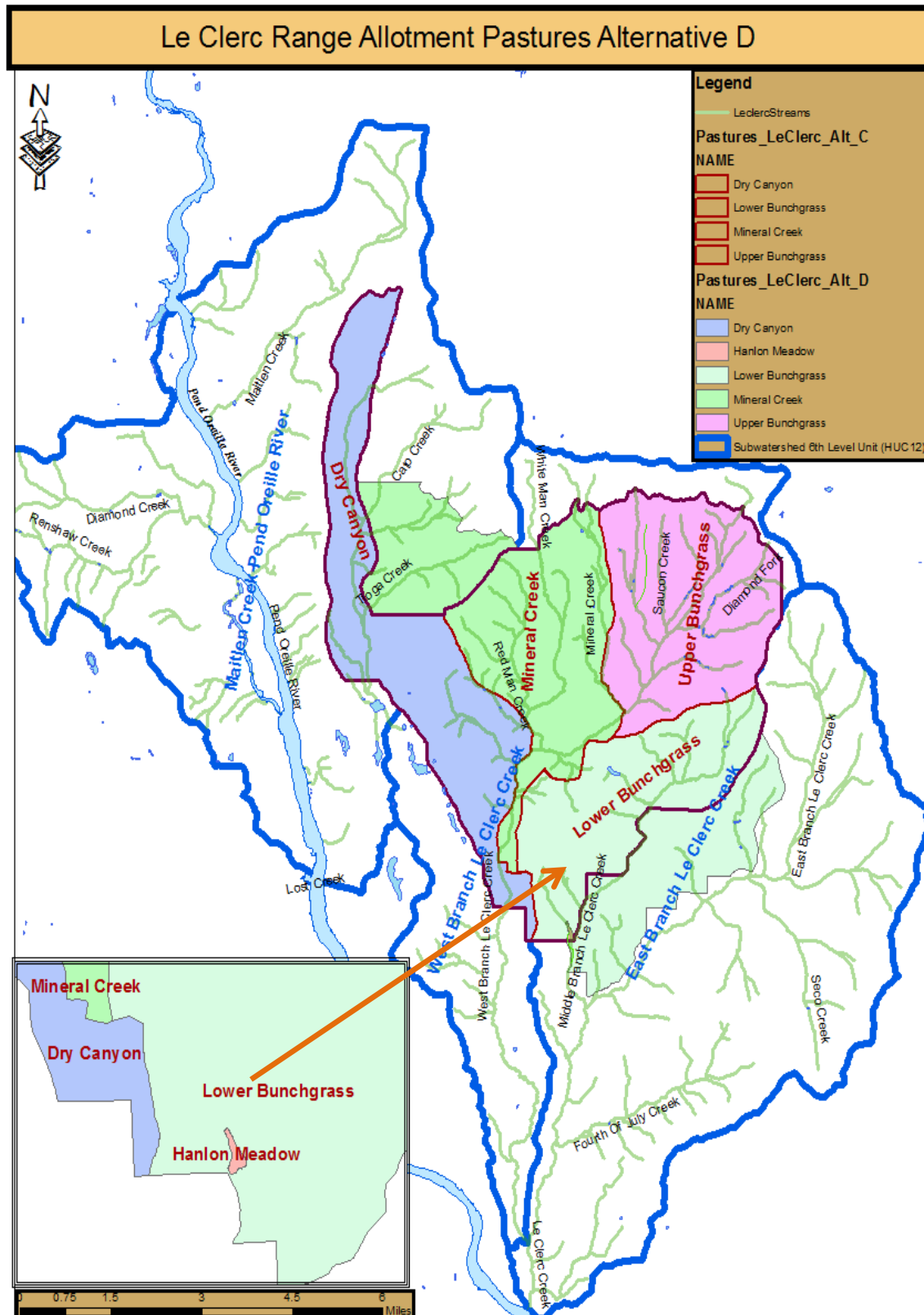


Figure 11. Allotment pasture boundaries under Alternative D in comparison to Alternative C.

Forest Plan Compliance

Forest Plan standards and INFISH Riparian Management Objectives are not currently met and would continue to not be met under Alternative A, because no changes would be made to operation and management of grazing in the allotment. This analysis does not detail optional management strategies to attain improved resource conditions. These measures include, but are not limited to: increased riding (locating and moving cattle) and strategic placement of supplements, (i.e., salt or nutrient blocks) which attract livestock away from riparian areas. Proper placement of mineral supplements can be an effective method for improving distribution. Livestock usually go from water, to grazing, then to salt; therefore, it is not necessary to place salt near watering areas. Livestock can be drawn to areas they would otherwise avoid by placing salt away from water (Holechek et al. 2001).

The flexibility to promptly implement one or more of these measures allows management to take actions improving livestock distribution and forage utilization, which would lead to improved vegetative conditions. However, without a comprehensive adaptive management strategy, certain actions are not allowed without additional analysis.

All activities in Alternative B would be expected to meet Forest Plan direction and desired future conditions for aquatic resources, as amended by INFISH. Maintaining State water quality standards would be addressed for temperature, fecal coliform, and sedimentation (p. 4-44) within 5-10 years of implementation.

Alternatives C and D, fully and effectively implemented through monitoring and adaptive management, would comply with Forest Plan standards within 5-10 years. Continued impacts and conflicts of livestock use with riparian values will be mitigated through efforts to minimize impacts by implementation of adaptive management actions per annual monitoring results (p. 4-14).

Table 21. Forest Plan consistency for hydrology, by alternative

Indicator	Alternative A	Alternative B	Alternatives C and D
Temperature Addresses the Clean Water Act as administered by WA State DOE, INFISH	No, there is no change expected for the current condition of stream temperature which does not meet state standards or the INFISH RMO. TMDL temperature impaired reaches continue to be utilized reducing/maintaining shade below site potential.	Yes, Temperature would be expected to improve with cumulative effects of discontinued range impacts and aquatic restoration efforts such as road relocation, road decommissioning, and in-stream channel restoration (e.g. bank stability, large wood placement, etc.)	Yes, Temperature would be expected to improve with cumulative effects of passive vegetative restoration increasing shadings and aquatic restoration efforts such as road relocation, road decommissioning, and in-stream channel restoration (e.g. bank stability, large wood placement, etc.) Localized areas on TMDL temperature impaired reaches will be addressed through adaptive management moving shade toward site potential. Further compliance with State water quality requirements in accordance with the CWA for protection of waters of the State of Washington would occur through implementation of current BMPs and design elements identified for this project (p. 4-51).
Fecal Coliform Addresses the Clean Water Act as administered by WA State DOE	No, under current management fecal coliform levels have been exceeded for the last three years.	Yes, Contributions to Fecal coliform levels from cattle will be removed.	Yes, Contributions to Fecal coliform levels from cattle will be removed. Management of allotment would encourage protection and improvement of riparian areas, which are to be given preferential consideration when conflicts occur among land use activities (p.4-53). Limiting livestock trailing, bedding, watering, salting, loading, and other handling efforts to those areas and times that would not retard or prevent attainment of Riparian Management Objectives or adversely affect inland native fish habitat and/or populations (p. A9 GM-3). The addition of acres to the Dry Canyon pasture, including TMDL impaired stream reach of West Branch LeClerc Creek, is solely for the purpose of trailing cows between Mineral Creek and current Dry Canyon pastures. The additional acres would not be grazed and trailing would occur on system roads only, some of which are within the RHCA management zone. Adaptive management actions, such as fencing between the road and West branch LeClerc Creek, may be necessary to avoid new impacts to the TMDL impaired stream reach of West Branch LeClerc Creek (currently not within the allotment boundary), to be in compliance with Forest Plan standards and guidelines, and to move toward attainment of Washington State water quality standards per CWA.
Stream Channel Function, Channel Widening	No, stream channel function and channel	Yes, Streams and riparian conditions would be expected to fully recover under normal climatic conditions; existing hardened crossings would be removed as	Yes, Streams and riparian conditions would be expected to fully recover under normal climatic conditions. Localized areas impacted by cattle will be addressed through adaptive management moving streams toward site

Indicator	Alternative A	Alternative B	Alternatives C and D
Addresses Executive Order 11988, INFISH	widening is functioning at risk.	funding is available. Cattle impacted riparian areas would stabilize and resource conflicts would be reduced. Impacts from livestock trailing and watering would cease to occur and riparian areas and streams affected by current use patterns would be expected to move toward functioning properly. Desired future conditions with the Forest Plan Amendment Inland Native Fish Strategy, would be expected to occur with improved stream channel integrity and channel processes.	potential. Cattle impacted riparian areas would stabilize. Desired future conditions with the Forest Plan Amendment Inland Native Fish Strategy, would be expected to occur with improved stream channel integrity and channel processes. Relocating handling facilities outside of riparian habitat conservation areas (INFISH p. A9 GM-2) and fencing riparian areas of tributaries and main stem of West and Middle Branches of LeClerc Creek frequented by cattle and resulting in less bank sloughing and widening of stream channels.
Sediment Regime Addresses INFISH	No, current grazing management is one of the contributing factors to the change to a chronic sedimentation regime versus the natural pulse regime.	Yes, Contributions to the chronic sedimentation level from cattle will not occur.	Yes, Roads, recreation, and grazing all contribute to the change from a pulse regime to a chronic sediment regime. Recent restoration actions, including wood placement and road relocation have begun to address these chronic sediment sources. Reduction of sediment inputs by cattle will support the movement back to a pulse regime.
Flows and Water Table Addresses Executive Order 11988, INFISH	No, impacts to streams from entrenchment and cattle impacts to wetlands have caused water tables to lower in the analysis area. Flows have been altered in upland tributaries.	Yes, Removing cattle will move toward restoration of natural timing and variability of the water table elevation in meadows and wetlands	Yes, however, cattle have post-holed small wetlands throughout the area, causing water tables to lower. Continued post holing will continue before adaptive management actions can remove the impact.
Wetland Addresses Executive Order 11990, INFISH	No, under current management 37% of wetlands are functioning at risk due to cattle.	Yes, Wetlands that were surveyed as functional – at risk with a non-apparent or downward trend would slowly recover and become functional with the exception of wetlands which cattle use has altered the hydrology. Additional restoration will be needed to bring several of the wetlands to properly functioning condition. Wetlands that are properly functioning would continue on that trend. (Soils Report)	Yes, the wetlands functioning at risk due to cattle will move toward functioning appropriately as alternative actions and adaptive management remove the impacts.

Conclusion

In summary, Alternative A would have the greatest adverse effect to East and West Branch LeClerc Creek subwatersheds, because there would be no change in operation and management of grazing to address issues in the allotment.

Alternative B would have the greatest potential to improve watershed function and health by allowing altered stream channels and over-utilized riparian areas to recover and restabilize which would move the streams toward a properly functioning condition.

Alternative C is expected to allow the overall condition of the East Branch LeClerc Creek subwatershed to improve as a result of rotational grazing and range improvement projects. East Branch LeClerc Creek and Fourth of July Creek would not be grazed due to removing the Fourth of July pasture and efforts to improve boundary effectiveness. Impacts to Middle Branch LeClerc Creek are expected to decline resulting in a positive trend toward improved water quality and stream morphology conditions in the East Branch LeClerc Creek subwatershed.

Alternative D is expected to shift and concentrate access in the East Branch LeClerc Creek subwatershed. Some areas in the East Branch LeClerc Creek subwatershed would be expected to receive an increase in access which would need to be monitored for impacts and corrected through adaptive management. Impaired TMDL stream reaches would be expected to continue to move toward state standards, but the increase in the concentration of cattle activity in sensitive reaches on the Middle Branch of LeClerc Creek and the northern tributaries to East Branch of LeClerc Creek would need to be monitored for impacts and corrected through adaptive management. The removal of the Fourth of July Creek pasture would be a beneficial effect for the East Branch LeClerc Creek subwatershed once drift off the allotment is controlled when boundary barriers are fully implemented and effective.

The effect of Alternatives C and D on the West Branch LeClerc Creek subwatershed are dependent on monitoring and follow-up adaptive management strategies. It would take between 10 years to realize many of the beneficial impacts of the change in management practices as a result of adaptive management and project activities. Further restoration efforts for West Branch LeClerc Creek are in various stages of planning and can be expected to be implemented over the next 5-10 years. The combined effects of increased cattle activity and aquatic restoration efforts would not be fully known for at least a decade. Through intensive monitoring and implementation of adaptive management, the confidence level that West Branch LeClerc Creek subwatershed and its tributaries would not be adversely impacted is moderate.

The Dry Canyon catchment is expected to be grazed for approximately the last two weeks of the season. This would likely increase grazing activity over the existing pattern of grazing over the past few years. The hydrology of this catchment subsurfaces before entering into the West Branch of LeClerc Creek subwatershed. Hydrologic concerns in this catchment are therefore isolated. The main concern would be road related damage from stream reaches not functioning properly. No other hydrologic concerns would be transferred outside of the catchment.

Fish and Aquatic Habitat

Data collection

Data used for the Biological Assessment and Aquatic Species report were biotic and habitat surveys completed by USFS personnel in branches of LeClerc Creek (1992, 1994, 2004, 2005 and 2007), Public Utility District No. 1 of Pend Oreille County (PUD) 2010, Middle Branch LeClerc Creek General Habitat Surveys, and Kalispel Tribal biologists juvenile bull trout surveys in the West Branch between 1995 and 2002.

Framework and Desired Future Conditions

The Forest Service Manual (USDA 2005a) directs “...biological evaluations, biological assessments and consultations with the U.S. Fish and Wildlife Service will be done, as appropriate, to ensure that no activity permitted, funded, or carried out by the Forest Service jeopardizes the continued existence of a threatened or endangered species or adversely modifies the essential habitat of such species.” Consultation with the USFWS has occurred (see Compliance with the Forest Plan).

Water quality and stream health must be maintained and/or enhanced to comply with the Inland Native Fish Strategy (INFISH) habitat guidelines, Washington Department of Ecology water quality standards, and the Endangered Species Act.

The desired future condition for the aquatic and riparian ecosystem, as described in the Forest Plan amended by INFISH, contains two parts. First, stream and riparian conditions fully support fish populations under normal climatic conditions. Second, they are resilient when subjected to extreme climatic events and recover rapidly without irretrievable damage to beneficial uses. These conditions are maintained by ensuring the present and future supply of ecosystem structural elements that control: a) landscape water storage and slow release functions (i.e., wetlands, floodplains, vegetative cover); b) channel form and function (i.e., riparian vegetation for streambank stability and large woody debris) by preserving the full diversity and function of wetlands, floodplains and riparian vegetation.

The Forest Plan (Forest Plan p. 4-1 to 4-2) and Inland Native Fish Strategy (INFISH p. A-1 to A-2) include the following goals:

- Provide a diversity of high quality aquatic habitats, which insures viable populations of fish in sufficient numbers to meet angler demands. INFISH sets the criteria for delineating Riparian Habitat Conservation Areas (RHCA). RHCA's are to be authorized in all forest watersheds. INFISH assigns both general management guidelines and specific riparian management objectives (RMOs).
- Provide and manage for riparian plant communities, which maintain a high level of riparian dependent resources.
- Riparian vegetation to provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems.
- Riparian vegetation to help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.

- Provide and manage habitat of threatened, endangered, and sensitive species in an aggressive manner, which contributes to the eventual removal of the species from the threatened, endangered, or sensitive status.

Desired future conditions are represented by the INFISH RMOs. The RMOs: pool frequency, water temperature, large woody debris, bank stability, bank angle, and width to depth ratio are used to assess health of the system and project the minimum needed for good habitat. The goal is to achieve a high level of habitat diversity and complexity through a combination of habitat features, to meet the life-history requirements of the fish community inhabiting a watershed. The values for the INFISH RMOs are listed in the Fisheries Report.

Affected Environment

Watershed Population Condition

The LeClerc Creek watershed has three branches, the West, Middle, and East Branches as well as several fish bearing tributaries. These tributaries include Whiteman, Redman, Mineral, Saucon, and Diamond Fork Creeks for the West Branch and Fourth of July Creek for the East Branch. Only portions of the West and Middle Branches and Fourth of July Creek fall within the project analysis area. The analysis area also includes Dry Canyon, which does not have any seasonal flow and no surface connection to LeClerc Creek or the Pend Oreille River within its bounds. The West and East Branches of LeClerc Creek merge to form LeClerc Creek, which then flows into the portion of the Pend Oreille River impounded by Box Canyon Dam.

The West Branch contains eastern brook trout (*Salvelinus fontinalis*), Westslope cutthroat trout (*Oncorhynchus lewisi clarki*), brown trout (*Salmo trutta*), coastal rainbow trout (*Oncorhynchus mykiss irideus*), and bull trout (*Salvelinus confluentus*) (USFS 2005-2007 and KNRD 1995). Genetic analysis of the Westslope cutthroat trout population in the West Branch, conducted by the Wild Trout and Salmon Genetics Lab of the University of Montana, indicates that 76 percent of the cutthroat trout sampled contained only Westslope cutthroat trout alleles with no evidence of introgression from rainbow trout. The remaining 24 percent had genetic contribution from both rainbow and Westslope cutthroat trout (Bonneville Power Administration 2001). Bull trout numbers are extremely low in the West Branch and no sampling for genetic purity has occurred.

The Middle Branch contains eastern brook trout, cutthroat trout, and brown trout (USFS 2005a). The population in Fourth of July Creek was also genetically analyzed and found to be pure Westslope cutthroat trout above a fish passage barrier in the form of a waterfall.

The analysis area is in Clark Fork River Basin Critical Habitat: Unit 31, Lake Pend Oreille Core Area. The 2008 Bull Trout / *Salvelinus confluentus* 5-Year Review: Summary and Evaluation done by the U.S. Fish and Wildlife Service described the status of the bull trout population in the Lake Pend Oreille core area as high risk. The report lists the population as having 1-50 adults and being under a substantial, imminent threat. (USFWS 2008)

Streams in the LeClerc Creek watershed are designated critical habitat for bull trout (USFWS 2010). LeClerc Creek is core area habitat for bull trout within the Draft Columbia Headwaters Recovery Unit Implementation Plan for Bull Trout Recovery Plan (RUIP) (USFWS 2014a). The RUIP sites livestock grazing as a primary threat to bull trout by causing riparian and instream degradation, loss of large woody debris, and pool reduction in LeClerc Creek. Locally individual bull trout have been found in Box Canyon Reservoir, a 55-mile segment of the Pend Oreille River from Box Canyon Dam to Albeni Falls Dam. Primarily adult migratory bull trout have

been captured in the reservoir between 1988 and 2012. Genetic testing has identified the origins of bull trout captured between 2003 and 2009 as Lake Pend Oreille tributaries.

Biotic surveys were completed by USFS personnel in branches of LeClerc Creek (1992, 1994, 2004, 2005 and 2007) to determine fish presence. No bull trout were found during these surveys. However, juvenile bull trout have been found in the West Branch by Kalispel Tribal biologists between 1995 and 2002. In addition, an adult female bull trout was found on her redd in the West Branch in 2000 (personal communication Todd Andersen 2000). The large size of this female (20 to 22 inches in length) indicated that it had an adfluvial or fluvial life history.

Temperature

Bull trout appear to have more specific habitat requirements than other salmonids (Rieman and McIntyre 1993). Stream temperature and substrate composition may be particularly important characteristics of suitable habitats. Bull trout have repeatedly been associated with the coldest stream reaches within basins.

Temperature standards and survey information are provided in the hydrology section of this chapter.

River Basin Habitat Condition

The Pend Oreille River between Box Canyon and Albeni Falls dams is a run of the river reservoir (Box Canyon Hydroelectric Project –FERC License number 2042). The water retention time is longer, water velocities slower, water temperatures slightly higher, and channel width is wider than when the river was in its free flowing condition. The reservoir now supports much greater biomass of aquatic vegetation than in its riverine form. Eurasian water-milfoil, an aquatic noxious weed, and curly pondweed, a nonnative plant, comprise a significant portion of this aquatic vegetation. Former riffles, gravel bars, side channels and pools have been inundated by the present water levels behind the dam. Large woody debris is almost nonexistent. The habitat is more suitable for spiny-ray fish than for salmonids due to lack of habitat complexity and increase in shallow water habitat.

Watershed Existing Habitat Condition

Portions of the streams on NFS lands in the analysis area were most recently surveyed between 2004 and 2007 using the R6 Hankin-Reeves Stream Survey protocol. Segments of the stream also lie within private lands and those reaches were not surveyed.

There is one possible natural seasonal blockage presently preventing fish passage between Box Canyon Reservoir and a portion of the West Branch LeClerc Creek in the analysis area. The surface flow periodically goes subsurface in a section of the West Branch in the western quarter of section 5, T. 35 N., R. 44 E. It is presently unclear if the aggradation of streambed material in this stream section is due to past natural or human actions. There is also a historic diversion dam on the West Branch upstream from this section that is also a seasonal, if not yearlong, barrier to upstream fish passage in section 8, T. 36 N., R. 44 E.

There are at least two undersized and improperly placed culverts on the Middle Branch of LeClerc Creek, in the analysis area, that prevent upstream fish passage permanently or seasonally that are being addressed in the Public Utility District No. 1 of Pend Oreille County (PUD) Trout Habitat Restoration Plan project pre-proposal, Upper Middle Branch LeClerc Creek Enhancement Project (2012).

Outside of the analysis area, a natural falls and cascade on lower Fourth of July Creek tributary to the East Branch of LeClerc Creek prevents upstream fish passage beyond the first 0.3 miles of this stream.

Pend Oreille Public Utility District Trout Habitat Restoration Program

The Box Canyon Hydroelectric Project (Project; FERC 2042) is operated by the Public Utility District No. 1 of Pend Oreille County (POPUD). The Project is located on the Pend Oreille River in Northeast Washington State, approximately 100 miles north of the City of Spokane. On July 11, 2005, the Federal Energy Regulatory Commission (Commission) issued a new license for the Project. Some of the provisions in the license were subsequently modified in a Settlement Agreement (SA) and included in an order amending the Project license on February 19, 2010 (130 FERC 61,148). The amendment order included a requirement for a Trout Habitat Restoration Program (THRP) in the Box Canyon watershed (Appendix A of the License Amendment Order, Revised 4(e) Condition 6). As part of the THRP, the District is required to restore 164 miles of tributary habitat.

Per the FERC license, the POPUD has conducted five stream surveys within the analysis area. These are the Middle Branch LeClerc, Upper Middle Branch LeClerc, Whiteman, Redman, and Fourth of July Creeks (see Fisheries Report for additional location description). All of these survey areas include some lands of other ownership outside of the analysis area.

To date, one of the restoration projects (in Middle Branch LeClerc Creek) has been completed. In 2011, the PUD installed 266 pieces of large wood throughout the project area. The objective of the wood placement was to bring the number of pieces of wood and number of pools per degraded reach within desirable conditions. Monitoring in future years will determine if these objectives were met.

In 2011 and 2012, partly due to these road-related impacts to large woody debris recruitment, a 2.6-mile section of stream adjacent road was decommissioned along the Middle Branch. The road prism of decommissioned NFS Road 1935000 (adjacent to the stream) was seeded and replanted with herbaceous grass, conifers, and shrubs. In addition, four road stream crossings were removed and the stream was re-contoured to its channel.

PIBO Data

PIBO is an acronym for the PACFISH/INFISH biological opinion. It describes a large scale monitoring effort to show effectiveness of implementing the PACFISH and INFISH strategies. There are two designated monitoring areas in the allotment; the most current survey data for streams within the analysis area is displayed in Table 22. The data below is interpreted in the Population and Habitat section of the Fisheries Report. Highlighted cells do not meet INFISH RMO standards.

Table 22. Forest Service survey data¹ for streams in the LeClerc Creek Allotment².

Stream Name	Survey Method	Stream Reach and Year Surveyed	Length of stream reach surveyed (feet)	Average width (feet)	Pool frequency (pools/mile)	Large Woody Debris	Bank Stability ³	Bank Angle ⁴	Wetted Width/Depth Ratio
Dry Creek	PIBO	DMA ⁵ Site 2013	NA	NA	0	NA	100	141	NA
Fourth of July Creek	FS	1 (2007)	8,927	4.8	17.2	60	NA	NA	4.3
	PUD	PUD 1	2,019	NA	49.6	NA	NA	NA	NA
	PUD	PUD 2	818	NA	45.4	NA	NA	NA	NA
	PUD	PUD 3	2,955	NA	71.3	NA	NA	NA	NA
	PUD	PUD 4	1,770	NA	65.5	NA	NA	NA	NA
	PUD	PUD 5	1,430	NA	51.7	NA	NA	NA	NA
	PUD	PUD 6	2,970	NA	67.6	NA	NA	NA	NA
	PUD	PUD 7	5,973	NA	47.5	NA	NA	NA	NA
	PUD	PUD 8	1,312	NA	48	NA	NA	NA	NA
Middle Branch LeClerc Creek	FS	1 (2005)	3,681	6	39	3	NA	NA	6.9
	FS	2 (2005)	3,956	8	20	17	NA	NA	8.1
	FS	4 (2005)	6,404	7	44	7	NA	NA	5.4
Middle Branch LeClerc Creek (pre-project) ⁶	PUD	PUD 10	4,149	NA	31.7	NA	NA	NA	NA
	PUD	PUD 11	1,338	NA	82.9	NA	NA	NA	NA
	PUD	PUD 3	1,724	NA	22.2	NA	NA	NA	NA
	PUD	PUD 5	1,038	NA	45.9	NA	NA	NA	NA
	PUD	PUD 6	1,424	NA	37	NA	NA	NA	NA
	PUD	PUD 7	3,561	NA	12.1	NA	NA	NA	NA
	PUD	PUD 8	4,931	NA	29	NA	NA	NA	NA
	PUD	PUD 9	1,506	NA	38.5	NA	NA	NA	NA
Upper Middle Branch LeClerc Creek	PUD	PUD 12	984	NA	37.5	NA	NA	NA	NA
	PUD	PUD 13	365	NA	72.3	NA	NA	NA	NA
	PUD	PUD 14	2,805	NA	47	NA	NA	NA	NA
	PUD	PUD 15	3,272	NA	100.3	NA	NA	NA	NA
	PUD	PUD 16	1,462	NA	39.6	NA	NA	NA	NA
	PUD	PUD 17	1,619	NA	42.2	NA	NA	NA	NA
	PUD	PUD 18	2,714	NA	46.5	NA	NA	NA	NA

Stream Name	Survey Method	Stream Reach and Year Surveyed	Length of stream reach surveyed (feet)	Average width (feet)	Pool frequency (pools/mile)	Large Woody Debris	Bank Stability ³	Bank Angle ⁴	Wetted Width/Depth Ratio
West Branch LeClerc Creek	FS	1 (2005)	6,623	20	11	18	NA	NA	6.8
	FS	3 (2005)	15,407	28	13	16	NA	NA	7.8
	FS	4 (2005)	9,779	26	4	18	NA	NA	8.5
	FS	5 (2005)	9,877	19	10	26	NA	NA	6.3
	FS	6 (2005)	6,574	16	11	13	NA	NA	4.1
	FS	7 (2005)	9,436	10	21	20	NA	NA	4.6
	FS	8 (2005)	4,066	7	36	78	NA	NA	5.1
	PIBO	DMA Site 2013	NA	NA	32	NA	100	105	NA
White-man Creek	PUD	PUD RW1	4,316	NA	97.7	NA	NA	NA	NA
	PUD	PUD WM1	4,720	NA	67.1	NA	NA	NA	NA
	PUD	PUD WM2	2,412	NA	107.2	NA	NA	NA	NA
	PUD	PUD WM3	1,740	NA	100.3	NA	NA	NA	NA
	PUD	PUD WM4	341	NA	77.6	NA	NA	NA	NA
	PUD	PUD WM5	1,937	NA	111.9	NA	NA	NA	NA
	PUD	PUD WM6	3,838	NA	115.6	NA	NA	NA	NA

¹ Completed using the Forest Service Region 6 survey protocol, Pend Oreille Public Utility District protocol, and PIBO data.

² Highlighted cells do not meet INFISH RMO standards.

³ The Riparian Management Objective for bank stability is >80%.

⁴ The Riparian Management Objective for bank angle more than 75% of banks with < 90 degree angle.

⁵ Designated Monitoring Area

⁶ Pre-project: prior to implementing Public Utility District No. 1 of Pend Oreille County Trout Habitat Restoration Plan

Effects

Analysis Considerations

Cattle grazing in riparian areas may adversely impact riparian species and future wood recruitment (Platts 1991). Literature indicates stream banks in grazing exclosures were, for the most part, more highly vegetated and possessed greater overhead canopy than unfenced stream banks where grazing was allowed. Studies have shown that both plant richness and species diversity were much greater on stream banks that were protected from grazing. The various expressions of vegetation: abundance, overstory cover, species richness and species diversity, were richer for the most part on protected stream banks (Bayley and Li 2008).

Streambank alteration is an indicator of damage to streambanks that can lead to bank instability, accelerated delivery of sediment to stream channels, loss of undercut banks and increasing bank angles with an associated loss of cover for fish and contributes to channel widening. A threshold of 20 percent bank alteration using the MIM protocol is consistent with the recommendations of Archer (2014) based upon the PIBO monitoring information. Not exceeding 40 percent utilization of mean annual vegetative production on woody vegetation should protect riparian shrubs and bushes from excessive grazing (Winward 2000). Maintaining four to six inches stubble height is designed to protect the health of riparian vegetation. Clary and Leininger (2000) suggest that a four inch stubble height is a starting point for improved riparian grazing but raising the stubble height to six to eight inches may be required to protect willows and limit bank trampling. Therefore, depending upon the conditions at a site, a four-inch residual stubble height may not be sufficient for improving riparian vegetation conditions.

Root strength is important for maintaining stable streambanks, preventing bank erosion, and for the development of undercut banks that provide cover for fish. Overall utilization of herbaceous vegetation can result in slow or diminished root growth thus potentially affecting the health of riparian vegetation and reducing the root strength. The threshold of not exceeding 40 percent utilization of the mean annual vegetative production of herbaceous vegetation is at the upper end of the recommendations of Archer (2014).

The loss of riparian vegetation can decrease instream wood, debris, shade, and streambank stability (Heike et al. 2008). Cattle may also cause the replacement of deep-rooted riparian (stable) species with riparian species with shallow roots (unstable) (Heike et al. 2008).

In the LeClerc Creek subwatersheds and Dry Canyon Catchment, stream reaches with the most cattle-related impacts are predominantly found where roads are located within the riparian area or at road-stream intersections where cattle can easily access the stream and the adjacent riparian area for water and more desirable vegetation (Hydrology Report).

The effects analysis for fish and aquatic habitat, for all alternatives, analyzed the effect of livestock grazing on riparian and aquatic functions. This is addressed through restoration of channel and riparian habitat to provide for the recovery of bull trout (a listed species) and the continued sustainability of Westslope cutthroat trout (a sensitive species); and through compliance with the Inland Native Fish Strategy habitat guidelines, Washington Department of Ecology water quality standards, and the Endangered Species Act.

For the purposes of this analysis, the cumulative effects area for fisheries includes the lower reaches of East Branch, West Branch, and Middle Branch LeClerc Creek. These are the main fish

populations that would be affected by activities in the analysis area. Short-term effects are those that would occur up to 3 years from project initiation. Long-term effects are those that would occur 5 years or more from project initiation.

Past actions within the West and East Branch LeClerc Creek subwatersheds and Dry Canyon Catchment that affect riparian and aquatic habitat include recreation, timber harvest, and aquatic restoration (i.e., road relocations, road improvements, in-stream habitat improvements).

Recreation/Homestead Meadows

Homestead meadows are typically located adjacent to waterways and incorporate a natural meadow or wetland. These localized areas are attractive for recreational use (e.g., dispersed camping, OHV activity) which often results in adverse impacts to the water quality by reducing riparian vegetation, stream bank stability, and shade. Ineffective past seasonal grazing practices have adversely affected localized areas of the streams (i.e., wide and shallow channels, increased bank instability, high use in wetlands, and reduction in riparian vegetation affecting overall stream shade). These areas often become attractive recreation sites for dispersed camping with non-delineated boundaries. Grazing would maintain these meadows in an early seral state.

Timber Harvest

Timber harvest and associated road and skid trail construction has occurred within the riparian area, with mixed effects. Negative effects may occur because stream access for cattle and recreation is often enhanced; effects may be positive in that transitory rangelands provide grazing opportunities away from the streams.

The ongoing Hanlon Fuels and Timber Project is expected to treat approximately 7,400 acres. The Hanlon project has the potential to increase transitory range. Cattle barriers were maintained in riparian areas and along allotment boundaries to prevent cattle drift and/or access to sensitive areas.

Other recent, current, or reasonably foreseeable harvest activities have occurred or will occur within or near the analysis area on private lands and lands managed by Pend Oreille County, Washington Department of Natural Resources, and Stimson Lumber Company (see Appendix C). The harvest activities alone are expected to have little to no effect on the hydrology of the area due to best management practices and mitigation required by Washington State Forest Practices, however these areas are typically known to result in cattle drift off the allotment or between pastures.

Aquatic Restoration and Road Management

Fish restoration projects occurring in the area include: Box Canyon dam relicensing stream habitat restoration projects such as large woody debris placements, fish passage projects (removing or replacing at least seven fish barrier culverts), West Branch LeClerc stream restoration activities such as rerouting a West Branch LeClerc Creek reach to its historic channel, relocation of approximately 1.8 miles of NFS Road 1935000, and removing legacy crib dams.

The Hanlon Vegetation Management Project includes additional fencing, Fourth of July in-stream habitat restoration, channel restoration, culvert replacements, and road decommissioning and relocation projects. Completion of the Middle Branch LeClerc enclosure would result in beneficial improvements to riparian resource on Lower Middle Branch LeClerc.

Recent restoration activities which have been completed include a reroute of the Middle Branch LeClerc Road 1935000 along the Middle Branch of LeClerc Creek, in-stream restoration by POPUD in Middle Branch LeClerc and Whiteman Creeks (large wood placement), and fish passage culvert replacement on NFS Road 1935011 in upper Middle Branch LeClerc Creek. In 2003, obliteration and relocation of approximately 2 miles of the East Branch road located within RHCA of East Branch LeClerc Creek was completed.

Other past, ongoing, or reasonably foreseeable activities within or near the analysis area include Pend Oreille County road maintenance and improvements, private landowner road improvements, Pend Oreille Public Utility Department in-stream restoration and road improvement projects on multiple ownerships, Stimson road improvements or abandonment. The road maintenance, abandonment, and improvement activities are expected to have minimal short-term impact to the hydrology as best management practices and mitigation requirements are in place per Washington State Forest Practices and are expected to be followed.

Cattle may affect aquatic restoration projects. Any revegetation efforts would need to be protected from cattle or they may not work. Cattle would have no effect on large wood placement. However, the goal of large wood placement is to create fish habitat through digging pools and storing sediment, which narrow stream channels. Habitat improvement work would not be as effective due to the additional sediment from bank trampling filling in pools and other habitats. Culvert replacements would not be affected by cattle use.

For a complete list of past, present and reasonably foreseeable activities within and adjacent to the LeClerc Creek Allotment analysis areas, refer to Appendix C.

Alternative A

Direct and Indirect Effects

Habitat quality in the LeClerc Creek watershed ranges from poor to good. Past disturbances, natural and human-caused, have altered the channel equilibrium.

There are no developed water sources within this allotment, so cattle water at streams and undeveloped springs. This lack of off-stream water causes cattle to concentrate in riparian areas, which is exacerbated later in the grazing season as upland forage cures and becomes less palatable. This has led to impacts to stream banks and riparian and wetland soils.

Despite the existing fencing on the allotment that was intended to discourage cattle drift, there are areas on the allotment where cattle drift is a recurring problem. Lack of natural barriers and timber harvest activities on private lands within and adjacent to the allotment and pasture boundaries also contribute to the drift problem, which makes keeping the cattle in the prescribed pasture during the prescribed season of use difficult at times.

Under Alternative A, existing stream and riparian habitat conditions are expected to remain at current levels because no range improvements or changes in operation and management are proposed. Approximately 38.2 miles of fish bearing streams would be accessible to livestock, including 12.9 miles of designated bull trout critical habitat.

Although the size and distribution of the bull trout population is not known, the low numbers presently indicate that the long-term viability and ability to recover from environmental disturbance may be reduced.

The Westslope cutthroat trout population should have the resilience to recover from any short-term disturbance within those reaches with better habitat conditions, such as 4th of July, Whiteman and Mineral Creeks.

The adaptive management strategy and additional monitoring would not be implemented. Monitoring has the dual purpose of ensuring compliance with the design features and proper use criteria for an allotment and determining whether the current management of the allotment is maintaining or moving the area toward functioning condition. Implementation and focused effectiveness monitoring are critical to determine when or if management changes should be made.

Cumulative Effects of Alternative A

As described in the Affected Environment section, past grazing and recreation activities have had adverse effects (such as increased bank stability and reduced vegetation) in localized areas of streams, while aquatic restoration and road management activities have resulted in beneficial effects to riparian resources. Timber harvest has had mixed effects, both negative and positive.

Cumulatively, stream and riparian habitat conditions would be expected to remain at current levels, and could result in a downward trend because there would be no improvements in the allotment, there is no adaptive management strategy, and it is presumed that watershed restoration efforts under the Box Canyon Hydropower License would not resume in the LeClerc Creek drainage (see the social-economic section in this chapter).

Alternative B

Direct and Indirect Effects

Alternative B would remove cattle from riparian areas; areas with high cattle impacts would be expected to improve as vegetation and bank stability recover. This recovery is also expected to result in deeper, narrower, and healthier stream channels (Heike et al. 2008).

Riparian vegetation would improve to create more shade to the streams to reduce temperature and increase sources of woody debris to the channel, which improves pool depth hiding cover.

As stream channels recover, fish populations would be expected to also recover as spawning and rearing areas are less embedded and pool quality improves. There would not be any miles of fish bearing streams or designated bull trout critical habitat that would be accessible to livestock.

Cumulative Effects of Alternative B

As described in the Affected Environment section, past grazing and recreation activities have had adverse effects (such as increased bank stability and reduced vegetation) in localized areas of streams, while aquatic restoration and road management activities have resulted in beneficial effects to riparian resources. Timber harvest has had mixed effects, both negative and positive.

Under Alternative B, cattle grazing in the allotment would cease. Habitat improvement work would be more effective without the continued impact to streams. There would not be any miles of fish bearing streams or designated bull trout critical habitat that would be accessible to livestock so, over time, stream conditions would improve and fish populations would be expected to recover.

Cumulatively, the beneficial effects of removing cattle from the allotment under Alternative B in conjunction with the past, ongoing and reasonably foreseeable restoration efforts would eventually have a beneficial effect on stream habitat, including critical habitat for bull trout.

Alternatives C and D

As described in chapter 2 (Alternatives Considered in Detail), both Alternatives C and D would continue grazing within the LeClerc Creek Allotment, with proposed modifications to the permit terms and conditions to address current management and resource concerns. Alternative D would include modifications (beyond those proposed in Alternative C) to address the permittee's operational concerns.

Both alternatives incorporate an adaptive management strategy, in an ongoing effort to meet, or trend toward desired conditions (page 7 and by resource in chapter 3, as appropriate). In localized areas where grazing impacts (such as streambank sloughing, compaction, and lack of vegetation cover) continue to occur, adaptive management would be implemented, as described in chapter 2.

Due to the similarity of the alternatives, the description of effects is combined, highlighting those effects the alternatives have in common and those that differ between the alternatives. More detailed discussion of effects is provided in the Fisheries Report and Hydrology Report.

Direct and Indirect Effects

Under Alternatives C and D, the concentration of cattle on the riparian area along Lower Middle Branch LeClerc Creek is expected to decrease substantially with the proposed change in the allotment boundary and additional fencing in section 21 of T. 36 N., R. 44 E. connecting the two segments of POPUD fence (installed 2012) located along the northwest riparian edge of Middle Branch LeClerc Creek. These areas are expected to be monitored and adaptive management applied to reduce impacts. Where monitoring indicates that standards for riparian compliance and utilization are not being met, adjustments in the way the allotment is managed would be initiated. Adaptive management strategies are listed in Table 4 and Table 5 (chapter 2).

Monitoring the grazing thresholds should help manage livestock grazing to protect riparian and aquatic habitat. The bank alteration and utilization thresholds may be more protective and actually be reached before the stubble height is grazed down to four to six inches. The bank alteration threshold however needs to be measured very soon after the cattle are removed from an allotment and before the fall rains that may wash away signs of alteration (Archer 2014).

The proposed changes in management practices are expected to increase activity in the Diamond City area as well as riparian areas along West Branch LeClerc Creek, Mineral Creek, and upper Whiteman Creek, but these impacts should be localized reducing overall adverse effects. Fencing of the meadow in the Hanlon pasture would reduce the 4 acres of wetlands that are currently impacted by cattle. An 800-foot section of road that also currently affects the wetland would be obliterated.

Table 22 indicates the INFISH standards for pool frequency are currently not being met. Past disturbances, both natural and human-caused, have altered the channel equilibrium. Localized areas where cattle have access to riparian areas may be degraded and adversely impact baseline conditions. These areas would be monitored and adaptive management tools would be applied as necessary. Areas where there would be allotment improvements to move cattle away from streams would likely improve baseline conditions.

Due to the presence of juvenile bull trout in the analysis area, there is the potential for loss of bull trout eggs, alevins, and fry. Indirect effects of sedimentation and temperature increase from shade loss may result in stress that causes mortality. Continued grazing in riparian areas may increase sediment input to streams. Livestock can alter stream shape (pattern, dimension, and profile) and are therefore an indirect influence on temperature if large areas of stream are disturbed. However due to the low numbers (1-50 adults) present in the entire Lake Pend Oreille core area, the risk of this happening is low.

Under both Alternatives C and D, existing stream and riparian habitat conditions are expected to show improvement due to the proposed range improvements (fencing, boundary changes, and water developments that move cattle away from riparian areas and streams). Alternative C would have 24.8 miles of fish bearing streams accessible to livestock including 11.2 miles of designated bull trout critical habitat. Alternative D would have 27.5 miles of fish-bearing streams accessible to livestock, including 12.1 miles of designated bull trout critical habitat. Under both alternatives, this would be a reduction from the current condition, which has 32.8 miles of fish bearing stream and 12.9 miles of critical habitat accessible to livestock. Fish populations would be expected to increase as habitat conditions improve.

Under Alternatives C and D, the effects of range improvements to the fish habitat condition in the West and East LeClerc Creek subwatersheds are expected to be beneficial by reducing drift between pastures and off the allotment, reducing the use in localized riparian areas and wetland meadows, and drawing cattle away from the main stream channels by developing trough sites in upland areas. Two additional hardened crossing sites have been identified for improvement or reconstruction, which is expected to decrease the amount of direct impact to stream channels. With the implementation of all these improvements, it is expected adverse effects would be mitigated over much of the analysis area.

The decrease in access by cattle to riparian areas may improve pool numbers and quality in localized areas. Fencing of riparian areas would reduce trampling, compacting, and sloughing off of the streambanks in the analysis area. Increases in riparian vegetation may lead to decreased width to depth ratios and increased shade to streams. Riparian areas of concentrated use would take longer to recover but many of these areas are being excluded from the allotment (Middle Branch LeClerc Creek) so there would be a gradual recovery over time.

Continued grazing in riparian areas and cattle trailing along streams within grazing allotments would likely continue to contribute elevated sediment levels to streams in the watershed, although adaptive management provisions in allotment management plans should be implemented where necessary to reduce livestock impacts. In the absence of other reductions to sediment delivery in the watershed, streams in several of the watersheds where treatment is planned would continue to receive sediment from anthropogenic sources.

With adaptive management strategies, Alternatives C and D are designed to reduce impacts in riparian areas, specifically in areas that continue to be revisited by cattle drift. The allotment improvements and the implementation of any of the strategies within the adaptive management tables would move cattle away from riparian areas and would have a long-term positive impact to streams in localized areas. This may include reducing the number of cattle and/or the time on the allotment, additional water troughs to move cattle from streams, or fencing to exclude them from riparian areas. Monitoring and implementation of the adaptive management plan should avoid any negative effects to riparian or aquatic habitats that would carry over in any meaningful way to the following grazing season.

Under Alternative D, the area of Lower Bunchgrass pasture would be approximately double the area proposed in Alternative C. Currently the Public Utility District No. 1 of Pend Oreille County is required to fence the north side of the bridge to the south end of the enclosure per the terms of the Federal Energy Regulatory Commission (FERC) license and agreement with Fisheries Subcommittee (FSC) parties for the lower Middle Branch LeClerc Creek Trout Habitat Restoration Project (THRP). The FSC agreed to defer construction of this fence until the LeClerc Creek Allotment NEPA decision was finalized. If Alternative D is selected, then the fence would not be constructed immediately, but monitoring at the PIBO site would continue for five years, then a determination on whether to construct the fence would be made.

About an 800-foot reach of Middle Branch LeClerc Creek in section 21 (which is not National Forest System land) would not be fenced (Appendix A, Figure A-6). There may be potential effects in this reach as it would be the only section of stream that is not fenced in the area. Of the approximately 3,000 acres being added to Lower Bunchgrass pasture in Alternative D, about 2,000 acres are private ownership. Five tributaries to East Branch LeClerc Creek and additional 2,000 feet of sensitive riparian reach of lower Middle Branch LeClerc Creek would be accessible to cattle. The majority of this 2000-foot reach is a wide flood plain with alder and willow shrub component, braided stream with tributaries. Fencing of the meadow in the Hanlon pasture would reduce the 4 acres of wetlands that are currently impacted by cattle. An 800-foot section of road that also currently affects the wetland would be obliterated.

Due to the presence of juvenile bull trout in the analysis area, there is the potential for loss of bull trout eggs, alevins, and fry. Continued grazing in riparian areas may increase sediment input to streams. Livestock can alter stream shape (pattern, dimension, and profile) and are therefore an indirect influence on temperature if large areas of stream are disturbed.

Cumulative Effects

As described in the Affected Environment section, past grazing and recreation activities have had adverse effects (such as increased bank stability and reduced vegetation) in localized areas of streams, while aquatic restoration and road management activities have resulted in beneficial effects to riparian resources. Timber harvest has had mixed effects, both negative and positive.

Under Alternatives C and D, improvements to the allotments would move cattle away from riparian areas. In conjunction with the monitoring and adaptive management (see hydrology section), these alternatives would improve the trend toward riparian management objectives and allow for long-term positive trends in habitat conditions and a corresponding positive trend in fish populations. The overall effects of implementing adaptive management strategies to fisheries and aquatic habitat would be dependent on the extent and frequency with which the strategies are implemented, and are expected to range between minimal/no change to beneficial in the long term.

Summary of Effects

The following tables summarize the determination of effects and comparison of effects by alternative.

Table 23. Effects determination for bull trout and bull trout critical habitat

Alternative	Species / Habitat	Determination of Effects	Potential for Incidental Take?
A, C, D	Bull Trout	NLAA	Yes

Alternative	Species / Habitat	Determination of Effects	Potential for Incidental Take?
A, C, D	Bull Trout Critical Habitat	LAA	N/A
B	Bull Trout	NLAA – Beneficial Effect	No
B	Bull Trout Critical Habitat	NLAA – Beneficial Effect	N/A

NE = No Effect

NLAA = May Affect - Not Likely to Adversely Affect

LAA = May Affect - Likely to Adversely Affect

N/A= Not Applicable

Table 24. Summary of effects of livestock grazing on riparian and aquatic functions measures by alternative

Measure	Alternative A (No Change)	Alternative B (No Grazing)	Alternative C	Alternative D (Mod. of Alt C)
Miles of designated critical habitat for bull trout accessible to livestock	12.9	0	11.2	12.1
Miles of fish-bearing streams accessible to livestock	32.8	0	24.8	27.5
Acres of wetlands accessible to livestock	40	0	35	35
Number of hardened stream crossings for livestock	3	0	5	5
Number of upland water sources (water troughs)	0	0	4	4
Adaptive management strategy in place?	No	N/A	Yes	Yes

Forest Plan Compliance

Implementation of Alternative A would not be consistent with the Forest Plan as amended by INFISH as it would not maintain RMOs and may cause a downward trend to stream habitat conditions as there would be no allotment improvements or adaptive management strategy. Implementation of Alternative B would be consistent with the Forest Plan as there would not be grazing impacts to stream habitats or riparian areas. Restoration projects and natural recovery of stream habitats would occur that would trend toward improvement of INFISH RMOs.

Alternatives C and D would be consistent with the Forest Plan as there would be improvements to the allotment that would move cattle away from riparian areas. These improvements used together with monitoring and adaptive management would improve RMOs and allow for long term positive trends in habitat conditions and corresponding positive trends in fish populations.

Biological Opinion from U.S. Fish and Wildlife Service (USFWS)

After submitting the biological evaluation for fish and wildlife to the USFWS with the effects analyzed, USFWS concurred with the USFS that localized significant adverse effects to bull trout critical habitat in the action area are expected to affect Primary Constituent Elements (PCEs) 3 (prey base), 4 (habitat complexity), and 8 (water quality and quantity). The majority of effects seem to relate to the inability of the USFS to enforce minimization measures on private

lands. Specifically most effects are expected where the CNF is unable to prevent cattle from entering adjacent private lands or enforce measures to minimize effects in private lands.

Conservation measures were given to help minimize or avoid adverse effects of the original proposed action on bull trout and their critical habitat. These conservation measures include: relocation of the allotment to another area outside of the sensitive watershed containing bull trout and their critical habitat and if cattle cannot be moved, completely exclude riparian and wetland areas that support native salmonids (including private land), implement management techniques to treat or remove nonnative and noxious vegetation where cattle grazing occurs, ensure grazing criteria and standards are appropriate for LeClerc Creek Watershed, more frequent monitoring of grazing impacts (including annual post season assessment), and require that where significant riparian impacts are observed the lease holder replant the impacted area or exclude it to speed up the restoration process.

Terrestrial Wildlife Species and Habitats

Data Collection

The biologist compiled state and Forest records of past observations of wildlife species or their sign within the allotment. Over the course of several days in the summer of 2000, he surveyed wetlands in the LeClerc Creek Allotment for native amphibians with Lisa Hallock, Herpetologist with the Washington Department of Natural Resources (Hallock 2003). In the summer of 2009 and 2010, he surveyed timber stands in the allotment for wildlife habitats in conjunction with the planning effort for the Hanlon Vegetation Management Projects. Over several days in the summer of 2012 and 2013, he assessed the impacts of cattle grazing on selected riparian and upland meadow habitats. The interdisciplinary team assigned to this project discussed specific aspects of present management of the allotment during several field trips in the summer of 2012.

Framework and Desired Future Conditions

The management framework for threatened, endangered, and sensitive (TES) wildlife species is provided in the Forest Plan (as amended), existing recovery plans, conservation assessments, interagency guidelines, and related documents. The Forest Plan identifies Management Indicator Species (MIS) for the Forest, and provides standards and guidelines for conserving the species and their essential habitats. Management recommendations for MIS may also be provided in existing conservation assessments. The management framework for landbirds is provided by Executive Order 13186, and by an existing Memorandum of Understanding between the USDI Fish and Wildlife Service and the Forest Service. See the biological assessment for this project for the existing management framework, by species.

Effects

The wildlife biologist used the following methods to analyze the effects of the proposed allotment management alternatives to terrestrial wildlife habitats and populations:

- review of past environmental documents specific to the allotment and forest management projects in the area,
- review of data collected during field reconnaissance,
- review of timber stand examination data,
- aerial photo interpretation,
- spatial analysis of habitats using a geographic information system (GIS).

The biologist conducted a risk assessment of the potential project effects to each threatened and endangered species according to procedures outlined in Forest Service Manual (FSM) 2672.42, 8 / 90, R-6 Supp. 2600-90-5. For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek Allotment analysis areas, refer to Appendix C.

Threatened and Endangered (T and E) Species

The range allotment is entirely included within the boundary of Pend Oreille County, Washington. For this county, the USDI Fish and Wildlife Service (FWS) presently lists five species as threatened or endangered under the Endangered Species Act (ESA) of 1973 (http://www.fws.gov/wafwo/species_new.html). In addition, there is one candidate species and one species proposed for listing under the ESA. The following table displays information for threatened and endangered wildlife species relative to the allotment. This section will address the predicted effects of the project to those terrestrial wildlife species with potential habitat in the project area (shaded blocks).

Table 25. Threatened (T), endangered (E), proposed (P), and candidate (C) species listed for the CNF

Species ¹	Status	Habitat present?	Documented in area?	Habitat description / other comments
Canada lynx (<i>Lynx canadensis</i>)	T	Yes	Yes	<p>The primary lynx range overlaps the higher elevation portions of the allotment.</p> <p>Habitat for the primary prey of lynx (snowshoe hares) includes plantations or older stands with extremely dense understories of lodgepole pine, other conifers, or mixed conifer / hardwoods. Alternate prey (red squirrel) habitat is timber stands that have mature, cone-bearing trees with interlocking crowns.</p> <p>Typical lynx den habitat includes high elevation stands with complex structure such as log jackpots and root wads.</p> <p>Other considerations include habitat connectivity and seclusion from human disturbance (Ruediger et al. 2000).</p>
grizzly bear (<i>Ursus arctos</i>)	T	Yes	Yes	<p>The LeClerc Creek Allotment is located within the Selkirk Mountains Grizzly Bear Recovery Area.</p> <p>Spring forage habitats include low to mid-elevation riparian areas, meadows, parklands, etc. Summer and fall foraging sites include shrub fields / timber stands with berry-producing shrubs, montane meadows, etc.</p> <p>Grizzlies often den in alpine / subalpine areas with deep soils and where snow tends to linger into the spring.</p> <p>Seclusion from human disturbance is a primary management objective (USDI et al. 1986 and USDI 1993).</p>
North American wolverine (<i>Gulo gulo luteus</i>)	P	Yes	No	<p>Wolverines typically den in higher elevation rock slides, caves, and crevices; often in glacial cirque basins. They forage in all higher elevation habitats but particularly those where carrion can be found. They require seclusion from human disturbance (Copeland 1996).</p>
woodland caribou (<i>Rangifer tarandus caribou</i>)	E	Yes	Yes	<p>The higher elevations of the LeClerc Creek Allotment (4,000+ feet) are within the Selkirk Mountains Woodland Caribou Recovery Area.</p> <p>Suitable caribou habitat consists of late and old structural stage stands in the cedar / hemlock and subalpine fir / spruce habitat series (USDI 1994 and USDA 1988).</p> <p>Forage during the warm months includes grasses, sedges, forbs, mushrooms, and the leaves of shrubs such as pachistima, prince's pine, huckleberries, and others.</p> <p>Winter diet mainly consists arboreal (tree) lichens.</p>

¹ Yellow-billed cuckoo (*Coccyzus americanus*), a threatened species, is not addressed because there is no habitat present and the species is not documented in the area.

Canada lynx (threatened)

The Lynx Conservation Assessment and Strategy (LCAS) provides conservation recommendations for activities in lynx habitat (Ruediger et al. 2000). The primary lynx range overlaps the higher elevation portions of the allotment (roughly above 3,500 - 4,000 feet). The primary lynx range is divided into separate Lynx Analysis Units (LAUs) between 25-50 square miles in size; the average home range of an individual lynx. LAUs are the units over which biologists evaluate and monitor habitat over time. Areas outside of LAUs are not considered important for supporting reproducing lynx (Ruediger et al. 2000). The LeClerc Creek Grazing Allotment contains portions of the Molybdenite, LeClerc, and Harvey LAUs.

Biologists with the Washington Department of Fish and Wildlife documented lynx tracks in the Harvey LAU during snow track surveys they completed in 1998 and 2004 (Base and Zender 2008). A set of possible tracks was reported from the Paupac LAU in 2008.

In the summer of 2013, the Interagency Lynx Biology Team (2013) published an updated version of the LCAS. This document identified the Selkirk Mountain Range as a “secondary area” for lynx where “The focus of management is on providing a mosaic of forest structure to support snowshoe hare prey resources for individual lynx that infrequently may move through or reside temporarily in the area.” However, given the regular sightings of lynx on the forest, the recommendation of the USDI Fish and Wildlife Service is to manage lynx habitat in the Selkirk Mountains as a “core area” for lynx (personal comm. with M. Eames and B. Holt 2014).

In northeastern Washington, lynx use lodgepole pine, subalpine fir, Engelmann spruce, and aspen cover types in subalpine fir plant associations (Ruediger et al. 2000). They may also use other mesic stands (particularly cedar/ hemlock cover types) that lie in proximity to the preferred cover types (Holt 2012). Lodgepole pine and subalpine fir/ spruce stands exist in the higher elevation portions of the allotment. Cedar/ hemlock stands are common on the allotment, particularly on sheltered aspects and in draw bottoms.

Foraging Habitat

Snowshoe hares are the primary prey of lynx. Hares prefer forested habitats that have ample cover and browse low to the ground. Dense young stands of trees (15 plus years old) that are at least 75 percent lodgepole pine or hardwoods or both are prime habitats for hares, but stands with other tree compositions are also utilized. Forest stands in older structural stages with dense, low cover patches can also provide suitable conditions for snowshoe hares. Within the mapped lynx range on the grazing allotment, certain older plantations appear to be providing the best habitats for snowshoe hares. These plantations could potentially be productive foraging sites for lynx. Typically, the most suitable snowshoe hare habitats are too dense to receive much use by cattle.

On the CNF, livestock can sometimes mechanically damage conifer trees in plantations that are up to 5 years old. This typically occurs where the topography is flat, and the plantation is located adjacent to a cattle travel-way or meadow. In the worst such cases this can affect the number of planted trees that survive the first five years. However, with the in-growth of “volunteer” trees, cattle use of plantations does not appear to be impairing the development of lynx foraging habitat over time (Haas 2013).

In the summer, snowshoe hares consume green forage, the leaves of shrubs, and woody browse. Their wintertime diet is restricted to small diameter twigs and bark that are available above the snow (Ruediger et al. 2000). “In riparian areas within lynx habitat, ungulate forage use levels

may reduce forage resources available to snowshoe hares. Browsing or grazing can have direct effects on snowshoe hare habitat if it alters the structure or composition of native plant communities” (Ruediger et al. 2000). In that portion of the LeClerc Creek Allotment located on lynx range, streamside riparian vegetation is being utilized by livestock on low gradient stream reaches at low to middle elevations. Stream headwaters are typically on steeper, incised slopes that are densely vegetated. Green forage and woody plants on these sites tend to exhibit much less evidence of cattle use.

Aspen trees appear to be uncommon to rare on lynx range in the allotment, and mainly occur as trace components of conifer stands. Where these trees are growing near key grazing areas or travel-ways, repeated livestock browsing could arrest the growth of aspen regeneration. This could reduce browse available for snowshoe hares, and impact the replacement of mature aspen trees over time.

During times of hare scarcity, lynx focus more on alternate prey such as red squirrels, grouse, and infrequently, ungulates (Ruggiero et al. 1999). At the southern extent of lynx range (including the CNF) the main alternate prey appears to be red squirrels. Mature forests with good canopy closure, large amounts of coarse wood on the ground, and good cone production tend to support larger populations of red squirrels. Livestock tend to find these stands difficult to move through and lacking in available forage.

Den Habitat

Lynx tend to locate their natal dens under rootwads or in complex “jackpots” of down logs. These structures may be the result of blow-down events, or recruited from trees that have succumbed to insects, disease, or overall stand senescence. Lynx dens may be in older regenerating stands or mature forests, typically of spruce/ fir or spruce/ birch (Ruediger et al. 2000). Potential lynx den stands exist at higher elevations on the allotment. These stands typically have closed canopies and limited forage values for livestock. There are no known lynx den sites within the allotments or surrounding lands.

Environmental Consequences

The following table displays the acreage of lynx primary range in the LeClerc Creek Allotment, by project alternative.

Table 26. Approximate acres of lynx primary range in the LeClerc Creek Allotment, by alternative.

Grazing Allotment	Lynx Analysis Unit (LAU)	Alt. A (acres)	Alt. B (acres)	Alt. C (acres)	Alt. D (acres)
LeClerc	LeClerc LAU	1,945	0	1,299	1,682
LeClerc	Paupac LAU	10,986	0	9,125	11,012
LeClerc	Harvey LAU	43	0	0	0
Total		12,974	0	10,424	12,694

Direct and Indirect Effects

Effects to Foraging (Prey) Habitats

All Alternatives - Where grazing is permitted on the lynx range, dense plantations and other forest stands with thick understories would continue to be effectively impenetrable to livestock.

Impacts to these primary prey (snowshoe hare) habitats should be insignificant or discountable. Cattle would also tend to under-utilize suitable alternative prey (red squirrel) habitats, owing to the coarse woody debris that would impede travel, and lack of palatable grasses in the shaded understory. Grazing would not affect habitat components important to red squirrels such as mature conifer trees, conifer cone production, and overhead canopy.

Alternative A - Livestock grazing on the LeClerc Creek Allotment would continue to reduce the density, diversity and regeneration of shrubs and green forage in local riparian areas. As a result, there could be reduced low cover and available forage for snowshoe hares in these areas.

Aspen reproduction would continue to be suppressed by repeated livestock browsing on this allotment. These effects to snowshoe hare forage plants would be local, mostly occurring on gentle to moderate topography, and usually near travel ways and key grazable areas such as old homestead meadows. The Forest Service could fence livestock from selected aspen stands, and cut down small conifers in other stands to impede livestock access and reduce inter-tree competition for site resources.

Alternative B - The allotment would be closed to grazing. On the LeClerc Creek Allotment, livestock utilization of riparian vegetation and aspen reproduction would cease. Low cover for snowshoe hares should quickly improve in density on locally impacted sites. Browse and green forage values for snowshoe hares could be enhanced on these sites over time. A new environmental analysis would be required to reauthorize grazing on the allotment.

Alternatives C and D - New cattle guards and allotment and pasture fencing would be installed in strategic locations to block cows from drifting between pastures or off the LeClerc Creek Allotment. New watering troughs would be installed in the Lower Bunchgrass Pasture. These improvements should assist in better distributing grazing pressure across the allotment, preventing the re-grazing of pastures, and confining grazing effects to within the allotment boundaries.

Approximately 432 acres of lynx range would be added to the Dry Canyon Pasture with alternatives C and D, in order to make this pasture contiguous with the rest of the allotment. The entire Fourth of July Pasture and higher elevation areas south of Molybdenite Ridge would be removed from the LeClerc Creek Allotment. The bulk of these areas are on the primary range of lynx. The Forest Service would attempt to effectively block any trails that livestock could use to drift into these areas (and off the allotment) with sections of fence, jackpots of felled trees, or other means. If these measures are effective, any local impacts from livestock grazing to riparian vegetation and aspen should cease in these areas.

With alternative D, the Mineral Creek Pasture would be expanded by approximately 822 acres in the southwest corner of the LeClerc LAU. Livestock access to most of the acres added to the allotment would be hindered by natural barriers such as steep, broken ground, or dense forest stands. With proposed changes to the allotment boundaries, the total area of lynx range on the LeClerc Creek Allotment would be reduced by approximately 2,550 acres with alternative C and 280 acres with Alternative D, from the present condition.

Adaptive Management - With alternatives C and D, the Forest Service would monitor key riparian areas for green forage and riparian shrub utilization by livestock on each allotment that is being actively grazed. If the habitat parameters provided in the Monitoring and Adaptive Management Plan (Appendix D) are not being met, the Forest Service would take steps to reduce grazing impacts to these resources. Remedial actions could include protecting specific areas with

fencing, reducing the length or timing of the grazing season, reducing livestock numbers, etc. The intent would be to initiate and sustain an upward trend in hardwood reproduction and riparian resources, which should benefit snowshoe hares over the long run.

Direct and Indirect Effects to Den Habitat

Alternative B - There would be no potential for livestock to disturb lynx den activities.

All other alternatives - There are no known lynx den sites in any of the LAUs that overlap the grazing allotment. Potential lynx den stands typically have closed canopies, and therefore limited forage value for livestock. Cattle movement in these high elevation stands would normally be impeded by dense understory vegetation and high levels of woody debris. Livestock would be put out on the allotment well after the initiation of lynx denning, and would normally graze preferred sites at low elevations first. Thus, the risk of cattle disturbing adult lynx or kittens during this critical life stage should be slight or questionable.

Cumulative Effects

Biologists evaluate the cumulative effects of forest management on lynx and their essential habitats at the scale of an individual LAU (USDI 2001). Appendix C of the biological assessment for this project (Borysewicz 2017) lists other recently completed, active, or future projects and activities in the LAUs that overlap the grazing allotment. Some of these projects and activities could impact low cover and forage for snowshoe hares. These effects could be cumulative to those resulting from livestock grazing on the allotment proposed with Alternatives A, C and D.

Over the last few decades, timber sales on all ownerships in the LAUs opened up many dense timber stands. Low cover for snowshoe hares was compromised, particularly within created openings. Both hares and lynx were likely to avoid created openings that were more than a few acres in size, owing to the lack of concealing cover. Within about 15 years of harvest, young trees and shrubs growing on these sites would likely have restored hiding cover values. Dense plantations between about 15-30 years old are now providing some of the best snowshoe hare habitats in the LAUs. Livestock tend to avoid these sites owing to their almost impenetrable nature.

Per direction in the LCAS, the CNF does not precommercially thin plantations on the lynx range that are suitable for snowshoe hares, or that could be suitable in the future. Thus, the conditions preferred by hares are maintained on these sites until the live tree canopy eventually lifts above where it is accessible to hares. Precommercial thinning of plantations continues to occur on private lands on the lynx range.

The Forest Service must manage timber stands on the lynx range to “provide a mosaic of stand structures to support snowshoe hare prey resources for individual lynx that infrequently may move through or reside temporarily in the area”. Toward this end, we would continue to promote future snowshoe hare habitats through timber harvest that creates openings, while ensuring that less than 30 percent of a LAU is in an unsuitable condition for lynx (natural or recently created openings). We must consider habitat conditions across all ownerships in a LAU when applying standards and guidelines pertaining to lynx management on NFS lands.

Prescribed burning projects intended to reduce forest fuels or improve wildlife habitat are mostly initiated by the Forest Service. Any completed or planned burns on the LAUs that overlap the

grazing allotment would rejuvenate existing green forage and woody browse species such as aspen, potentially benefitting snowshoe hares over the short to mid-term.

There are a number of recently completed, active, or planned projects in the LAUs that are intended to restore riparian areas. These include culvert replacements, large wood installation in streams, road obliterations, and road relocations out of riparian corridors. These projects could remove or damage some riparian vegetation that could otherwise be utilized by snowshoe hares. However, these impacts would be of small scale and the affected sites should quickly revegetate. Over time, the extent and vigor of riparian vegetation should be enhanced by these projects. The ability of livestock to physically access the affected riparian areas would likely be reduced with these projects.

Based on this discussion, we expect that cumulative effects to riparian vegetation and aspen stands from grazing would tend to be local, small scale, and ameliorated by other projects and activities intended to protect or restore these habitat components.

Effects Determination

With alternative B (no grazing), any potential impacts of livestock grazing to the essential habitats of lynx prey animals would cease.

With alternatives A, C, and D, livestock grazing would have insignificant or discountable effects to dense young conifer stands that provide the best quality snowshoe hare habitat, and to the essential habitat components of red squirrels. The potential for livestock to disturb and displace lynx engaged in denning activities would be slight or questionable. There would continue to be some potential for livestock to reduce forage and low cover for hares within local streamside riparian areas. Aspen regeneration could be locally suppressed.

With alternatives C and D, permitted grazing would be authorized on more acres of primary lynx range. However, these alternatives would include measures to improve the control of livestock movement across the allotments, and livestock distribution within pastures. These alternatives would also include monitoring and adaptive management plans intended to maintain or improve hardwood shrub and tree density and green forage values in locally impacted riparian areas.

The alternatives as proposed would be consistent with recommendations in the LCAS for livestock grazing on lynx range. Based on this discussion, the effects determination for alternative B would be “not likely to adversely affect - beneficial effect”. Alternatives A, C, and D as proposed “may affect, but are not likely to adversely affect” lynx.

Grizzly bear (threatened)

The Grizzly Bear Recovery Plan (USDI 1993) identifies six separate recovery areas in the western United States. In Washington State, the Selkirk Mountains Grizzly Bear Recovery Area lies east of the Pend Oreille River and north of the Middle Creek drainage. Each recovery area is divided into individual Grizzly Bear Management Units (BMUs) which biologists use for habitat evaluation and population monitoring. An individual BMU is roughly 100 square miles in size, the approximate area required for supporting an adult grizzly sow with cubs. The LeClerc Creek Allotment lies entirely within the LeClerc BMU.

District records include scores of potential and documented observations of grizzly bears or their sign in the LeClerc Creek Allotment, dating back to 1976. Radio-collared grizzlies have been documented using the allotment in recent years.

Livestock and grizzly bear conflicts

When livestock are grazed in grizzly bear-occupied habitat there is a potential for bears to locate and feed on livestock carrion. A bear that has fed on stock carrion could learn to associate domestic animals with food, and begin preying on livestock (USDI et al. 1986). This could result in the bear being relocated or controlled by wildlife officers. There have never been any depredations of livestock by grizzly bears documented on the Forest. The cattle grazed on the LeClerc Creek Allotment give birth off-Forest, and in the winter. Therefore, bears on the allotment do not have access to afterbirth or very young, highly vulnerable calves.

The Forest's special order for proper food storage is included in the existing AMP for the LeClerc Creek Allotment. To our knowledge, the allotment permittee has always complied with the order.

Cattle movements on range allotments are in part controlled by sections of barbed wire fencing on pasture or allotment boundaries. Barbed wire fencing presents no barrier to grizzly bears. Typically, a bear will squeeze between the gap between the first and second wire of a fence, or perhaps pass underneath the bottom wire (Almack, Madel, and Hanna 1999).

Seclusion

Core habitat for grizzly bears is defined as areas lying further than 500 meters from open and restricted (gated) roads and motorized trails (USDI 1993). Within this 500-meter "zone of influence", grizzly bears are most prone to being disturbed and displaced from suitable habitat by encounters with vehicle traffic or people on foot. The risk of a bear being shot by a poacher, or mistakenly shot by a legal black bear hunter, is higher in these areas. The higher the road density is in a given area, the fewer acres of core habitat and the greater the risk of human-caused bear mortality (USDI 2001). Each individual BMU has its own set of standards for core habitat levels and road densities. For the LeClerc BMU, there should be no net decrease in core habitat or increase in open or total road densities due to Federal actions (USDI 2001).

Each year the CNF issues a closed road-use permit to the LeClerc Creek Allotment permittee for a number of restricted roads on the allotment (typically six roads). He uses this permit to move cattle from one pasture to another, place salt blocks, maintain fencing, and move his herd on or off the Forest. In any given year, he typically completes five or less entries on a given closed road.

When they are actively foraging, grizzly bears often appear to ignore cattle and have been observed grazing right alongside domestic stock. Foraging stock can disturb and displace bears from their day beds however (Madel 1999).

Spring Forage

Grizzly bears emerge from the den in late March or April. At this time they are underweight and physiologically stressed. Over the next few months it is critical that the animals consume large amounts of the most nutritious foods available in order to replenish fat reserves lost in hibernation. Palatable grasses, sedges, and herbs provide spring forage for grizzly bears. Deer fawns, elk calves, and the carcasses of winter-killed big game animals can be important sources of calories at this time of year. If bears do not have access to high quality forage in the spring, they may not be able to survive the next denning or post-denning periods. Sows entering the den in less than optimal shape may give birth to fewer cubs or none at all.

Within the grazing allotment, spring forage plants are most abundant within old homestead meadows, within the riparian corridors along major streams, and in discrete wetlands. Approximately 2,354 acres of the LeClerc Creek Allotment are providing spring foraging habitats for grizzlies. This represents about 45 percent of the available spring forage habitat in the LeClerc BMU.

Presently, green forage in upland areas of the LeClerc Creek Allotment tends to be underutilized by cattle. Most utilization tends to occur on homestead meadows and riparian sites. In part this is due to poor existing controls over stock movement across the allotment. Cattle are presently able to drift back to preferred grazing areas in pastures that have already been grazed to the proper level.

Key livestock grazing areas on the allotment are potentially among the most productive foraging sites for bears. However, the ability of bears to fully utilize these sites is often compromised by the presence of nearby open roads and associated human disturbance. Many of the old homestead meadows are also popular dispersed campsites, particularly during the hunting seasons. Bears are more likely to access relatively remote, forested wetlands than are cattle. Bears are also more likely to tolerate foraging in inundated wetlands.

Noxious weeds exist in all of the grazeable areas of the allotment. These exotic plants are usually not very palatable to wildlife, and can successfully outcompete native forage plants for sunlight, water, and soil nutrients. Certain weeds (for example, knapweeds) emit chemicals into the soil that suppress the growth of other plants. Weed seeds can be transported overland on the hair of livestock, and deposited in their feces. It is possible that cattle on the LeClerc Creek Allotment are bringing in weed seeds from off-Forest. They also may be spreading seeds from place to place within the allotment. The CNF has an active program of spraying herbicides to kill noxious weeds in meadows, on roadsides, and on other areas of the allotment. In recent years, these treatments have led to marked reductions in weed coverage and improvements in the vigor of native grasses and forbs in sites like Fourth of July Meadow.

Late Summer and Fall Forage

As spring turns to summer, bears follow the “green-up” of forage plants to progressively higher elevations (USDI 1993). Bears will then seek out succulent forbs and other green forage plants growing in alpine meadows, avalanche chutes, and riparian areas. In the late summer and fall months, berry-producing shrub fields become important foraging sites as the fruit ripens. Discrete berry-producing shrubfields exist mainly at middle to upper elevations in the LeClerc Creek Allotment, particularly within natural openings on the south flank of Molybdenite Ridge. Berry-producing shrubs are often present in the understories of more open-canopied forest stands in the allotment. Huckleberries are the most common. Other species present include buffaloberry, thimbleberry, bearberry, serviceberry, mountain ash, and raspberry. Berry crops are not utilized by domestic livestock to an appreciable degree.

The following table displays the approximate existing acres of the various grizzly bear foraging habitats in the LeClerc Creek Allotment.

Table 27. Approximate acres of grizzly bear foraging habitats on the LeClerc Creek Allotment

LeClerc Creek Allotment pasture	Acres of berry-producing shrubfields	Acres of meadows, parklands	Acres of forb fields	Acres of riparian forest / shrubs	Acres of wetlands
Dry Canyon	0	83	0	184	20
Fourth of July	275	0	30	51	58
Lower Bunchgrass	179	0	21	264	63
Mineral Creek	821	88	297	464	35
Upper Bunchgrass	1,367	146	109	347	94
Total allotment acres (percent of habitat in LeClerc BMU)	2,642 (65)	317 (29)	457 (46)	1,310 (55)	270 (33)

Den sites

Grizzlies tend to dig their dens on sheltered slopes where the wind and topography is likely to cause an accumulation of snow, and where the snow is unlikely to melt during warm periods (USDI 1993). Higher elevations, northerly aspects and remote areas that are isolated from human activity appear to be preferred by most bears. High elevation areas in the LeClerc Creek Allotment are relatively isolated, but they tend to be on exposed, southerly aspects. The best den habitat in the LeClerc BMU is located on the north side of Molybdenite Ridge, just outside the LeClerc Creek Allotment. A grizzly bear was documented to have excavated a den on the north side of this ridge in the 1990s.

Hiding Cover

Hiding cover for grizzly bears is defined as vegetation capable of hiding 90 percent of a standing adult bear from human view at a distance of 200 feet (USDI 2001). Owing to the densely forested nature of the allotment, hiding cover is abundant.

Cattle browsing on alder and other shrubs have reduced the density and vigor of these plants in certain riparian shrubfields in the LeClerc Creek Allotment, particularly along the lower reaches of the Middle Branch LeClerc Creek. The reduced density of vegetation has resulted in increased line-of-sight distances through these prime bear foraging areas. Bears may be more vulnerable to disturbance or to being poached in areas lacking adequate hiding cover.

Environmental Consequences

Direct and Indirect Effects

Direct and indirect Effects: Livestock and Grizzly Bear Conflicts

Alternative B (no grazing) - The allotment would be closed to grazing. There would be no opportunity for grizzly bears to predate or scavenge domestic stock on the allotment.

Alternatives A (no change), C, and D - Allotment management plans (AMPs) would contain a clause for cancelling or temporarily ceasing activities to resolve human and bear conflict situations. Livestock permittees would be required to properly store, handle, and dispose of human food and refuse, livestock feed, and other attractants, so that they are unavailable to bears. The AMP would require the permittee to remove any discovered sick or injured stock off

the allotment, so they are not targeted by large carnivores. The AMP would also require the permittee to work with the Washington Department of Fish and Wildlife in completing the removal, destruction, or treatment of any discovered livestock carcasses, if necessary. These measures could reduce the risk of grizzly bears becoming conditioned to viewing livestock as food.

With alternatives C and D, the turn-on date for the LeClerc Creek Allotment would be pushed back two weeks to mid-June. Although the turn-off date would likewise be pushed back to mid-October, grizzlies are most likely to be at higher elevations than where cows would be in October. Thus, the potential for grizzly bear and livestock conflicts could be temporally reduced by two weeks with these alternatives.

Direct and Indirect Effects: Seclusion

All alternatives - There would be no change in core habitat levels or road densities in the LeClerc BMU resulting from any of the range allotment management alternatives.

Alternative A (no change) - There would be no change in the potential for a grizzly to be moved off a day bed by livestock, or disturbed by allotment management operations that are conducted on foot or horseback. There would be no change in the number of vehicle trips on closed roads required by the permittee, from the present condition.

Alternative B (no grazing) - The allotment would be closed to grazing. There would be no risk of disturbance to grizzly bears in the LeClerc BMU associated with livestock operations. Closed road entries by the allotment permittee would cease.

Alternatives C and D - As previously mentioned, the turn-on date for the LeClerc Creek Allotment would be pushed back by two weeks. Thus, livestock would be off-Forest during almost the entire spring season for bears. The potential for livestock to disturb bears on their day beds during this period would be reduced from the present condition.

With the removal of the Fourth of July Pasture from the LeClerc Creek Allotment, vehicle access by the permittee should not be required on closed NFS Roads 1932 and 1934200. There should be no change in the average number of vehicle trips required for allotment management on other closed roads, from the present condition.

Direct and Indirect Effects: Den Habitat

Cattle are off the Forest during the winter denning period. Livestock grazing would not conflict with grizzly bear denning, or with the suitability of potential den sites for bears.

Direct and Indirect Effects: Forage Resources

The following table displays the acres of habitats that would be included in the LeClerc Creek Allotment, by alternative.

Table 28. Approximate acres of grizzly bear foraging habitats available to cattle in the LeClerc Creek Allotment, by alternative

Grizzly bear foraging habitat	Habitat acres Alternative A (no change)	Habitat acres Alternative B (no grazing)	Habitat acres Alternative C	Habitat acres Alternative D
berry shrubs	2,642	0	975	984

Grizzly bear foraging habitat	Habitat acres Alternative A (no change)	Habitat acres Alternative B (no grazing)	Habitat acres Alternative C	Habitat acres Alternative D
Dry Canyon	0	0	0	0
Fourth of July	275	0	0	0
Lower Bunchgrass	179	0	155	155
Mineral Creek	821	0	234	243
Upper Bunchgrass	1,367	0	586	586
forb fields	457	0	390	393
Dry Canyon	0	0	0	0
Fourth of July	30	0	0	0
Lower Bunchgrass	21	0	12	15
Mineral Creek	297	0	298	298
Upper Bunchgrass	109	0	80	80
grasslands, parks	317	0	116	407
Dry Canyon	83	0	83	83
Lower Bunchgrass	0	0	0	4
Mineral Creek	88	0	3	290
Upper Bunchgrass	146	0	30	30
riparian forest	1,144	0	1,044	1,172
Dry Canyon	181	0	251	251
Fourth of July	48	0	0	0
Hanlon Meadow	0	0	0	4
Lower Bunchgrass	214	0	111	224
Mineral Creek	404	0	421	432
Upper Bunchgrass	297	0	261	261
riparian shrub fields	166	0	126	158
Dry Canyon	3	0	3	3
Fourth of July	3	0	0	0
Lower Bunchgrass	50	0	36	59
Mineral Creek	60	0	58	67
Upper Bunchgrass	50	0	29	29
wetland plants	270	0	177	227
Dry Canyon	20	0	49	49
Fourth of July	58	0	0	0
Hanlon Meadow	0	0	0	7
Lower Bunchgrass	63	0	38	76
Mineral Creek	35	0	40	45
Upper Bunchgrass	94	0	50	50

All alternatives - Cattle make only incidental use of native berries. Continued grazing should have insignificant or discountable effects to the availability of berry crops for bears.

The Forest Service would continue to monitor and control noxious weed populations on National Forest System lands on the allotment, as is standard practice.

Alternative A (no change) - Cattle distribution across the LeClerc Creek Allotment would remain less than optimal, with animals tending to concentrate in lowlands and streamside riparian areas. Riparian vegetation would continue to be well-utilized along certain stream reaches. Grasses and forbs in many upland areas would continue to be underutilized by cattle. Some cows would continue to drift between pastures, potentially re-grazing plants in preferred areas. Stock would also continue to drift off the allotment, due to the lack of adequate fencing and other control structures.

The risk of livestock transporting noxious weed seeds onto and across the LeClerc BMU would remain unchanged.

Alternative B (no grazing) - The allotment would be closed to grazing. Within the LeClerc Creek Allotment, direct effects from cattle grazing, trampling, or trailing in local riparian habitats that currently occur on an annual basis would cease. Local stream segments and wet meadows that are being mechanically impacted by cattle trailing should recover over time. Riparian vegetation would become more dense and diverse on these sites. Over time the suitability of these sites as spring foraging habitat for grizzly bears could be enhanced.

The condition of homestead meadows would likely improve for the first few years. There would be fewer areas of bare ground on these sites. Native forage plants could increase overall while weedy “invader” species such as yarrow, plantain, and dandelion could decline. Over time there would be more accumulation of dead plant material that would insulate the ground, provide some water-holding capacity, and decrease the potential for surface soil movement and erosion.

Grasses evolved with the periodic removal of vegetative material through fire, insects, or grazing by ungulates. In the absence of livestock grazing, grasses growing in meadows would likely accumulate excess amounts of dead material over time. This accumulated litter may eventually shade out new shoots and cause the plants to go into a “self-imposed stress” (Knapp and Seastedt 1986). The vigor of the plants may be compromised and the meadows may become less productive and healthy.

In the absence of livestock grazing, young lodgepole pines and other conifers would accelerate their encroachment into existing meadows. This natural forest succession could lead to the conversion of these openings to forestland over time (Zender 2005). We have documented this occurring within riparian livestock exclosures on the allotment. Lodgepole pines are successfully colonizing the upland areas within these exclosures, while apparently being suppressed in adjacent meadows that are still grazed by cattle. Mechanical damage or browsing of seedling trees by livestock may be keeping trees from establishing in the grazed meadows (Catlin 2005). The fence line contrast is abrupt at these sites. Of all the alternatives, the need to actively manage meadows to keep them in an open, productive condition would be much greater with alternative B (no grazing). The ability of the Forest Service to continue meadow maintenance treatments over time would be subject to available funding.

Cattle would no longer contribute to the spread of noxious weeds in the LeClerc BMU.

Alternatives C and D - The annual turn-on date for the LeClerc Creek Allotment would be pushed back from June 1 to June 15. Grizzly bears would be able to access green forage in the area for almost the entire spring period, free from competition with domestic stock.

Cattle distribution across the LeClerc Creek Allotment would be improved with the installation of water troughs in upland areas. These new watering sites could enable cows to more efficiently utilize upland forage resources, potentially reducing the amount of time they spend in lowlands and riparian habitats. New cattle guards and allotment and pasture fencing would be installed in strategic locations in order to block animals from drifting between pastures or off the allotment. Any trails that stock could use to drift into high-elevation areas (and off the allotment) would be effectively blocked with sections of fence, jackpots of felled trees, or other means. These measures could reduce the potential for livestock to spread weeds across the allotment.

The Fourth of July Pasture would be removed from the LeClerc Creek Allotment. Green forage plants that are consumed by bears would no longer be utilized by livestock in this pasture. Wetland plant diversity and production, and the hydrologic integrity of wetlands should be enhanced in the area, over time. In the absence of livestock grazing, there would be an increased need to periodically manage Fourth of July Meadow to keep it in an open, productive condition. Toward this end, the Forest Service could use prescribed fire to remove accumulations of rank grass leaves and encroaching conifer trees. Small conifers could also be mechanically removed. The ability of the Forest Service to implement these treatments over time would be subject to available funding. Cattle would no longer contribute to the spread of noxious weeds in the Fourth of July Pasture.

Boundaries of the Upper Bunchgrass and Mineral Pastures would shift to the south. This should result in only minor changes in how livestock use those pastures from the present condition. Cattle are already mostly excluded from the high-elevation areas that would be dropped from the allotment, due to steep topography and intervening dense, forest stands. We expect that areas added to the Dry Canyon Pasture would be mostly inaccessible to cows for the same reasons, as well as due to existing control structures (fencing, cattle guards). The intent of expanding the Dry Canyon Pasture would be to make it contiguous with the rest of the allotment. Thus, when the permittee drives his cattle on roads to the Dry Canyon Pasture, his herd would no longer have to pass outside of the allotment altogether.

With alternative C, the boundary of the Lower Bunchgrass Pasture would be moved to the west side of the Middle Branch LeClerc Creek, resulting in approximately 2.6 miles of the creek being located outside the allotment. This segment of streamside riparian habitat is presently the most impacted by cattle on the allotment. If the proposed fencing is effective, riparian shrubs, succulent forbs, and sedges growing along the creek should increase in density and diversity over time. Forage values for grizzly bears should be enhanced.

With alternative D, the LeClerc Creek Allotment would be expanded to the east, following the existing drift fence along the East Branch LeClerc Road (NFS Road 1934). Most of the lower Middle Branch LeClerc Creek would be within the allotment, as is presently the case. Segments of this stream north of the Hanlon Meadow pasture in T. 36 N., R.44 E., sections 16 and 20 would be completely included in new livestock exclosures (fenced). The stream segment running through Stimson Lumber Company's property in section 21 would remain open to livestock use. This section of stream could see more concentrated stock use, since the upstream and downstream segments of the creek would be fenced off. The new allotment boundary would include similar acreages of habitats that could provide green forage for bears, as the existing condition (alternative A).

Adaptive Management - The Forest Service would monitor key grazing areas (including riparian habitats) on the allotment to assess utilization and vegetation trends. If green forage utilization exceeds the standards proposed in the Monitoring and Adaptive Management Strategy

(Appendix D), the CNF would take management actions to reverse this trend. These could include additional pasture controls, shortening the grazing period in a given pasture, or reducing the numbers of cow/ calf pairs authorized for the allotment.

Direct and Indirect Effects: Hiding Cover

Alternative A (no change) - Cattle would continue to concentrate in lowlands and streamside riparian areas in the LeClerc Creek Grazing Allotment, particularly later in the year. Riparian shrub growth would continue to be suppressed on certain stream segments. The development of dense hiding cover along the most heavily browsed stream sections would continue to be suppressed. Aspen sprouts would continue to be suppressed in local areas.

Alternative B (no grazing) - On the LeClerc Creek Allotment, browsing of riparian shrubs and aspen by cattle would cease, leading to increases in regeneration and overall density of these hardwoods. This alternative has the greatest potential to improve hiding cover at locally impacted sites, over time.

Alternatives C and D - New water troughs installed in upland areas of the LeClerc Creek Allotment should draw livestock away from lowland riparian areas to some extent, potentially leading to an upward trend in riparian shrub density. The Fourth of July Pasture would be dropped from the allotment. Any impacts to hiding cover from livestock grazing on that pasture should cease.

With alternative C, the boundary of the Lower Bunchgrass Pasture would be moved to the west side of the Middle Branch LeClerc Creek, resulting in approximately 2.6 miles of the creek being removed from the allotment. Hiding cover along this segment of stream is presently the most impacted by cattle on the allotment. If the new allotment boundary fencing along the west side of the creek is effective, hiding cover values for grizzly bears should quickly improve on the excluded stream reaches. With alternative D, this section of creek would remain within the allotment, but would be partially included in riparian livestock exclosures. The segment of stream running through private land in T. 36 N., R. 44 E., section 21 would remain accessible to cattle. There could be more concentrated livestock use along this stream segment, leading to a reduction in riparian shrub density over time.

Adaptive Management - With alternatives C and D, we would monitor key riparian areas for green forage and riparian shrub utilization by livestock on each allotment that is being actively grazed. If the habitat parameters provided in the Monitoring and Adaptive Management Plan (Appendix D) are not being met, the Forest Service would take steps to reduce grazing impacts to these resources. Remedial actions could include protecting specific areas with fencing, reducing the length or timing of the grazing season, reducing livestock numbers, etc. The intent would be to initiate and sustain an upward trend in hardwood reproduction and riparian resources, which should enhance hiding cover values over the long run.

Cumulative Effects

Biologists evaluate the cumulative effects of forest uses and management activities on grizzly bears at the scale of an individual bear management unit (USDI 2001). Thus, the cumulative effects area for the LeClerc Creek Allotment is the LeClerc BMU. Appendix C of the biological assessment for this project (Borysewicz 2017) lists other forest management projects and uses recently completed, underway, or proposed in the respective cumulative effects areas.

Livestock and Grizzly Bear Conflicts - Beyond the 101 cow/calf pairs currently permitted for the LeClerc Creek Allotment, no other livestock are grazed in the LeClerc BMU. To reduce the potential for livestock and grizzly bear conflicts, the AMP would incorporate the design elements listed earlier in this document.

Seclusion - Motorized entries on restricted (closed) roads required by the allotment permittee would be cumulative to those needed for forest management, research, monitoring, and emergency access. However, the number of entries associated with allotment management would continue to be quite small. In the grizzly bear recovery area, we strive to limit the number of administrative entries on each restricted road to no more than 57 trips during the “active bear year”. This is the disturbance threshold for classifying a road as “active” (open) for the purpose of calculating open and total road densities in each BMU over a given year. With the exception of roads used for active timber sales, most closed roads in the LeClerc BMU receive well under this number of trips in a given year.

No permanent roads would be constructed to access timber stands on NFS lands in the LeClerc BMU. New road construction on private or state lands in the BMU is likely to be very limited as those ownerships are presently well roaded.

Forage - In the last 20 or more years, timber sales and road construction opened up many areas of dense timber and created new pathways for livestock to move through the allotment. This decreased the effectiveness of existing livestock controls. Cattle were then more likely to cross pasture boundaries to re-graze preferred sites. They were also more likely to move off the allotment altogether. All alternatives that authorize livestock grazing would include new infrastructure and other means to control livestock movement on the allotment.

Past timber harvest in the cumulative effects area improved growing conditions for grizzly bear food plants by increasing the amount of sunlight, water, and soil nutrients available to the plants. Coincidentally, this harvest sometimes created transitory range areas for cattle. The magnitude of these effects was dependent on a number of variables including: the amount of forage plants on site prior to harvest, the percentage of the tree canopy removed, and post-harvest fuels treatments. Improvements in forage production and palatability were likely best realized where prescribed burning was used to treat logging slash (mainly NFS lands).

Active or planned timber sales would create new openings on hundreds of acres in the cumulative effects area. Livestock could shift to foraging in these openings to some extent, and spend less time in lowland riparian habitats. These effects would be additive to those resulting from improvements in livestock distribution on the LeClerc Creek Allotment we expect would occur with alternatives C and D, as described earlier. Riparian areas within timber sale units will receive no-cut buffers or selective harvest prescriptions, depending on the stream class and other site conditions.

As time goes on, growing young conifers would overtop understory plants and “recapture” sites where timber harvest has occurred. Some of the older tree plantations on the allotment have already grown out of transitory range status and are dense enough to be mostly avoided by cattle.

There are a number of recently completed, active, or planned projects in the cumulative effects areas that are intended to restore riparian habitats. These include fencing livestock from key riparian areas, replacing culverts to restore fish passage, installing large wood in streams, and obliterating or relocating roads out of riparian corridors. Heavy equipment used to complete these projects could remove or damage some riparian vegetation. However, these impacts would

be of small scale and the affected sites should quickly revegetate. Over time, the extent and vigor of riparian vegetation should be enhanced in the project areas. The ability of livestock to physically access the affected riparian areas is likely to be reduced to some degree with these projects.

In recent years, the Forest Service has completed a number of prescribed burns in the cumulative effects areas specifically designed to improve elk forage. These burns were intended to increase forage palatability and vigor in upland shrubfields, dry parklands, and meadows. Spring forage production for grizzly bears was enhanced where it exists on these sites. Other completed or proposed habitat improvements in the areas include removing encroaching conifers from homestead meadows, and protecting aspen reproduction with fencing or other means.

Continued livestock grazing on the LeClerc Creek Allotment would contribute to the spread of noxious weeds in the cumulative effects area. These effects could be additive to those resulting from other forest projects and uses, particularly those that cause soils to be exposed. The Forest Service would implement noxious weed prevention, pretreatment and monitoring actions with each active and proposed forest management project, as is standard practice. Noxious weed management does not appear to be a consideration on state and private forest lands. Weed infestations are likely to increase on those ownerships over time. The Forest Service would need to continue its ongoing program of weed monitoring and control, in order to check the spread of weeds in the drainages.

Hiding Cover - Timber sales and other vegetation management projects would remove or reduce hiding cover. These effects would be cumulative to those resulting from late-season browsing of riparian shrubs by cattle. However, both the Forest Service and Stimson Lumber Company routinely take steps to ensure that lateral cover is maintained where it exists within harvest units along open roads in the LeClerc BMU. No point within created openings can be further than 600 feet from forested cover. Hiding cover is constantly being recruited in the BMU within older plantations. Alternatives C and D should initiate an improving trend in hiding cover associated with streamside riparian areas through the changes in allotment management described earlier.

Effects Determination

With alternative A, the present low risk of livestock predation by grizzly bears would remain unchanged. Livestock and grizzly bears could be directly competing for the same forage resources within the LeClerc BMU for the last two weeks of the critical spring period for bears. Close administration of the LeClerc Creek Allotment would be required to prevent cattle grazing from causing local impacts to forage resources in stream bottoms and other riparian areas. Provided all project design elements and mitigation related to grizzly bears is followed, this alternative “may affect, (but is) not likely to adversely affect,” grizzly bears.

With alternative B, all effects from livestock grazing on riparian habitats and green forage would cease. The need to periodically maintain meadows through burning, mechanical conifer removal, etc. would be greatest with this alternative. There would be no opportunities for grizzly bears to scavenge livestock carcasses, or predate stock animals. There would be no potential for grizzly bears to be disturbed by livestock or allotment management operations. Thus, the effects determination for alternative B would be; “not likely to adversely affect, may beneficially affect” grizzly bears.

With alternatives C and D, the overlap in livestock and grizzly bear use of the LeClerc Creek Allotment would be effectively reduced by two weeks. Livestock distribution should be

improved from the present condition, potentially reducing grazing pressure on important riparian habitats. Mitigation proposed with these alternatives would be intended to reduce the potential for bears to locate and feed on sick or injured livestock, or livestock carcasses. These alternatives “may affect, (but are) not likely to adversely affect,” grizzly bears.

North American wolverine (proposed for listing)

A few documented sightings of wolverines exist from the Newport-Sullivan Lake Ranger Districts, mainly from remote, high elevation areas. In late winter of 2013, we contracted a private biologist to conduct aerial surveys for wolverine sign and active dens on major ridge systems on the ranger districts. He detected no tracks or other sign during the two flights he conducted (Layser 2013). There are no documented sighting records of wolverines from the grazing allotment covered by this report.

Estimated home ranges for adult wolverines in North America are huge, up to 900 square kilometers for males and 100 square kilometers for each of two breeding females in one Montana study (Ruggiero et al. 1994). The maintenance of wolverine populations appears to be closely tied to providing for large, protected areas with limited human activity (Hornocker and Hash 1981).

Wolverines appear to restrict themselves to higher elevation habitats where spring snow cover persists until May, even when they are dispersing (Parks 2009). They will skirt around warm, dry valleys to remain in cooler conditions at high elevations. Large areas of medium or scattered mature timber and ecotonal areas associated with cliffs, rock slides, swamps, and meadows appear to be particularly important to this animal.

Molybdenite Ridge, at the northern boundary of the LeClerc Creek Allotment, could potentially provide suitable habitats for wolverines. This long ridge system supports a mosaic of higher elevation subalpine fir/ lodgepole pine stands, mountain meadows, and shrubfields interspersed with rock outcrops and talus. Livestock appear to have poor access to this area, owing to large expanses of dense forest stands and steep topography that separate it from the bulk of the allotment (Bolyard 2016).

Food Resources

Wolverines are opportunistic omnivores that consume a wide variety of foods. Carrion (especially big game animals) serves as the mainstay of their diet, particularly in winter. Small mammals such as ground squirrels, porcupines, snowshoe hares, and birds are primary prey only when carrion of larger animals is unavailable (Banci, in Ruggiero et al. 1994). Surplus food is often cached for later use. In late summer and fall, berry crops may be important to wolverines.

The allotment contains both summer and winter ranges for deer, elk, and moose. Forest grouse and a diversity of small mammal species are also present. Discrete berry-producing shrubfields exist mainly at mid to upper elevations in the LeClerc Creek Allotment; particularly within natural openings on the south side of Molybdenite Ridge. Berry-producing shrubs are often present in the understories of more open-canopied forest stands in the allotment. Huckleberry shrubs are the most common.

Den Habitat

Wolverines construct their dens in the cavities of hollow trees and logs, under the roots of upturned trees, or among boulders and rock ledges (Ruggiero et al. 1994). Females appear to

prefer high-elevation, north-facing talus slopes, for natal denning (Heinmeyer et al. 2001). Dens are often located in glacial cirque basins.

In 2007, we used a geographic information system (GIS) to map potential natal den habitat on the ranger districts based on the model developed by Heinmeyer et al. (2001). The selection criteria we used included;

- northerly aspects (320 to 130 degrees) where snow cover persists the longest,
- elevations above 5,500 feet,
- concave and flat slopes,
- rock and / or herbaceous cover types present,
- patch size at least six hectares (14.5 acres).

Using the above criteria, we mapped four potential den areas for wolverines on the north and northwest sides of Molybdenite Ridge, adjacent to, but outside the LeClerc Creek Allotment. We did not map potential den areas on the south face of the ridge (inside the allotment), since snow cover is unlikely to persist later in the season on those exposures.

Seclusion

Wolverines are most susceptible to being disturbed and displaced by human activities during the winter, particularly snowmobile riding in areas with active dens. Open roads in wolverine habitats may facilitate poaching, and incidental trapping.

Environmental Consequences

Direct and Indirect Effects

Direct and Indirect Effects: Prey Habitats

Cattle have poor access to higher ridge systems in the LeClerc Creek Allotment due to intervening stands of dense timber and steep topography. We have not documented any sites within the subalpine fir/ spruce biophysical zone where cattle are over-utilizing green forage resources important to big game and other wolverine prey species. With alternatives C and D, most high elevation areas (including Molybdenite Ridge) would be dropped from the LeClerc Creek Allotment. See the coverage of gray wolves in the sensitive species section of this document for a discussion of grazing effects to big game habitats. See the section on lynx for a discussion of effects to snowshoe hare habitats. Livestock make only incidental use of native berry crops that could be consumed by wolverines.

Direct and Indirect Effects: Den Sites

There are no known active wolverine dens on the allotment, or anywhere on the Colville National Forest. The best potential den habitat in the area would be on the sheltered (northerly) aspects of Molybdenite Ridge, just outside the LeClerc Creek Allotment. Den activities would occur outside of the period when cattle are present on the allotment. Thus, continued livestock grazing should have no impacts to denning wolverines or potential natal den habitats.

Direct and Indirect Effects: Seclusion

The range permittee does not require access on restricted roads in the higher elevation portions of the LeClerc Creek Allotment. The potential for wolverines to be disturbed and displaced by livestock or human activities associated with allotment management should be insignificant or discountable.

Cumulative Effects

See the cumulative effects discussion related to big game habitats, in the MIS section later in this document.

Effects Determination

The alternatives as proposed should have no effect to denning or seclusion habitats for wolverines. Effects to big game animals would be similar to those reported in the section on gray wolves, later in this document. Thus, the alternatives as proposed are not likely to jeopardize the continued existence of the species or result in destruction or adverse modification of proposed critical habitat.

Woodland caribou (endangered)

The Selkirk Mountains Woodland Caribou Recovery Area generally includes lands lying above 4,000 feet in elevation in northeastern Washington, northwestern Idaho, and southeastern British Columbia. On the Colville National Forest, the recovery area lies east of the Pend Oreille River from the Canadian border south to just south of Monumental Mountain. The woodland caribou herd in the Selkirk Mountains Ecosystem is the only remaining population of this species in the lower 48 states.

In 2012, the USDI Fish and Wildlife Service designated a portion of the recovery area as critical habitat. Critical habitat is considered “essential to the conservation of the southern Selkirk Mountains population of woodland caribou” (USDI 2012). The mapped critical habitat area includes approximately 30,010 acres in extreme northeastern Washington and northwestern Idaho.

The caribou recovery area is divided into several Caribou Management Units (CMUs) which biologists use for habitat evaluation and monitoring. Approximately 8,244 acres of the LeClerc Creek Allotment overlaps with the Molybdenite CMU. The allotment is located more than 12 miles south (outside) of designated critical habitat for the Selkirk Mountains caribou herd (USDI 2012).

In late winter, biologists with the British Columbia Ministry of Forests, Parks, and Environment conduct aerial reconnaissance of the recovery area to census the remnant caribou herd. At that time of year, the animals tend to be using the more open, high-elevation ridges where it is possible to locate them and get a complete count of the herd from the air. In the winter of 2015-2016, the caribou population numbered 12 animals. The center of activity of the herd is in the vicinity of Stagleap Provincial Park, located a few miles north of the international border in British Columbia.

Based on past telemetry and census locations, caribou have used habitats that are fairly well distributed across the CNF’s portion of the recovery area. However, in the last ten years no animals have been documented south of the Salmo-Priest Wilderness, including the LeClerc Creek Allotment (Wakkinen 2013).

Caribou Seasonal Habitats

The Forest Plans for the Colville National Forest (USDA 1988) and Idaho Panhandle National Forests (USDA 1990) describe six seasonal habitats important to caribou, and provide silvicultural prescriptions for maintaining and restoring these habitats in the recovery area. A more recent analysis by Kinley and Apps (2007) identified just five seasonal habitats used by caribou based on their distinct shifts in elevation over the course of the year. These seasonal habitats occur primarily within two vegetation zones; mature and older (100 plus years) western hemlock/ western red cedar and subalpine fir/ Engelmann spruce forests. Seasonal habitats used by caribou are characterized in the following table.

Table 29. Woodland caribou seasonal habitat components (Allen 2013)

Seasonal zone	Approx. season of use	Stand description	Slope position
early winter	November – Jan. 18	Mature and old spruce/ subalpine fir with 26-50 percent canopy cover, old growth cedar/ hemlock with 76-100 percent canopy cover with large, lichen-bearing branches.	mid-lower elevations
late winter	mid-Jan. – April 20	Mature and old stands of spruce/ subalpine fir with 26-50 percent canopy and cover. High levels of arboreal lichens, which caribou feed on almost exclusively this time of year.	upper slopes, ridgetops
spring	April 20 – July 7	Areas with abundant green forage, which becomes the primary food source and allows caribou to recover from the effects of winter. These areas often overlap early and late winter ranges.	mid-lower elevations
calving	June 1 – July 7	Same as late winter.	high-elev. ridgetops
summer	July – October 16	Mature and old subalpine fir/ spruce stands with preference for benches, secondary stream bottoms and riparian areas, seeps, with abundant lush forage.	higher elevations

Winter Forage - In the winter, caribou utilize forage resources such as tree lichens that are not eaten by cattle to an appreciable degree. On the LeClerc Creek Allotment, livestock appear to have poor access to the high-elevation ridge systems that provide late winter habitat for caribou, owing to intervening steep topography and dense stands of trees. Suitable early winter stands for caribou are also difficult for cattle to access, due to the heavy tree stocking and coarse woody debris on the forest floor. Cattle are off the Forest during the wintering period for caribou.

Spring and Summer Forage - Livestock make only incidental use of pachistima, huckleberries, and other shrub species important to caribou during the warm months. The primary potential for overlap in forage plants used by caribou and livestock is among the grasses, sedges, and succulent forbs. On those portions of the LeClerc Creek Allotment that overlap with the caribou recovery area, these plants are mostly found within small meadows and streamside riparian zones.

From about June 1 to July 6, cattle are normally on the Lower Bunchgrass Pasture, which is lower in elevation than the Molybdenite CMU. Thus, during most of the spring season for caribou (April 20 - July 7), there should be little potential for overlap in forage use between livestock and caribou. Any overlap in forage use should be predominantly confined to the summer seasonal zone for caribou. We have not documented any sites within the caribou recovery area where cattle appear to be over-utilizing green forage resources. The following table displays the existing acres of suitable (“target”) timber stands for caribou, by allotment pasture.

Table 30. Caribou habitat data for the Molybdenite Caribou Management Unit (CMU)

LeClerc Creek Grazing Allotment pasture	Approx. acres in CMU	Approximate livestock grazing period	Approx. acres of “target” stands spring season (April 20 - July 7)	Approx. acres of “target” stands summer season (July 7 - Oct. 16)
Lower Bunchgrass	272	June 1 - July 6	0	0
Mineral Creek	3,193	July 7 - Sept. 15	187	483
Upper Bunchgrass	4,767	July 7 - Sept. 15	34	476
Dry Canyon	12	Sept. 16 - 30	0	0
Fourth of July	0	Sept. 16 - 30	0	0
Total	8,244	June 1 - Sept. 30	221	959

Seclusion

As is the case with elk, caribou might be disturbed and displaced from suitable habitats by cattle. Vehicle traffic and the continued presence of humans in caribou habitat could also disturb the animals. The LeClerc Creek Allotment permittee does not require vehicle access on any restricted road within the caribou recovery area.

Environmental Consequences

Direct and Indirect Effects

Direct and Indirect Effects: Caribou Forage

The following table displays the acres of target stands for caribou in the spring and summer seasonal zones, by allotment management alternative.

Table 31. Approximate acres of spring and summer “target” stands for caribou in the LeClerc Creek Allotment by alternative

Caribou seasonal zone by allotment pasture	Acres Alternative A (no change)	Acres Alternative B (no grazing)	Acres Alternative C	Acres Alternative D
spring	221	0	306	330
Dry Canyon	0	0	85	86
Mineral Creek	187	0	187	210
Upper Bunchgrass	34	0	34	34
summer	959	0	96	98
Mineral Creek	483	0	30	32
Upper Bunchgrass	476	0	66	66
Total “target” stands in the allotment	1,180	0	402	428
Total active allotment acres in CMU	8,244	0	6,114	7,749

All Alternatives - As previously mentioned, livestock make only incidental use of arboreal lichens and shrub species preferred by caribou. The effects of the allotment grazing alternatives to these caribou food plants should be insignificant or discountable.

Alternative A (no change) - The LeClerc Creek Allotment would contain approximately 1,180 acres of caribou target stands in the spring and summer seasonal zones. Cattle would not be turned onto the upper elevation pastures until around July 6. Thus, cattle would not have access to green forage in the Molybdenite CMU until the end of the spring season for caribou (April 20 - July 7). There could be overlap in green forage use over the entire summer use period for caribou. As previously mentioned, we have not documented any sites within the caribou recovery area where cattle are causing unacceptable impacts to green forage resources. We would not expect this situation to change.

Alternative B (no grazing) - Livestock grazing on grasses, sedges, and forbs within the caribou recovery area would cease. In the absence of this intensive, periodic grazing, some grass plants could become rank and decadent over time. Conifer encroachment into small meadows could accelerate. Sedges and succulent forbs could increase in vigor and diversity in some local riparian areas.

Alternatives C and D - Livestock would not be moved to the upper pastures of the LeClerc Allotment until about July 22, two weeks later than the present situation. Thus, cattle would not have access to green forage in the Molybdenite CMU until the after the spring season for caribou (April 20 - July 7).

Higher elevation areas south of Molybdenite Ridge would be removed from the allotment. This action would result in approximately 2,130 fewer acres of the caribou recovery area within the allotment with alternative C, and 409 fewer acres with alternative D. Cattle likely have poor access to most of these acres, due to intervening, dense stands of trees and steep topography. We would use new fence sections, piled woody material, or other means to block any existing stock trails or other paths that cattle could use to drift outside the new allotment boundary. The new grazing allotment boundaries would contain about 98 acres of target stands for caribou in the summer seasonal zone, about 10 percent of the acres within the present allotment boundary. Thus, the potential overlap in green forage utilization by livestock and caribou should be reduced in both time and space, from the existing condition.

Direct and Indirect Effects: Seclusion

Alternative A (no change) - There would be no change in the potential for caribou to be disturbed by livestock or by allotment management activities.

Alternative B (no grazing) - There would be no risk of disturbance to caribou in the Molybdenite CMU associated with livestock operations.

Alternatives C and D - The potential for overlap between livestock and caribou use of the allotment would be effectively reduced in both time and space. Thus, the risk of disturbance to caribou would be reduced from the present condition.

Cumulative Effects

We must evaluate the cumulative effects of forest management projects and activities on caribou at the scale of a caribou management unit (USDI 2001). No other livestock are grazed in the Molybdenite CMU besides those permitted with the LeClerc Creek Allotment. Appendix C of the biological assessment for this project (Borysewicz 2017) lists the other forest management projects and uses recently completed, active, or proposed in the CMU.

No timber sales or other vegetation management projects are active or proposed on NFS lands in the Molybdenite CMU. Forest Roads 1935045 and 1936008 are planned for obliteration to address hydrologic concerns with the roadbeds. This action could reduce the potential for cattle to use these road corridors to drift into the higher elevation portions of the LeClerc Creek Allotment. Other types of projects active or proposed in the CMU include fish habitat improvements, and ongoing activities such as routine road maintenance, noxious weed control, and public recreation. Effects to potential caribou forage resources from these projects and activities should be of such small scale as to be insignificant or discountable. Effects to seclusion would mostly be confined to existing open road corridors, or well removed from suitable seasonal caribou habitats, or both. Cumulative effects are therefore not expected.

Effects Determination

The remnant South Selkirk Mountains caribou herd presently numbers 12 animals whose center of activity is in British Columbia, more than 20 air miles north of the LeClerc Creek Allotment.

Livestock make only incidental use of the arboreal lichens and shrub species that are important forage resources for caribou. Livestock grazing would have insignificant or discountable effects to these caribou foods.

There would continue to be some potential for overlap between livestock and caribou use of green forage plants on the LeClerc Creek Allotment with alternatives A, C, and D. Livestock do not appear to be over-utilizing green forage anywhere in the Molybdenite CMU, and appear to have poor access to the higher elevations of the CMU. With alternatives C and D, the overlap in livestock and caribou use of the allotment would be reduced in both time and space.

Based on this discussion, the effects determination for alternative B would be; “not likely to adversely affect, may beneficially affect” caribou. Alternatives A, C, and D as proposed “may affect, (but are) not likely to adversely affect,” caribou.

Forest Plan Compliance

The Forest Service (FS) is responsible for managing allotments to ensure compliance with Forest Service Policy and Forest Plan Standards, including those that concern the Federal Endangered Species Act and management of Forest Service Sensitive Species, Management Indicator Species and other species of concern. Maintaining wild, large predators on the landscape involves reducing the likelihood that they prey on livestock. Mitigation measures would be necessary

Sensitive Wildlife Species

The USDA Forest Service maintains a list of sensitive species for each national forest. Sensitive species are those whose population viability is a concern because of:

- Significant current or predicted downward trends in numbers of animals, or
- Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

The following tables display the bird and mammal species that are currently listed as sensitive for the Forest (as of July 13, 2015), and which have been documented in the allotment and/or have suitable habitat present. Sensitive species which have not been documented on at least one of the allotments or for which there is no suitable habitat present are not addressed in this FEIS (see Wildlife Report).

Table 32. Sensitive birds listed for the CNF

Sensitive birds	Habitat present?	Documented in the area?	Habitat description
bald eagle (<i>Haliaeetus leucocephalus</i>)	Yes	Yes	Eagles forage on rivers and large lakes with abundant fish. For nesting / perching, they select large trees that stand above the main forest canopy, and usually within one mile of a foraging area. Winter roosts may be in old growth stands with good canopy closure (Stalmaster 1987).
great gray owl (<i>Strix nebulosa</i>)	Yes	Yes	This owl forages in open, grassy habitats such as open forest stands, meadows, pastures, and wetlands. They nest in forest stands near foraging areas. Nest structures include large, broken-topped snags and abandoned raptor nests (Hayward and Verner 1994).
harlequin duck (<i>Histrionicus histrionicus</i>)	Yes	Yes	Harlequins breed on cold, fast-moving mountain streams with adjacent dense shrub / timber stands and an absence of human disturbance. They winter on boulder strewn, coastal waters (Lewis, Krage 2003).
Lewis' woodpecker (<i>Melanerpes lewis</i>)	Yes	No	This woodpecker is principally associated with open or park-like ponderosa pine stands and cottonwood riparian areas. They may also nest in stands of mixed conifers, riparian woodlands, and burned-over stands of Douglas-fir (WDFW 1991).
northern goshawk (<i>Accipiter gentilis</i>)	Yes	Yes	This wide-ranging forest raptor uses a variety of forest types for nesting and foraging. They tend to select stands with high canopy closure, larger trees, and gentle to moderate slopes, for nesting. Where forest habitats are continuous, the spacing between active nests is fairly regular (Woodbridge and Hargis 2000). Goshawks are ambush hunters known for their agility and relentlessness in pursuit of prey. Prey items include forest grouse, hares, tree and ground squirrels, woodpeckers, and larger passerine birds.
white-headed woodpecker (<i>Picoides albolarvatus</i>)	Yes	No	Primarily birds of mature, ponderosa pine forests, this species forages on large, decayed snags and ponderosa pine trees greater than 24" in size (WDFW 1991).

Table 33. Sensitive mammals listed for the CNF

Sensitive mammals	Habitat present?	Documented in the area?	Habitat description
gray wolf (<i>Canis lupus</i>)	Yes	Yes	Wolves are closely tied to habitats that support abundant big game populations. Limiting livestock depredations and human-caused wolf mortality are primary management concerns (Mech 1991).
little brown bat (<i>Myotis lucifugus</i>)	Yes	Yes	Found in a wide variety of forest habitats at elevations up to tree line. They usually prefer riparian areas and sites with open water. Roost sites include buildings and bridges, tree cavities, beneath tree bark, rock crevices, caves and mines (Hayes et al 2013). They forage for aquatic insects over water and on a wide variety of insects over forest trails, cliff faces, meadows, and farmland.
pygmy shrew (<i>Sorex hoyi</i>)	Yes	No	Found in conifer stands and wetlands with dense ground vegetation. May be associated with disturbed, seral habitats. In WA, pygmy shrews have been captured in upland, even-aged second-growth conifer forests (WDFW 1991).
red-tailed chipmunk (<i>Tamias ruficaudus</i>)	Yes	No	On the CNF, this species is most prevalent at higher elevations in the moist, subalpine fir / Engelmann spruce plant associations where stand understories are dense (Best 1993).
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	Yes	No	This bat uses caves or mines for roosting or hibernation. Old growth trees with basal hollows provide day roosts. Abandoned buildings are sometimes used by nursery colonies (WDFW 1991).

Table 34. Sensitive invertebrates listed for the CNF

Sensitive butterflies	Habitat present?	Documented in area?	Habitat description (James and Nunalee 2011)
eastern tailed blue (<i>Cupido comyntas</i>)	Yes	No	This species thrives in disturbed environments. It uses a variety of lightly wooded, dry habitats and weedy areas. It is found in vacant lots, parks, canals and creeks and fallow fields. Caterpillars feed on both native and exotic plants in the pea family.
Great Basin fritillary (<i>Speyeria egleis</i>)	Yes	No	Associated with openings and edges in forest habitats including; montane meadows, forest clearings, exposed rocky ridges, and stream banks. Forested habitats themselves are not used.
meadow fritillary (<i>Boloria bellona</i>)	Yes	No	Colonies are very local and endemic in the Pacific NW. Preferred habitat is open, boggy, wet meadows. Also found in aspen parklands and pine woodlands between 2000 and 5000 feet in elevation. Caterpillars feed on violets.
Peck's skipper (<i>Polites peckius</i>)	Yes	No	Habitats include mountain meadows, marshy edges of potholes and roadsides. Wet, grassy meadows are preferred.
Tawny-edged skipper (<i>Polites themistocles</i>)	Yes	No	Habitat includes a variety of moist, grassy habitats at higher elevations such as lake and pond margins, wetlands and stream margins. Host plants include a variety of grasses and sedges.
Rosner's hairstreak (<i>Callophrys nelsoni rosneri</i>)	Yes	No	Habitat for this species includes openings and edges in coniferous forest around western redcedar. Adults lay their eggs on cedar needles. Larvae utilize cedar foliage.

Sensitive dragonflies and damselflies	Habitat present?	Documented in area?	Habitat description / other comments (Foltz Jordan 2008, Paulson 1999)
subarctic bluet (<i>Coenagrion interrogatum</i>), subarctic darner (<i>Aeshna subarctica</i>), zigzag darner (<i>A. sitchensis</i>)	No	Yes	Populations of these species are localized and rare in the Pacific Northwest. In Washington, they are associated with high-elevation ponds, bogs, fens, and boreal wetlands. On the CNF, they have been documented at Bunchgrass, Rufus, Granite, Davis and Little Davis meadows. Subarctic bluet has also been found at Frater Lake; a mid-elevation lake / wetland complex that is influenced by cold air drainage (Loggers and Moore 2011).
delicate emerald (<i>Somatochlora franklini</i>), whitehouse emerald (<i>S. whitehousei</i>)	No	Yes	In WA, both species have been found only at Bunchgrass Meadows, a Research Natural Area on the CNF (Loggers and Moore 2011). Bunchgrass Meadows is an extensive, high elevation, sedge wetland. It is similar to boreal bogs located much further north in Canada and is thought to be a remnant of the last ice age.
Sensitive bees	Habitat present?	Documented in area?	Habitat description / other comments
Western bumble bee (<i>Bombus occidentalis</i>)	Yes	Yes	Bumblebees inhabit a wide variety of natural, agricultural, urban, and rural habitats. Species richness tends to peak in flower-rich meadows of forests and subalpine zones. Western bumblebees were once found throughout Oregon and Washington, but are now largely confined to high elevation sites and areas east of the Cascade Crest. Like other bumblebees, this species has three basic habitat requirements: suitable underground nesting sites for the colonies, nectar and pollen from floral resources available throughout the duration of the colony period (spring, summer and fall), and suitable overwintering sites for the queens.
Sensitive mollusks	Habitat present?	Documented in area?	Habitat description / other comments
fir pinwheel (<i>Radiodiscus abietum</i>)	Yes	No	Most often found in moist and rocky Douglas-fir forest at mid-elevations in valleys and ravines and sometimes in western redcedar. It is often found in or near talus or under fallen logs (Duncan 2008).
magnum mantleslug (<i>Magnipelta mycophaga</i>)	Yes	No	This species prefers very moist habitats with permanent or persistent water sources. It is often associated with rock talus, deep leaf and needle duff, and large woody debris. In Washington it is found in subalpine fir plant associations (Frest and Johannes 1995).

Environmental Consequences

Direct and Indirect Effects

The following table displays the direct and indirect effects of the allotment management alternatives to sensitive terrestrial wildlife species. See the biological assessment for this project (Borysewicz 2017) for a more detailed description of predicted project effects to individual sensitive species.

Table 35. Summary of direct and indirect effects to sensitive terrestrial wildlife species, by alternative

Sensitive species	Alternative	Direct and indirect effects
bald eagle	All	No known active or historic nests, perch trees, or roosts on the allotment. No impacts to large trees or potential forage base from continued grazing.
gray wolf	A (no change)	LeClerc Creek AMP would include mitigation for dealing with sick/ injured livestock and livestock carcasses. This could reduce the potential for wolves to associate domestic stock with food. Inadequate livestock movement controls on the allotment would continue to result in re-grazing of preferred meadows and riparian habitats (big game foraging/ parturition habitats). This could lead to a reduction in cover and forage biomass, making the sites less suitable for wolf prey species. Conversely, livestock grazing would tend to retard forest succession and maintain meadows in an open, productive condition for big game.
gray wolf	B (no grazing)	Allotment closed to livestock grazing. No need for wolf control actions related to livestock depredations. Livestock browsing of hardwood trees and shrubs would cease. Improvements in habitat values for big game in meadows and riparian habitats. In the absence of grazing, active meadow maintenance required to rejuvenate grasses and remove encroaching conifers. Meadow maintenance would occur subject to available funding.
gray wolf	C, D (modified grazing)	Grazing could be authorized on allotment. AMPs would include mitigation for dealing with sick/ injured livestock and livestock carcasses. New range improvements intended to better distribute livestock, reduce time spent in riparian areas. Monitoring and adaptive management intended to address any ongoing impacts to riparian habitats and key foraging sites. These sites provide important foraging and reproductive habitats for wolf prey species. Periodic maintenance of meadows required; particularly those that are no longer grazed (ex. Fourth of July Meadow).
great gray owl, northern goshawk, pygmy shrew	A	Continued grazing on LeClerc Creek Allotment would not impact existing or potential raptor nest trees/ groves. Inadequate controls of livestock movements on this allotment would continue to result in re-grazing of preferred meadows and other openings. This could lead to a reduction in low cover and forage biomass. Livestock would continue to reduce the biomass of hardwood shrubs and trees in local areas. These processes could reduce hiding cover and forage for small mammals and avian prey species. Conversely, livestock grazing would tend to retard forest succession in meadows and maintain these sites in an open, productive condition.

Sensitive species	Alternative	Direct and indirect effects
great gray owl, northern goshawk, pygmy shrew	B	Allotment closed to livestock grazing. Immediate improvements in low cover and forage for small mammal populations in meadows and wetlands on the LeClerc Creek Allotment. In the absence of grazing, active meadow maintenance required to rejuvenate grasses and remove encroaching conifers. Meadow maintenance projects would occur subject to available funding.
great gray owl, northern goshawk, pygmy shrew	C, D	Grazing could be authorized on allotment. Grazing would not impact existing or potential nest trees/ groves for the 2 raptors. Fourth of July Meadow dropped from the LeClerc Creek Allotment. This is perhaps the best quality foraging site for great gray owls on the allotment. New range improvements intended to better distribute livestock, reduce time spent in riparian areas. Monitoring and adaptive management intended to address any ongoing impacts to riparian habitats, fields, and meadows. These sites provide important habitats for small mammal species. Periodic maintenance of meadows required, particularly those that are no longer grazed.
harlequin duck	All	No evidence of nesting on allotment. Low habitat suitability on the allotment. Potential nesting habitat on the West Branch LeClerc Creek appears to be inaccessible to livestock.
sensitive bats	All	No impacts to existing or potential roost trees. No impacts to mines, bridges, or other potential man-made roost structures. See the effects rationale for sensitive invertebrates for potential impacts to insect prey species.
red-tailed chipmunk	All	Livestock use of dense, mixed forest habitats and subalpine fir/ spruce stands mostly limited to a few traditional travel-ways. Insignificant or discountable impacts to overhead canopy or mature trees. No or questionable overlap in the forage base between livestock and red-tailed chipmunks.
Lewis's & white-headed woodpeckers	All	Species not documented on the allotment. Low habitat suitability. Grazing would not impact essential habitats including: large ponderosa pine trees, black cottonwood trees, snags, burned areas, etc.
sensitive invertebrates	A	Grazing on the LeClerc Creek Allotment would continue to have insignificant or discountable impacts to special habitats such as high elevation wetlands, rock features, large woody debris, or western redcedar foliage. Some potential for livestock to crush or ingest individual invertebrates in sedentary life stages. Inadequate controls of livestock movements would continue to result in re-grazing of preferred meadows and other openings on the allotment. This could reduce low cover and forage plant biomass on these sites. Conversely, livestock grazing would tend to retard forest succession and maintain meadows in an open, non-forested condition.
sensitive invertebrates	B	Allotment closed to livestock grazing. Short-term improvements in meadow conditions (percent bare ground, green forage). In the absence of grazing, active meadow maintenance required to rejuvenate grasses and remove encroaching conifers.

Sensitive species	Alternative	Direct and indirect effects
sensitive invertebrates	C, D	<p>Grazing could be reauthorized on allotment.</p> <p>Livestock grazing would have insignificant or discountable impacts to special habitats such as high elevation wetlands, rock features, large woody debris, or western redcedar foliage.</p> <p>Some potential for livestock to crush or ingest individual invertebrates in sedentary life stages.</p> <p>New range improvements intended to better distribute livestock, reduce time spent in riparian areas, and prevent re-grazing of pastures.</p> <p>Monitoring and adaptive management intended to address any on-going impacts to riparian habitats, and key foraging sites. These sites provide important habitats for many sensitive invertebrates. Periodic maintenance of meadows required. Active maintenance of meadows required if they are no longer grazed (ex., Fourth of July Meadow).</p>

Cumulative Effects

See the biological assessment for this project (Borysewicz 2017) for a detailed discussion of cumulative effects to sensitive wildlife species, and the spatial bounding used. What follows is a brief summary.

As described in the preceding table, the allotment management alternatives would not impact bald eagles, harlequin ducks, red-tailed chipmunks, Lewis' and white-headed woodpeckers or their essential habitats. Therefore, we expect there would be no cumulative effects to these species.

The potential effects of livestock browsing on deciduous shrubs and trees on the allotment would be cumulative to those occurring on other range allotments across the Forest. Browsing pressure from wild ungulates can also locally impact these plants. Dispersed recreation can damage or suppress deciduous plant cover on overused sites. Decades of active fire suppression across the Forest has favored the growth of conifer trees, which are overtopping and shading out the light-loving hardwoods in many locations.

Alternatives C and D would include new range improvements and a monitoring and adaptive management plan for the allotment. As the management plans for the other active range allotments on the Forest are updated, we are including similar provisions. In part, these measures are intended to avoid, minimize, or mitigate any adverse effects to riparian woodlands and shrublands resulting from permitted livestock grazing on the Forest.

Active or planned timber sales on the Forest would reduce or remove forest cover. Openings in the forest canopy and edge habitat would be created. Shrubs and green forage plants growing within the harvested stand understories should become more robust over time, particularly where prescribed fire is used to reduce forest fuels. Hardwood trees would not normally be designated for harvest, and should benefit from the reduction in competition with conifers, following timber harvest.

The Forest Service has recently completed or is planning habitat improvement projects that would maintain or enhance essential sensitive species habitats on the allotment. These projects include fencing livestock from key riparian areas, replacing culverts to restore fish passage, installing large wood in streams, relocating roads out of riparian corridors, burning upland shrubfields to improve big game forage, and removing small conifers encroaching into meadows. Taken together, these projects have the potential to improve habitat conditions for big game

animals, great gray owls, and sensitive invertebrates. These beneficial effects would be additive to similar effects described in the preceding table.

Livestock grazing with alternatives A, C, and D would contribute to the spread of noxious weeds on the allotment. Noxious weed infestations could locally reduce green forage resources for big game and some of the sensitive invertebrates. These effects would be cumulative to those resulting from livestock grazing on other allotments across the Forest, as well as from other vectors for noxious weed spread including wild ungulates and vehicle traffic on roads. The Forest has an active monitoring and control program to check the spread of noxious weeds. See the section on grizzly bears for a more detailed description of effects.

Livestock grazing on these and other allotments across the Forest would cumulatively increase the potential for lethal wolf control actions by wildlife officers. However, the mitigation measures in this document pertaining to gray wolves would be a part of each allotment management plan. While we expect these measures would not eliminate livestock depredations by wolves, they could reduce the opportunities for wolves to begin associating livestock with food.

Effects Determination

Based on the above discussion, the grazing alternatives as proposed would have no impacts to bald eagles, harlequin ducks, red-tailed chipmunks, Lewis' woodpeckers and white-headed woodpeckers. For all other sensitive wildlife species except gray wolves, the alternatives as proposed may impact individuals, but would not be likely to lead to a trend to federal listing or loss of viability of the species. Alternative B (no grazing) could beneficially impact gray wolves, since there would be no potential for wolf control actions related to livestock depredations on the allotment.

Forest Plan Compliance

The Forest Service (FS) is responsible for managing allotments to ensure compliance with Forest Service policy and Forest Plan standards, including those that concern the Federal Endangered Species Act and management of Forest Service Sensitive Species, Management Indicator Species and other species of concern. Maintaining wild, large predators on the landscape involves reducing the likelihood that they prey on livestock. Mitigation measures would be necessary under certain conditions to reduce potential impacts of the allotment management alternatives to large carnivores.

Management Indicator Species (MIS)

Rather than attempt to manage for each of the hundreds of wildlife species found on the CNF, the MIS approach singles out a few representative species for active management and conservation. Essential habitats provided for each indicator species would in turn support many other animals with similar habitat requirements. Indicator species listed for the CNF were selected for one or more of the following reasons:

- they are endangered or threatened with extinction,
- they are believed to be sensitive to the effects of forest management on a major biological community (such as old growth forests),
- they require specialized habitats that could be sensitive to forest management practices,
- they are species commonly hunted, fished, or trapped.

The following table displays information for the MIS listed for the Colville National Forest that have potential habitat in the allotment. Grizzly bear and woodland caribou are addressed in the Threatened and Endangered Species section; elk and deer are addressed with the discussion on wolves in the Sensitive Species section. Those without habitat and not documented in the area are not addressed in this FEIS (see Wildlife Report).

Table 36. MIS Listed for Colville National Forest

MIS Species	Habitat present?	Documented in the area?	Representative habitats (USDA 1988)	Habitat modeling / other comments (Youkey 2012, USDA 1988)
beaver (<i>Castor canadensis</i>)	yes	yes	aquatic, riparian habitats, aspen and willows	Approximately 177,118 acres of habitat is well distributed across the Forest.
northern bog lemming (<i>Synaptomys borealis</i>)	yes	yes	high elevation bogs	In Pend Oreille County, this species is only known to occur in Bunchgrass Meadows, a large boreal fen located on the northeast corner of the LeClerc Creek Allotment.
primary cavity excavators	yes	yes	standing dead trees (snags)	Ponderosa pine, western larch, quaking aspen, and paper birch are the favored trees species in many localities (Bull et al. 1997). Large diameter snags are preferred for nesting / roosting. Densities of these trees have declined across the Forest.
pine marten (<i>Martes americana</i>)	yes	yes	mature and old-growth mesic conifer habitat, and down trees at moderate to high elevations	Approximately 12,252 acres of habitat is well distributed on only a portion of the Forest. Declines in source habitats from historic levels have been extensive in the region.
barred owl (<i>Strix varia</i>)	yes	yes	lower elevation mature and old-growth forest	Approximately 93,081 acres of habitat is well distributed across the Forest.
pileated woodpecker (<i>Dryocopus pileatus</i>)	yes	yes	mature and old-growth forest in Douglas-fir or cedar / hemlock cover types, and large snags and logs	Approximately 93,081 acres of habitat distributed across the Forest. Populations and source habitat are likely less abundant than historic conditions. Densities of large diameter snags have declined from historic levels across the Forest.
northern three-toed woodpecker (<i>Picoides tridactylus</i>)	yes	yes	mature lodgepole pine and subalpine fir forest stands	Approximately 518,864 acres of habitat distributed across the Colville National Forest. Populations and habitat are widely distributed, but highly dispersed with areas exhibiting lower abundance.
dusky (blue) grouse (<i>Dendragapus obscurus</i>)	yes	yes	winter habitat - mature trees along ridgetops, nesting habitat - open forest with grass/shrub understory at lower elevations	Approximately 36,145 acres of winter habitat and 78,264 acres of summer nesting / brooding habitat distributed across the Forest. Suitable habitats are broadly distributed and abundant, but there are gaps of low habitat abundance in some areas.
Franklin's grouse (<i>Dendragapus. canadensis</i>)	yes	yes	young lodgepole pine stands with interspersed mature spruce	Approximately 604,187 acres of habitat distributed across the Forest. Suitable habitats are broadly distributed and abundant, but there are gaps of low habitat abundance in some areas.
large raptors and great blue heron	yes	yes	bald eagles, herons – larger trees along larger lakes, rivers and wetlands	Approximately 3,099 acres of bald eagle and heron habitats distributed across the Forest. Late successional riparian forests reduced from historic conditions. Human activities have reduced the effectiveness of source habitats.

MIS Species	Habitat present?	Documented in the area?	Representative habitats (USDA 1988)	Habitat modeling / other comments (Youkey 2012, USDA 1988)
			northern goshawk - forest mosaic-all forest communities-medium and large tree family group	Approximately 139,340 acres of goshawk habitat distributed across the Forest. There has been a reduction in source habitat and large diameter trees from historic conditions.
waterfowl	yes	yes	lakes, ponds, rivers, marshes and wetlands	Waterfowl were not designated as a MIS. However, the Forest Plan (page 4-40) requires that we maintain and enhance waterfowl habitats.

Environmental Consequences

Direct and Indirect Effects

The following table summarizes the direct and indirect effects to each MIS or species group, by grazing alternative. Effects to the representative habitats identified in the Forest Plan for grizzly bears (seclusion) and caribou (mature and old mesic forests) are described previously in this document. See the coverage of gray wolves in the sensitive species section of this document for a discussion of effects to big game winter ranges.

Table 37. Summary of effects to MIS

Species	Alternative	Summary of direct and indirect effects
beaver	A	On the LeClerc Creek Allotment, inadequate controls of livestock movements would continue to result in livestock loitering in riparian areas; particularly later in the season. Livestock would continue to browse riparian shrub and hardwood regeneration, retarding the growth of these beaver food plants at local sites. Selected aspen stands protected from livestock browsing with fencing or other means.
	B	Allotment closed to livestock grazing. Deciduous shrubs and trees browsed by cattle on the LeClerc Creek Allotment would recover over time, leading to improvements in local forage resources for beavers.
	C and D	With these alternatives, new range improvements (fencing, cattle guards, upland watering sites, etc.) intended to control livestock movement and better distribute cows across active allotment. This should reduce the amount of time livestock spend in riparian lowlands. If monitoring reveals that standards for riparian habitat values are not being met, adaptive management actions would be employed to initiate an improving trend. Selected aspen stands protected with fencing or other means.
n. bog lemming	B	No potential for livestock to utilize suitable bog lemming habitats.
	All other alternatives	Bunchgrass Meadows is the only site known to support this species on the allotment. Livestock have not accessed this wetland for more than 20 years. Livestock do not appear to be accessing other high elevation wetlands on the LeClerc Creek Allotment.
pine marten, barred owl, pileated woodpecker	A	Continued grazing on the LeClerc Creek Allotment would have insignificant or discountable impacts to existing large live trees, snags, down logs, root wads, and overhead canopy closure. Continued browsing of riparian shrubs could reduce hiding cover on certain stream segments, decreasing their utility as travel corridors for pine marten. Continued browsing of aspen sprouts could keep these trees from releasing.
	B	Allotment closed to grazing. Livestock browsing of hardwood tree regeneration and riparian shrubs would cease. Aspen reproduction would be more likely to release and eventually replace mature trees. Cover values within streamside riparian areas presently impacted by cattle would improve. The ability of pine marten to use these natural travel / dispersal routes would improve.
	C and D	.Livestock grazing would have insignificant or discountable impacts to existing large live trees, snags, down logs, root wads, overhead canopy closure. Livestock browsing of riparian shrubs could reduce hiding cover on certain stream segments, decreasing their utility as travel corridors for pine marten. New range improvements intended to control livestock movement and better distribute cows across the allotment. Monitoring and adaptive management would be tied to the condition of riparian vegetation. This should lead to improved hiding cover on impacted stream segments. See the section on beavers for a discussion of impacts to hardwood trees.
primary cavity excavators,	A, C, D	Livestock grazing would have insignificant or discountable impacts to defective live trees, standing dead trees, stumps, or down logs.

Species	Alternative	Summary of direct and indirect effects
three-toed woodpecker		Livestock browsing of hardwood tree regeneration could suppress the development of mature trees in some locations (i.e., near key grazing sites). Selected aspen stands protected with fencing or other means.
	B	All utilization of hardwood tree regeneration by livestock would cease. There would be a higher probability that mature trees could develop on the affected sites over time.
dusky (blue) grouse	A	Livestock grazing would not impact winter roost trees. Inadequate controls of livestock movements would continue to result in re-grazing of meadows and other preferred sites. However, grazing would tend to maintain these potential dusky grouse brood habitats in an open, productive condition. Livestock would continue to be a vector for noxious weed spread.
	B	In the absence of grazing, there would be short-term improvements in meadow conditions (less bare ground, improved vigor of green forage). Periodic meadow maintenance would be required to rejuvenate grasses and remove encroaching conifers. Livestock would no longer be a factor in the spread of noxious weeds.
	C and D	No impacts to winter roost trees. Better distribution of livestock due to new range improvements. This should reduce the potential for key grazable areas to be re-grazed in the same year. If standards for green forage utilization and riparian habitat values are not met, adaptive management actions would be employed to initiate an improving trend. Somewhat reduced risk of noxious weed spread from the current condition.
Franklin's (spruce) grouse	All	Suitable habitat mostly too dense to be accessed by cattle. Livestock utilization of conifer needles and other plant resources important to spruce grouse is insignificant or discountable.
large raptors and herons	All	Insignificant or discountable impacts to suitable nest / perch trees or overhead canopy closure. See dusky grouse for a summary of effects to meadows and other openings (prey habitats for some raptors).
waterfowl	A	Suitable waterfowl habitats are very limited on the LeClerc Creek Allotment. Livestock grazing would continue to reduce cover and forage resources on some local, open wetlands.
	B	No potential for livestock to impact suitable waterfowl habitats. Recovery of locally impacted sites on LeClerc Creek Allotment.
	C and D	With Alt. C, wetland habitats on the allotment reduced by approximately 94 acres. With Alt. D, wetlands on the allotment reduced by approximately 43 acres. Better distribution of stock from the present condition due to new range improvements (fencing, cattle guards, upland watering sites). This should reduce the amount of time livestock spend in riparian lowlands. If standards for riparian habitat values are not met, adaptive management actions would be employed to initiate an improving trend.

Cumulative Effects

For most MIS we characterize cumulative effects over the entire Colville National Forest. The allotment management alternatives have the potential to impact the following essential habitats for MIS and waterfowl; hardwood trees, riparian shrublands, meadows, and wetlands.

Cumulative effects to meadows, parklands, and wetland habitats essential to certain MIS and waterfowl would be similar to those already described in the previous section on grizzly bears.

The potential effects of livestock browsing on deciduous shrubs and trees on the allotment would be cumulative to those occurring on other range allotments across the Forest. Browsing pressure from wild ungulates can also locally impact these plants. Dispersed recreation can damage or suppress deciduous plant cover on overused sites. Decades of active fire suppression across the Forest has favored the growth of conifer trees, which are overtopping and shading out the light-loving hardwoods in many locations.

Alternatives C and D would include new range improvements and a monitoring and adaptive management plan for the allotments. As the management plans for the other active range allotments on the Forest are updated, we are including similar provisions. In part, these measures are intended to avoid, minimize, or mitigate any adverse effects to riparian woodlands and shrublands resulting from permitted livestock grazing on the Forest.

Ongoing or future timber harvest on the Forest would reduce conifer cover, while maintaining most hardwood trees on the landscape. In recent years the Forest Service has been increasingly using prescribed burns to reduce forest fuel levels and return fire to the landscape. Timber harvest and prescribed burning could potentially release and rejuvenate on-site hardwood trees.

The Forest Service and cooperators continue to complete many projects intended to maintain or enhance riparian habitats across the Forest. These projects include relocating roads out of stream corridors, replacing culverts to restore fish passage, constructing livestock exclosures to protect stream banks and riparian vegetation, and installing large wood in stream channels. The projects are normally intended to benefit native fish populations. However, they can mutually improve habitat conditions for beavers and other MIS.

Conclusion

At the Forest-wide scale, the grazing alternatives as proposed would not result in gaps in available forested habitats that would tend to isolate populations of MIS. At the forest patch scale, the grazing alternatives would have no discernible impacts to stands of mature and old growth forest. At the within-stand scale, there would be no discernible impacts to existing large live trees, snags, logs, root wads, or other structures.

With alternatives A, C, and D, livestock grazing would continue to locally impact deciduous tree and shrub recruitment, and riparian plant density, diversity, and productivity. The respective acreage of these habitat components on the allotment is a fraction of one percent of the Forest-wide habitat acres. With alternatives C and D, new range infrastructure, and monitoring and adaptive management should initiate an upward trend in habitat values from the present condition. Alternative B (no grazing) would result in the greatest long-term improvements in hardwood tree regeneration and riparian habitat values across the allotment. Any meadows that are removed from the allotment and no longer grazed by cattle would require active maintenance to keep them in an open and productive condition.

Based on this discussion, we expect that the grazing alternatives as proposed would not affect the continued viability of MIS populations on the Forest. The alternatives would be consistent with Forest Plan direction for MIS.

Forest Plan Compliance

The Forest Service is responsible for managing grazing allotments to ensure that livestock grazing is not likely to jeopardize the continued existence of listed threatened, endangered, or proposed species, or adversely modify their habitat. Provided the conservation measures and mitigation pertaining to grizzly bears is followed, the project as proposed would meet this direction. The grazing alternatives should not lead to a trend toward federal listing of any sensitive species. The project would be consistent with Forest Plan direction for management indicator species (MIS), and with conservation strategies for priority habitats of birds of conservation concern.

Landbirds

Birds of Conservation Concern

Bird Conservation Regions (BCRs) are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues. The grazing allotment are located in the Northern Rocky Mountains BCR (BCR 10). The following table displays the birds of conservation concern for this BCR.

Effects to bald eagle, American peregrine, Lewis' woodpecker, and white-headed woodpecker are addressed in the Sensitive Species section. Effects of livestock grazing on bird species without suitable habitat in the allotment are not addressed in this FEIS (see Wildlife Report).

Table 38. Migratory birds of conservation concern

Bird species	Habitat Present?	Documented in the area?	Preferred habitats
flamulated owl (<i>Otus flammeolus</i>)	yes	no	Associated with ponderosa pine forests and mixed conifer stands with a mean 67% canopy closure, open understory with dense patches of saplings or shrubs. Grassy openings for foraging.
black swift (<i>Cypseloides niger</i>)	yes	no	Nests on ledges or shallow caves in steep rock faces and canyons, usually near or behind waterfalls and sea caves. Forages over forests and open areas in montane habitats.
calliope hummingbird (<i>Stellula calliope</i>)	yes	yes	Open shrub / sapling seral stages (8-15 years), meadows, burned areas, and riparian thickets at higher elevations.
Williamson's sapsucker (<i>Sphyrapicus thyroideus</i>)	yes	yes	Mid to high elevation, mature open and mixed coniferous / deciduous forests. Snags are a critical component.
olive-sided flycatcher (<i>Contopus cooperi</i>)	yes	yes	Open conifer forests (< 40 % canopy cover) and edge habitats where standing snags and scattered tall trees remain after a disturbance.
willow flycatcher (<i>Empidonax trailii</i>)	yes	no	Associated with riparian shrub dominated habitats, especially brushy / willow thickets.
loggerhead shrike (<i>Lanius ludovicianus</i>)	yes	no	Inhabits grasslands, pastures with fence rows, agricultural fields, sagebrush with scattered

Bird species	Habitat Present?	Documented in the area?	Preferred habitats
			juniper and open woodlands. Requires elevated perches throughout for hunting and nesting.
gray crowned rosy-finch (<i>Leucosticte tephrocotis</i>)	yes	no	Found above timberline among bare rock outcroppings, cirques, cliffs, and hanging snowfields.
Cassin's finch (<i>Carpodacus cassinii</i>)	yes	yes	Open, mature coniferous forests of lodgepole and ponderosa pine, aspen, alpine fir, grand fir and juniper steppe woodlands.

Brown-headed cowbirds

This species was originally restricted to the range of buffalo herds on the prairies of North America. Cowbirds are now widespread, owing to the favorable habitat conditions created by forest management, human settlement, and livestock grazing. Cowbirds do not raise their own young but lay a single egg in the nest of another species. The “foster” parents may become duped into raising the cowbird nestling as their own. Cowbird nestlings tend to develop faster and are more aggressive than their nest mates. They often outcompete their nest mates for food delivered to the nest. Brood parasitic cowbirds now overlap with species that have not evolved mechanisms for distinguishing foreign eggs or nestlings from their own. Thus, cowbirds are a threat to many native bird populations in North America. Salt licks, corrals, and other livestock concentration areas may function as primary cowbird feeding sites (Robinson et al. 1995).

Cowbirds occur within the Pend Oreille River Valley, particularly associated with town sites and ranches. Cowbird populations appear to be largely absent from National Forest System lands on the allotment. This may be due to the predominantly continuous and dense nature of the forest stands present, the quick regrowth of vegetation following disturbances such as timber harvest or fire, and the scarcity of permanent forest openings.

Environmental Consequences

Direct and Indirect Effects

Direct and Indirect Effects: Active Nests

Alternative B (no grazing) - There would be no potential for livestock grazing to impact active nests.

Alternatives A (no change), C, and D - Landbird nests could be at risk of being mechanically destroyed by cattle. These potential impacts to local bird populations would likely be small and insignificant or discountable, given the following considerations:

- Impacts would be mostly limited to ground nesting bird species.
- Ground nests are often placed against logs, under shrubs, or other protective cover.
- Impacts would be mostly limited to key grazing areas, open timber stands, stock travel-ways and on gentler slopes.
- Cattle would have access to only a portion of the allotment during the bulk of the nesting season.

- Adult birds are unlikely to be physically harmed by livestock and many bird species are capable of re-nesting in the same season.

Direct and Indirect Effects: Priority Habitats

The following table summarizes the predicted effects of the grazing alternatives to priority habitats for the birds of conservation concern with potential to occur in the area.

Table 39. LeClerc Creek Allotment - summary of effects to priority habitats for birds of conservation concern

Bird species	Priority habitats	Alternative	Summary of direct and indirect project effects
flamulated owl, Cassin's finch, calliope hummingbird, Williamson's sapsucker, olive-sided flycatcher	dry conifer forests, mixed mesic conifer forests, subalpine forests, snags, burned areas	All	Livestock grazing would have no or questionable impacts to existing mature conifer trees, snags, or to stand canopy closure. Grazing should not impair the development of fully stocked stands (Hass 2013). Subalpine forest stands are relatively inaccessible to cattle on the allotment.
black swift, gray-crowned rosy finch	alpine areas, rock features, waterfalls	All	Cattle do not appear to be accessing alpine areas on the LeClerc Creek Allotment. Livestock avoid rock features. No known waterfalls on the allotment.
Williamson's sapsucker, Cassin's finch	hardwood trees	A	Livestock browsing would continue to suppress hardwood regeneration; particularly trees growing adjacent to key grazing areas such as meadows / fields.
		B	Allotment closed to livestock grazing. Hardwood regeneration suppressed by repeated browsing on the allotment could release over time.
		C and D	LeClerc Creek Allotment reduced by about 2,774 acres with alternative C, but increased by about 2,453 acres with alternative D, from the present condition. Additional acres grazed means additional hardwood stands potentially subject to browsing pressure by livestock. Stands adjacent to key grazing areas / travel-ways would be most at risk. Hardwoods would be promoted with planned / future conifer tree harvest, prescribed burning, and fencing of selected stands.
willow flycatcher, calliope hummingbird, Cassin's finch	riparian areas	A	Livestock browsing of riparian shrubs would continue to locally suppress shrub density and diversity. Riparian forbs and sedges would continue to be mechanically damaged or over-utilized in some locations.
		B	Allotment would be closed to livestock grazing. Riparian vegetation in local areas impacted by trailing / grazing cattle would become more dense, complex and diverse over time.
		C and D	LeClerc Creek Allotment reduced by about 2,774 acres with alternative C, but increased by about 2,453 acres with alternative D, from the present condition. Additional acres grazed means additional riparian habitats potentially subject to trailing / browsing by livestock. New range improvements (fencing, cattle guards, upland watering sites, etc.) designed to control livestock movement and better distribute cows across active allotments. This should reduce the amount of time livestock spend in riparian lowlands. If monitoring reveals that standards for riparian habitat values are not being met, we would employ adaptive management actions to initiate an improving trend.

Bird species	Priority habitats	Alternative	Summary of direct and indirect project effects
calliope hummingbird, loggerhead shrike, flamulated owl	meadows, parklands	A	Livestock grazing of meadows and fields would tend to maintain grass vigor and keep these sites in an open, productive condition. However, some sites would continue to be re-grazed in the same growing season, due to poor controls of livestock movement. Livestock would continue to be a vector for noxious weed spread.
		B	Allotment closed to livestock grazing. Meadows and fields on LeClerc Creek Allotment would exhibit fewer areas of bare ground and more native plants over time. Potential long-term reduction in grass vigor in the absence of intensive, periodic grazing. Potential reduction in meadows overall, due to forest succession. Livestock would no longer be a factor in the spread of weeds.
		C	LeClerc Creek Allotment would contain approximately 268 fewer acres of meadow, parklands, and field habitats, due to allotment boundary adjustments. Livestock grazing would tend to maintain grass vigor and forestall conversion of open meadows to forestland. New range improvements intended to control livestock movement and better distribute cows across active allotments. This should reduce the amount of time livestock spend in riparian lowlands. If monitoring reveals that standards for green forage values are not being met, we would employ adaptive management actions to initiate an improving trend. Somewhat reduced risk of noxious weed spread.
		D	Same as Alt. C except the acreage of meadow habitats on the LeClerc Creek Allotment would be similar to the existing condition.

Cumulative Effects

As displayed in the preceding table, the livestock management alternatives would have no, or questionable effects to: dry conifer forests, mixed mesic conifer forests, subalpine forests, snags, burned areas, alpine areas, rock features, or waterfalls. We would not expect cumulative effects to these priority landbird habitats on the Forest.

See the previous section on MIS for a discussion of cumulative effects to hardwood habitats utilized by landbirds. See the previous section on grizzly bears for a discussion of cumulative effects to riparian, meadow, and parkland habitats utilized by landbirds.

Conclusion

Alternative B (no grazing) would best meet the priority habitat conservation strategies for deciduous trees, shrublands, and riparian habitats. This alternative would require the greatest degree of active meadow maintenance (prescribed burning, hand-falling of young conifers) to keep these sites from being lost to forest succession over time. Completion of this work would be subject to available funding.

With alternatives C and D, new range infrastructure, and monitoring and adaptive management should initiate an upward trend in hardwood regeneration and riparian habitat values on the LeClerc Creek Allotment. Meadows removed from this allotment due to shifts in the allotment boundaries would require active maintenance to keep them in an open and productive condition over time.

With each of the alternatives that authorize grazing, we expect livestock impacts to priority habitats would be reduced or mitigated to some extent with other projects completed or planned on the allotment. Hardwood trees would be promoted within areas of timber harvest and prescribed burning. Livestock access to riparian areas would be impeded by projects such as exclosures, road relocations, and large wood installation in stream channels. Meadows and parklands would be maintained with projects that remove encroaching conifers, and through weed spraying. See Appendix C of the biological assessment for this project (Borysewicz 2017) for a list of projects completed and proposed in the watersheds. Based on this discussion, the grazing alternatives as proposed would be in step with the conservation strategies for priority landbird habitats provided by Altman (2000, 2012).

Forest Plan Compliance

The Forest Service is responsible for managing grazing allotments to ensure that livestock grazing is not likely to jeopardize the continued existence of listed threatened, endangered, or proposed species, or adversely modify their habitat. Provided the conservation measures and mitigation pertaining to grizzly bears is followed, the project as proposed would meet this direction. The grazing alternatives should not lead to a trend toward federal listing of any sensitive species. The project would be consistent with Forest Plan direction for management indicator species (MIS), and with conservation strategies for priority habitats of birds of conservation concern.

Sensitive Plants

Data collection

A review of the following sources provided the basis for the pre-field review:

- Federally listed and candidate species (USDI FWS 2014b)
- Natural Resources Management Database for sensitive plant sightings and surveys database (USDA FS 2016)
- Region 6 Regional Forester Special Status Species List (USDA FS 2011, 2015)
- Washington Natural Heritage Program (WNHP 2015, 2016, WNHP and USDI BLM 2016)

During the pre-field review, species that normally occur well below the elevation range of the project area or those where typical habitat is not present are omitted from further analysis. Field reconnaissance is limited to areas within, adjacent or near the project area where proposed ground disturbing activities may affect sensitive plant species.

Intuitive controlled plant surveys were conducted in LeClerc Creek Allotment in 2014 (August 19 and September 8), 2013 (July 6, 15, 16; August 5, 28), 2012 (August 22, 27), 2010 (August 24-26, September 17) and 2008 (August 19, 27; September 2-3, 9, 16). The intuitive controlled method first involves walking through the project area and the perimeter of the potential habitat. Next, the surveyor conducts a complete examination of specific areas of the project or walks more than once through the area. A map showing areas surveyed is on file at the Supervisor's Office. During these surveys one new sensitive plant subpopulation of poor sedge was found.

Framework and Desired Future Conditions

The proposed project action would comply with Forest Service regulations included in the Forest Service Manual and Handbook, Threatened, Endangered and Sensitive Plants and Animals – Pacific Northwest Region (2005a). These regulations direct the agency to ensure that management activities do not contribute toward listing or cause a loss of viability of species identified as “sensitive” by the Regional Forester. “A sensitive plant is one thought to be vulnerable to becoming threatened or endangered due to low population levels or significant threats to its habitat” (USDA 2005a).

The Forest Service Manual (USDA 2005a) directs sensitive plant management on National Forest Service (NFS) lands: “All actions are taken to assure that management activities do not jeopardize the continued existence of sensitive species or result in an adverse modification of their essential habitat.” In addition, “...biological evaluations, biological assessments and consultations with the U.S. Fish and Wildlife Service will be done, as appropriate, to ensure that no activity permitted, funded, or carried out by the Forest Service jeopardizes the continued existence of a threaten or endangered species or adversely modifies the essential habitat of such species.”

The Forest Plan (1988) identifies standards and guidelines related to rare plants: “No actions that are likely to jeopardize the continued existence of any plant or animal species or cause the need for listing any species threatened or endangered will be authorized, funded, or carried out by the Colville National Forest. When evaluating the potential effects of an activity on any species, the species status, its dependency on the affected habitat, and the extent or limitation of the habitat,

will be evaluated as they influence the viability of populations within the Forest or the range of the species.”

The Colville National Forest is mandated to protect species viability for plants listed on the 2011 Final Region 6 Regional Forester Special Status Species List (Forest Plan, page 4-42). Botanical surveys on NFS lands are conducted for sensitive species documented or suspected to occur in planning areas with suitable habitat.

Affected Environment

The Colville National Forest is entirely included within the boundaries of Ferry, Stevens, and Pend Oreille counties in northeastern Washington. For these three counties, the USDI Fish and Wildlife Service (2015) lists Ute ladies-tresses (*Spiranthes diluvialis*) as federally threatened under the Endangered Species Act of 1973. It is not documented from the project area and is not included as a suspected species for the CNF (2015). Whitebark pine (*Pinus albicaulis*) is a federal candidate species for listing (USDI FWS 2014). It is documented from the project area and is a sensitive species.

Forty-eight vascular and non-vascular plant species listed as sensitive on the Regional Forester’s Special Status Species List (2011) are documented or suspected for the Colville National Forest. This list was in place at the onset of this project. Since then Nuttall’s pussy-toes (*Antennaria parvifolia*) was removed from the 2015 update of the regional list (USDA FS 2015), so will not be included in this analysis.

In addition to whitebark pine, six other sensitive species are known from the analysis area: western moonwort (*Botrychium hesperium*), poor sedge (*Carex magellanica ssp. irrigua*), beaked sedge (*Carex rostrata*), crested shield fern (*Dryopteris cristata*) and black snake-root (*Sanicula marilandica*). They occur in the allotment as shown in Table 40.

Table 40. Number of sensitive plant populations documented from the project area by allotment

Species	LeClerc Creek Allotment	In Project Area, but Outside Proposed Allotments	Total
Western moonwort (<i>Botrychium hesperium</i>)	1		1
Poor sedge (<i>Carex magellanica ssp. irrigua</i>)	1	1	2
Beaked sedge (<i>Carex rostrata</i>)		1	1
Crested shield fern (<i>Dryopteris cristata</i>)	1		1
Whitebark pine (<i>Pinus albicaulis</i>)		2	2
Black snake-root (<i>Sanicula marilandica</i>)			1
Total	3	4	7

Within two miles of the LeClerc Allotment, six sensitive species are documented: meadow pussy-toes (*Antennaria corymbosa*), least bladder milk vetch (*Astragalus microcystis*), poor sedge (*Carex magellanica ssp. irrigua*), green keeled cotton-grass (*Eriophorum viridicarinarum*),

black snake-root (*Sanicula marilandica*), and prairie cordgrass (*Spartina pectinata*). Potential habitat exists in the allotment for 39 suspected sensitive plant species.

There is not enough information to establish population trends for any of the sensitive plants in the project area. Table 41 displays threats to sensitive plant populations that occur in the LeClerc Allotment. Threats to these known populations are “unknown” because they were not revisited and monitored.

Table 41. Sensitive plants and population threats by allotment

Allotment pastures	Sensitive Plants	Population Threats
4 th of July Pasture	Western moonwort, 3 small subpopulations.	Noxious weeds (Yellow hawkweed, <i>Heracium caespitosum</i>).
Dry Canyon Pasture	None documented.	
Lower Bunchgrass Pasture	Crested shield-fern, recorded population numbers fluctuate, depending on timing of the surveys (before or after cattle in the area) and size of area surveyed.	Cattle trampling and grazing.
Upper Bunchgrass Pasture	Poor sedge.	Noxious weeds (Reed canarygrass, <i>Phalaris arundinacea</i> ; Canada thistle, <i>Cirsium arvense</i>); cattle trampling and grazing; beavers.
In LeClerc Creek Allotment, but not in areas affected by Alternatives C or D.		
Mineral Pasture	Whitebark pine.	White pine blister rust.
Upper Bunchgrass Pasture	Poor sedge.	Unknown.
	Beaked sedge.	Unknown.
	Whitebark pine.	White pine blister rust.

Effects

Analysis Considerations

A risk assessment of the potential effects for sensitive plant species was conducted according to procedures outlined in Forest Service Manual (FSM) 2672.42, 8/90, R-6 Supp. 2600-90-5. Four alternatives were analyzed (USDA FS 2014a and 2014b). A summary of the effects to sensitive plants by alternative is displayed in Table 42. Forest Plan compliance by alternative is also shown at the bottom of the table. All values on the table are subject to change with applied adaptive management.

In general, effects on sensitive plants are site specific and are not disturbed over the entire analysis area. The analysis area for cumulative effects to sensitive plants is the allotment boundary. The effects of past, present, and reasonably foreseeable future actions to sensitive plants typically involve the area of disturbance itself and does not move outside the area disturbed. For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek Allotment analysis areas, refer to Appendix C.

The time bounding for cumulative effects encompasses previous disturbances from prior wildfire, timber harvest, and grazing. Disturbance to sensitive plants and habitats can last for decades. For reasonably foreseeable future actions, the bounding is five years in the future. No additional projects and treatments, in addition to the preferred alternative, are anticipated to have large scale,

detrimental effects to sensitive plants and sensitive plant habitats within the activity area. Continued cattle grazing, road maintenance, and recreational activities are anticipated to be the reasonably foreseeable future events.

Other Forest Service, public, and private activities that overlapped in time or space in the vicinity of this project were considered when analyzing cumulative effects. They included Colville National Forest Hanlon and Scotchman vegetation projects, Public Utility District and Kalispel Tribe restoration projects, as well as other Colville National Forest projects (crib dam removal, instream wood placement in the Upper Middle Branch of LeClerc and Fourth of July Creeks, West Branch of LeClerc road relocation, and culvert replacements on the East and West Branches of LeClerc Creeks).

Indirectly, the spread of invasive plants and soil compaction can cause effects to sensitive plants. These factors can result in degraded habitat poorly suited or no longer ecologically capable of supporting sustainable populations of species of interest. Management requirements to reduce the potential for weed spread are in place.

Direct and Indirect Effects

Alternative A

This alternative would authorize grazing under the existing management plan for the LeClerc Creek Allotment. There would be no change to the existing allotment or pasture boundaries, season of use, and permitted number of cow/calf pairs (101). No new improvements would be installed, with the exception of a riparian exclosure on the lower Middle Branch LeClerc Creek that was planned and approved prior to this project. Other planned management activities would continue. Negative effects from grazing and noxious weeds under the current management would continue.

Alternative B

No action in grazing management planning is synonymous with “no grazing,” so livestock grazing would not be authorized within the project area and the allotment would essentially be closed. Additionally, no range improvements or resource protection projects would be implemented. Current Forest-wide programs such as noxious weed management and road maintenance would continue. This alternative would provide the most protection to soil conditions and wetland functions. Without cattle grazing and trampling, wetlands negatively impacted by cattle would recover, as well as sensitive plant populations in those areas. No grazing would have a positive impact on the sensitive plant populations in the project area.

Alternatives C and D

The effects of Alternatives C and D on sensitive plants would be the same.

Grazing would continue within the LeClerc project area with modifications (including adaptive management) to the permit terms and conditions to address management and resource concerns that currently exist. This alternative would modify the existing permit with changes to the boundaries, administration and management of the allotment (USDA FS 2014b), as outlined in Chapter 2.

The proposed changes to the boundaries, administration, and management of the allotment would positively affect sensitive plant species:

- Whitebark Pine in Mineral Creek and Upper Bunchgrass Pastures – The proposed boundary changes would exclude the locations and habitat of these trees from cattle trampling and grazing.
- Beaked Sedge and Poor Sedge in Upper Bunchgrass Pasture – The proposed boundary change would exclude locations of these sedges from cattle trampling and grazing.
- Western Moonwort in Fourth of July Pasture – This pasture would be removed from the allotment and cattle grazing.
- Poor Sedge in Upper Bunchgrass Pasture – Proposed range management changes are designed to reduce potential impacts caused by cattle to these sites, including monitoring and actively moving cattle.
- Crested Shield Fern in Lower Bunchgrass Pasture – Proposed fencing for this pasture would exclude cattle from the wetland where this plant occurs.

Since the intent of some of the proposed changes is to restore riparian areas, they should have positive effects on sensitive plants that occur in riparian areas and wetlands. The presence of livestock has the potential to add to the spread of noxious weeds. Noxious weeds displace native vegetation, including the habitats of sensitive plants. This alternative provides for the control of noxious weeds, which would benefit sensitive plant habitat. Trampling and destruction of individual sensitive plants by cattle may occur.

Maintenance, monitoring, and actively moving cattle throughout the allotment can reduce potential impacts to sensitive plants caused by continued grazing. With implementation of the design criteria to address noxious weed control for this project area, the proposed activities should not increase noxious weed distribution and would therefore not affect sensitive plant populations and habitat.

Direct and Indirect Effects of Alternatives C and D Adaptive Management Strategies

Alternatives C and D both propose monitoring and adaptive management, as described in Chapter 2. If any of the adaptive management strategies are implemented, they would likely have beneficial effects or no effects to sensitive plants, due to the implementation of design criteria (Chapter 2) and BMPs (Appendix B). The installation of fencing, upland water developments, and cattle guards would be evaluated before implementation for placement away from sensitive plant areas and therefore would not affect sensitive plants.

As a result of the adaptive management strategies, Alternatives C and D may impact individual sensitive plants, but are not likely to result in a trend to federal listing or loss of viability of any sensitive plant (vascular or nonvascular) species.

Cumulative Effects

Based on the implementation of design criteria (Chapter and Best Management Practices (Appendix B)), no effects to sensitive plant population viability are anticipated from this project, therefore no cumulative effects are anticipated.

Forest Plan Compliance

As designed, the project may have an impact on individuals, but is not likely to cause a trend to federal listing or loss of viability, and would adhere to Forest Plan standards and guidelines for sensitive plants. Adherence to Forest Plan standards and guidelines in future projects would

prevent adverse effects to sensitive plants. There are no irreversible or irretrievable effects to sensitive plants associated with the project.

Alternative A would not be compliant with the Forest Plan because it would result in negative impacts to sensitive plant viability.

Alternative B would be compliant with the Forest Plan by positively impacting sensitive plant viability.

Alternatives C and D would be compliant with the Forest Plan, because there would be at least no effect and potentially a positive effect with implementation of proposed improvements.

The following table provides a summary of effects to sensitive plants, by pasture. There are no known sensitive plants in Dry Canyon Pasture.

Table 42. Summary of the effects of the alternatives on sensitive plants

Pastures and Sensitive Plants	Alternative A	Alternative B	Alternatives C and D
4 th of July Pasture - western moonwort	Adverse effects from grazing and noxious weeds under the current management would continue.	No grazing would have a beneficial impact on all sensitive plant populations.	Since 4 th of July Pasture would not be grazed, the western moonwort would not be impacted by cattle.
Lower Bunchgrass Pasture – crested shield-fern	Negative effects from grazing and noxious weeds under the current management would continue.	No grazing would have a positive impact on all sensitive plant populations.	Proposed fencing would protect the wetland where these plants occur.
Mineral Pasture – whitebark pine	Negative effects from grazing and noxious weeds under the current management would continue.	No grazing would have a positive impact on all sensitive plant populations.	The proposed change in the northern boundary of the pasture means the areas where the trees grow would be excluded from cattle grazing and trampling, so would not be impacted by cattle.
Upper Bunchgrass Pasture – beaked and poor sedges, whitebark pine	Negative effects from grazing and noxious weeds under the current management would continue.	No grazing would have a positive impact on all sensitive plant populations.	Proposed range management changes, including monitoring and actively moving cattle, would reduce potential impacts caused by cattle to these sites. The proposed change in the northern boundary of the pasture means the areas where the trees and one of the sites of the poor sedge grow would be excluded from cattle grazing and trampling, so would not be impacted by them.

Soils

Data collection

The project area was evaluated using current soil mapping, geology maps, and topographical maps as well as historical and current aerial imagery. Jason Jimenez, Forest Soil Scientist, spent 5 days in the project area conducting reconnaissance and field surveys in August 2013 and spent 20

days with review of literature, analysis, and report writing. The soil crew spent 40 person days in the project area conducting reconnaissance and field surveys in August and September 2013.

The soil crew conducted National Soil Disturbance Monitoring Protocol Surveys on concentrated use areas identified through the use of aerial photography and field survey. Soil compaction was identified by use of a spade to evaluate alteration of soil structure and resistance to penetration. Extent of compaction as well as other detrimental soil conditions is determined through transects, dug soil pits, and use of visual disturbance classes (Page-Dumroese et al. 2009a and Page-Dumroese et al. 2009b). Visual disturbance classes used are described in Napper et al. 2009.

Current and past scientific literature was used to analyze effects of cattle grazing to the soil resource. Personal knowledge of this area, historic documentation, discussions with other resource specialists, qualitative and quantitative field surveys, and professional experience was used to analyze the alternatives and determine potential effects to soils and mapped wetlands.

Surveys were conducted at a 70 percent confidence interval. Due to the high rate of detrimental soil conditions found in concentrated use areas the calculation of the confidence interval was done by using the undisturbed variation in compaction instead of the disturbed variation in compaction. Minimum transect was 30 points. These areas were identified by field reconnaissance, interpretation of recent satellite imagery, and consultation with the range specialist with 14 concentrated use areas identified and surveyed.

The soil field crew using the Proper Functioning Condition Protocols (USDI 2003 and USDI 1998) conducted a survey of existing mapped wetlands on National Forest System lands within the allotment boundary. Wetlands were also surveyed to determine if they meet criteria for hydric plants, hydric soils, and wetland hydrology. Due to limited time and funding only wetlands greater than one acre were surveyed. Also due to this limited time and funding, the soil field crew conducted the surveys instead of the interdisciplinary team, as the protocol is intended (page 1, USDI 1998). The soil field crew was trained on the protocol for several days and had backgrounds in soils, wetland ecology, and environmental science. A total of 40 mapped wetlands were surveyed. Three wetlands ended up not being within the project area and one has poor access. A total of five mapped wetlands were determined not to possess sufficient hydric soil or obligate wetland vegetation to be determined a wetland; approximately 166 acres of wetland were surveyed. The wetland survey covers all of wetlands greater than one acre on National Forest System land within the alternative C allotment boundary, except for the nine detailed above (three not in the project area, one with poor access, and five determined not to be wetland). Wetlands on private lands within the project boundary were not surveyed.

Framework and Desired Future Conditions

A full description of the desired future conditions for the LeClerc Creek Allotment analysis area are listed on page 7.

The relevant laws, guidance, and direction for the proposed project in relation to the effects to soil quality, soil productivity, and watershed function are:

- Multiple-Use Sustained Yield Act of 1960
- National Forest Management Act (NFMA) of 1976 (as amended)
- Clean Water Act (CWA) of 1977 and 1982 (as amended)
- Executive Order 11988 (floodplains) - 1977

- Executive Order 11990 (wetlands) - 1977
- General Water Quality – Best Management Practices - 1988
- Colville National Forest Land and Resource Management Plan – 1988
- Forest Service Manual and Handbook Direction 2500 – Watershed and Air Management
- Region 6 - Soil Quality Standards and Soil Quality Guidelines - 1998
- National Best Management Practices for Water Quality Management on Forest System Lands - 2012

Affected Environment

The project planning area consists of the LeClerc Creek Allotment. The National Forest System lands within the project planning area are the analysis area for this resource. While livestock have access to a larger area, cattle use is more concentrated along roadsides, closed road beds, old landings seeded with palatable grasses, near water in riparian areas, and low tree canopy cover areas in the allotment.

This analysis will focus on the concentrated high use areas within the allotment, where a majority of the use by cattle was observed and soil disturbance data was collected. Other areas in the allotment are assumed due to lower use, to have lower percentages of detrimental soil conditions.

Soils in the Project Area

Soil maps are available in the project file. Four main categories summarize the soils in the project area based on their parent material and distribution of volcanic ash. Volcanic ash content has strong implications for soil productivity and sensitivity to management actions. Soils within the groups have similar properties and implications for management: volcanic ash-capped, admixture, no volcanic ash, and wetlands.

Volcanic Ash Capped Soils

Soils influenced by volcanic ash dominate the soils in the project area. Cascade volcanoes have deposited volcanic ash across the project area, predominately from Mt. Mazama, now Crater Lake, which deposited approximately six to twelve inches of volcanic ash in eastern Washington and northern Idaho. When volcanic ash was deposited, wind and water redistributed the volcanic ash across the landscape. The volcanic ash component is generally silt-size particles and deeper on north aspects, higher elevations, moist vegetation associations, and convex landscape positions. (Page-Dumroese et al. 2007)

About 75 percent of the LeClerc Creek Allotment project area has volcanic ash-capped soils. In this area, the ash layer generally ranges from 6 inches to 24 inches. The presence of volcanic ash strongly influences many of the management interpretations for these soils. Ash-cap soils have a high water holding capacity, high nutrient holding capacity, lower bulk density, are more productive, and are resilient to disturbance compared to most other soils. Volcanic ash capped soils are important to protect as they contribute greatly to soil and tree productivity. For additional description of volcanic ash capped soils, refer to the Soils Report.

Areas of Concern for Soil Resources

Concentrated Use Areas

Concentrated use areas were identified during reconnaissance surveys, aerial photo interpretation, and discussions with the range specialist. Designated in GIS and aerial photo interpretation and modified from ground survey, concentrated use areas are typically low canopy cover areas, dominated by grasses and forbs, and typically have access to water. These areas were surveyed using the National Soil Disturbance Monitoring Protocol at a 70 percent confidence interval. The following table summarizes the results of the surveys. Maps are available in the project file.

Table 43. Summary of soil disturbance monitoring protocol for the LeClerc Creek Allotment

Survey Unit	Percent Detrimental Soil Condition ¹	Forest Floor Depth (cm)	Acres	Wetland in Concentrated Use Area	Survey Comments
Concentrated Use - 1	3	2.8	3	Y	N/A
Concentrated Use - 2	7	1.6	7	N	N/A
Concentrated Use - 3	90	1.2	3	N	N/A
Concentrated Use - 4	3	1.1	8	N	N/A
Concentrated Use - 5	23	1.9	6	N	N/A
Concentrated Use - 6	10	1.5	6	N	Cattle disturbance
Concentrated Use - 7	92	1.5	13	Y	Cattle disturbance, Invasive plants
Concentrated Use - 8	97	0.8	5	Y	N/A
Concentrated Use - 9	100	0.6	7	N	Disperse camping, OHV disturbance
Concentrated Use - 10	100	0.8	3	N	Cattle disturbance
Concentrated Use - 11	97	1	12	N	Cattle disturbance
Concentrated Use - 12	100	2.7	2	N	Heavy compaction
Concentrated Use - 13	0	3.0	2	Y	Undisturbed, no evidence of cows
Concentrated Use - 14	100	0.3	2	N	Cattle damage

Notes: ¹Regional and Forest Plan Standards are exceeded above 20 percent detrimental soil condition, in highlighted rows. Total surveyed detrimental soil conditions are 53 acres of 79 acres of Concentrated Use Areas (66 percent).

A suitability analysis was completed by the GIS and range specialists to determine the approximate acres in the allotment that cattle have the potential to use; alternative A provides 5,452 acres, alternative C provides 4,565 acres, and alternative D provides 5,913 acres. Alternative B is the no grazing alternative and does not provide acres to be utilized by livestock. Approximately 0.9 to 1.2% of the potential areas for utilization by livestock are areas that do not meet Regional and Forest Soil Quality Standards from data collected during field surveys. These areas are typically low canopy cover areas with hydric soils and grass or shrub forage for livestock. These areas are a low percentage of the landscape and have higher productivities for livestock forage and other services than forested timber stands.

Wetlands

The Colville National Forest wetland geographical information systems (GIS) layer based on the National Wetland Inventory was used, and the area analyzed was limited to the proposed allotment boundary and to Colville National Forest System lands.

LeClerc Creek Allotment project area includes approximately 250 acres of mapped wetlands within the allotment boundary, with many present on private land that were not surveyed. Since the allotment is not enclosed, and wetlands adjacent to the allotment have no physical barriers, it is anticipated there would be some use of these features by cattle. Approximately 160 acres of wetlands, comprised of 40 individual wetlands, were surveyed using Proper Functioning Condition protocol per Technical Reference 1737-15 (USDI, 2003).

Of the 40 wetlands surveyed, 22 (55 percent) were determined to be properly functioning, 13 (33 percent) wetlands were determined functional at risk (9 downward trend, 1 upward trend, and 3 not apparent), and 5 (13 percent) were determined not to be a wetland. The percentages when not including the “not a wetland” are 63 percent properly functioning and 37 percent functioning at risk. All wetlands with cattle presence or cattle use were determined to be functional at risk with downward or not apparent trends. All wetlands surveyed which did not have use by cattle were rated as properly functioning. All surveys were conducted within the allotment boundary. There is approximately 91 acres of the 160 acres of wetlands surveyed determined to be functioning at risk, approximately 57 percent aerial extent of the wetlands.

A suitability analysis was completed by the GIS and range specialists to determine the approximate acres in the allotment that cattle have the potential to use; alternative A provides 5,452 acres, alternative C provides 4,565 acres, and alternative D provides 5,913 acres. Alternative B is the no grazing alternative and does not provide acres to be utilized by livestock. Approximately 1.5 to 1.9 percent of the potential areas for utilization by livestock is wetlands that were rated as functional at risk during field surveys. Wetlands provide many ecological services such as wildlife habitat, carbon storage, and improvement of water quality (Cooper and Merritt, 2012) and thus important areas to monitor and manage for proper functioning.

Road Prisms

The Forest Service considers roads to be land that is taken out of production. The soil productivity is already altered from the road construction, so grazing cattle along roads has negligible effect on the soil productivity for these areas. While cattle grazing along roads can be problematic (particularly where cattle trail up and down road cut slopes and fill slopes that are either unstable or wet from seeps), this was not extensively observed on the LeClerc Creek Allotment.

Dispersed Camping and Off-Highway Vehicle (OHV) Recreation

Dispersed camping and OHV travel occur sporadically throughout the project area. Frequently used dispersed campsites and unauthorized roads and OHV trails can be found within the allotment boundaries. Lightly used dispersed campsites occur throughout the project area on old landings and ends of roads.

One large dispersed camping and OHV area surveyed, referred to as Ballpark Meadow – Concentrated-Use Area 9, exceeded Regional Soil Quality Standards being surveyed as having 100 percent detrimental soil conditions. A majority of the conditions come from dispersed camping and OHV use; some of the conditions come from cattle and historic use of this area.

The effects of dispersed camping on the soil are intense but very spatially limited. The soil in popular campsites is compacted, the litter layer is often gone or very thin, and the soil surface is usually bare of vegetation.

Timber Harvest

Timber harvest is the most widespread activity in the area. Cattle grazing of past timber harvest was not widely observed; harvest has resulted in a large number of old roads and skid trails, some of which cattle and OHVs will continue to use. Past sampling of harvested areas in the Hanlon project area and Scotchman project area found detrimental soil conditions in harvest units with the vast majority less than 10 percent. Recent timber harvest has increased detrimental soil conditions, but conditions remain within Regional and Forest Soil Quality Standards.

Fire

Large stand replacing fires burned in the allotment boundary in the late 1920s and early 1930s. This has resulted in the densely stocked stands of small diameter trees. However, since large fires have not recently occurred in the action area and current forest canopies are dense, the effect of historic fire on the soil resources appears minor; soil resources have recovered and stabilized from potential fire damage caused by the fires in 1920s and 1930s.

Effects

Analysis Considerations

Grazing in the allotment has been ongoing in the project area for over 70 years, with grazing of cattle by homesteaders beginning in the 1900s. Potential impacts from historic and current grazing include an increase in soil bulk density (soil compaction) from cattle use in concentrated areas resulting in decreased infiltration rates and increases in erosion rates.

Soil compaction and displacement by hoof action can lead to the dislodging of plants, changes in soil structure and porosity, and a loss of productivity. Compaction and displacement occurs in several areas of cattle use including forage areas, trailing sites, and rest sites (Krzix et al. 1999). Compaction changes the soil structure, decreasing available refugia for soil organisms, reducing the rate of water and nutrient infiltration, and diminishing water storage capacity (Belsky and Blumenthol 1997 and Naeth et al. 1990). Lower soil moisture contents in turn reduce plant productivity and vegetative cover that further degrades both the plant community and soil structure. Detrimental soil conditions of compaction and displacement in meadow, wetland, and riparian areas would affect soil productivity (Donkor et al. 2002).

Many studies have found that cattle grazing reduces soil organic layers (litter and duff) (Belsky and Blumenthol 1997; Irwin et. al. 1994). Cattle trampling scuffs away litter layer and organic matter, or can reduce soil organic matter content and reduce macroporosity (increases compaction), consequently reducing water infiltration and air diffusion, increasing runoff, creating soil erosion and sedimentation. Cattle impacts on vegetation can also include indirect effects of trampling and soil compaction, removal of small stems in the shrub and sapling layer, and damage of larger trees. Bezkorowajnyj and others (1993) found that nitrogen uptake by saplings was decreased in areas compacted by grazing. Tree roots are more frequently exposed in heavily used areas than in unused areas. Heavily used areas experience progressive expansion of detrimental soil conditions.

Other less obvious impacts can occur, including changes in soil chemical parameters such as soil organic carbon and nitrogen. Ganjegunte and others (2005) found that light grazing increased soil organic carbon and nitrogen compared with heavy grazing and exclosures (no grazing). Hamilton and others (2008) found increased root exudation in Kentucky bluegrass when plants were

defoliated, which led to an increase in nitrogen mineralization. The authors conclude that changes in short-term rhizosphere processes as a result of defoliation play an important role in carbon and nitrogen transformations in grazed lands. It has been found that grazing by large domestic ungulates increases nitrogen loss through ammonia volatilization (Irwin et al. 1994). Light and heavy grazing stimulates the transfer of carbon and nitrogen from the above ground plants to the soil (Schuman et al. 1999). These sites may suffer unnatural litter production from annual grasses, loss of below ground organic matter accumulation, and altered below ground nutrient cycling regimes (Ehrenfeld 2003).

Slope stability and potential for landslides would not be measurably affected by either the presence or absence of cattle grazing in the LeClerc Creek Allotment due to lack of cattle grazing on steep slopes, lack of utilization of large woody vegetation, and the geology and parent materials in the allotment. Slope stability will not be addressed further in the analysis.

Bounding of the Cumulative Effects: In general, effects on soil productivity are site specific and are not disturbed over the entire analysis area. The analysis area for cumulative effects to soils is the treatment unit or activity area. The activity area as defined in Region 6 Soil Quality Standards as “the total area of ground impacting activity, and is a feasible unit for sampling and evaluating.” These areas would be the surveyed concentrated use areas and wetlands. The effects of past, present, and reasonably foreseeable future actions to soils typically involve the area of disturbance itself and do not move outside the area disturbed. The development and movement of soils occurs on a geologic time scale and this area bounding reflects cumulative effects to soils.

The time bounding for cumulative effects encompasses previous disturbances from prior wildfire, timber harvest, and grazing as detailed in the existing condition. Disturbance to soil can last for decades and even centuries (Amundson & Jenny, 1997). For reasonably foreseeable future actions, the bounding is five years in the future. No additional projects and treatments in addition to the preferred alternative that would have large scale, detrimental effects on soil resources or wetlands are anticipated within the activity area. Continued cattle grazing, road maintenance, and recreational activities are anticipated to be the reasonably foreseeable future events.

Past Activities: Effects of past and present activities are discussed in the affected environment section. The affected environment described in the analysis incorporates all past actions that have occurred within the analysis area.

Reasonably Foreseeable Future Activities: A complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek allotment analysis areas, is in Appendix C. The list includes various road restoration, culvert replacements, reforestation, pre-commercial thinning, commercial thinning, and prescribed fire.

Vegetation Management Projects - LeClerc Creek grazing allotment area is part of the ongoing Scotchman and Hanlon Stewardship Projects. There are approximately 50 timber harvest units within or adjacent to the allotment. These projects involve both commercial and noncommercial timber harvest and prescribed fire, and may include road construction and decommissioning. Timber harvest creates skid trails that are often used preferentially by cattle and wildlife as travel routes. Cattle use on old skid trails compacts portions of them further. Skid trails are already considered to be detrimentally compacted, so this does not increase the extent of detrimental compaction. The main effect of cattle use of skid trails is the slowed recovery of vegetative cover on the trail and very slight localized erosion where the soil remains bare. This does not constitute an appreciable impact on soil productivity or increases to detrimental soil conditions or cause measurable cumulative effects.

Roads - Ongoing road maintenance has negligible effects on soil productivity. Ongoing grazing along roads and at stream crossings could continue to cause maintenance problems where culverts are plugged or damaged by trampling and wallowing; however, as stated earlier (Areas of Concern for Soil Resources), this was not extensively observed on the LeClerc Creek Allotment.

Recreation - Motorized Vehicle Use: If all applicable rules regarding motorized recreation are followed, soil disturbance should be minimal. Unauthorized motorized use off roads and trails does impact soil and can be a problem particularly in wet areas that may already be impacted by cattle. Some unauthorized OHV use occurs in the project area but not to the extent that exceeds Regional Soil Quality Guidelines. Pioneered OHV trails can become established cattle trails and the combined cattle and vehicle traffic prevent the trails from fading back into the landscape. This is problematic in sensitive riparian and wetland areas.

Direct and Indirect Effects

Effects Common to Alternatives A, C and D

Cattle use of forested upland areas is generally very light, therefore continued grazing under Alternatives A, C and D would have little impact in these areas.

Cattle would continue to graze along roadsides, especially roadsides seeded to palatable grasses. Since the roadside grazing is limited to cut and fill slopes, the effects to on site-productivity would be very limited. Where cattle trail up and down sandy road cuts, localized erosion would continue.

Impacts from continued grazing (such as punching and chiseling of wetland soil and compaction) would continue.

Effects of Alternatives C and D

If cattle are successfully drawn into the more open uplands by improved water developments and management (as proposed under Alternatives C and D), grazing intensity of the uplands would increase. This would cause increased compaction in the form of trailing on dry ground to, near, and between troughs, and may cause very small areas of localized erosion. The extent of compacted soil in new trails would be small at a landscape scale and effects on soil productivity would be negligible. Increasing cattle use of uplands should decrease the intensity of impacts along streams, wetlands, and concentrated use areas.

The turn-on date moving two weeks later would be beneficial for soil resources; soils would potentially contain less moisture and have less potential for detrimental compaction. Additional growing season for plants to establish and provide soil cover would also be beneficial for soil resources in the allotment.

Removing the Fourth of July Pasture would be beneficial. Detrimental soil conditions in the pasture would slowly recover with freeze and thaw and biological activity. Wetlands that are functional at risk and riparian areas that are impacted by concentrated cattle use would recover with the subsequent vegetation recovery. Changes to the Lower Bunchgrass Pasture would improve soil and vegetation conditions in areas excluded. Additions to the allotment lack any sensitive soil or wetland features and would assist in the overall management of the allotment, which would maintain or reduce detrimental soil conditions. Other proposed changes would not have detrimental impacts to soil resources; having reviewed the areas no issues concerning soils or wetlands were discovered with these other changes in allotment boundaries.

Improvements including trough and fence installation as well as other physical structures would cause no measurable increases in detrimental soil conditions. New troughs or new locations of existing troughs would cause a small area around the trough to become compacted and bare but not substantially affect soil resources. No soil design elements are needed for the construction of range improvements including the installation of hardened crossings. National Forest Service best management practices are sufficient to protect soil resources.

The new access route to Hanlon Meadow would be used on an existing road template, with the obliteration of the existing road, would give a net benefit to soil resources.

Alternatives C and D would implement adaptive management, as described in Chapter 2 and the Soils Report. Implementation of such strategies could benefit soil resources through management based on data collected and standards implemented. The potential for reduced cattle presence in sensitive ecological areas (wetlands and riparian areas) would reduce detrimental soil conditions and assist in vegetation recovery.

Current cattle numbers have contributed to issues with detrimental soil conditions and moved several wetlands into functioning at risk conditions as documented in field surveys, data collection, and photos conducted by the soil field crew in August and September of 2013. The ability to change cattle numbers depending on monitoring and vegetation conditions would be beneficial to soil resources and wetland function.

Effects of Alternative B

Under Alternative B, removing cattle from the allotment would remove the ongoing impact of trampling and trailing on sensitive soils. In some areas, the reestablishment of vegetation on bare soil areas would occur within the first year or two. In most other areas, several years or longer would be needed to reestablish vegetation. Compacted moist swales and loafing areas would very slowly start to recover their porosity as vegetation slowly becomes established and root systems and soil organisms increase. Researchers have found a large range of recovery times for grazing-compacted soils from 2 years to 10 years (Talbot-Williams 2005).

Eventually, soil cover would increase and erosion rates would decrease. Structure would improve and a greater proportion of precipitation would enter the soil and be stored in the soil on the watershed. However, these changes depend on improving structure and pore space distribution, which is biologically mediated and would occur only after soil organic matter increases and trampling effects are ameliorated. Soil functions probably could return to near reference conditions within 20-50 years, though actual change would rely on climate, vegetation, and soil characteristics, which would be variable.

Nutrient cycling, filtering, and buffering, and carbon storage would be improved by the removal of grazing from the allotment. Scientific literature shows that these processes are affected by grazing (Talbot-Williams 2005). Recovery to background conditions would begin and continue for decades in concentrated use areas. Transitional range areas would not be affected as they receive minor cattle use.

Wetlands that were surveyed as functioning at risk with a non-apparent or downward trend would slowly recover and become functional with the exception of wetlands where cattle use has altered the hydrology. Additional restoration would be needed to bring several of the wetlands to properly functioning condition. Wetlands that are properly functioning would continue on that trend.

Under Alternative B, riparian and wetland plant cover and litter would increase, and the rate of organic matter accumulation in the soil would likely slowly increase. Disturbed stream banks would continue to erode in the short term, but would slowly stabilize either because of increased vegetative cover or because they would reach a new equilibrium.

Cumulative Effects

Cumulative Effects of Alternative A, Alternative C, Alternative D

There would be no adverse cumulative effects to soil resources under any alternative.

Alternative A would not result in improvements to (and may further degrade) soil conditions in concentrated use areas. Lack of cattle distribution practices and other range improvements would likely increase the overall impacts from cattle grazing, and wetland function would continue to gradually decline over time.

With the removal of cattle from the allotment, Alternative B would provide the most protection and recovery of soil quality and soil function, as well as wetland function. Detrimental soil conditions in concentrated use areas and wetland function in downward trending wetlands would slowly improve, as the effects of past cattle grazing would slowly be remediated over time by freeze-thaw and soil biological activity. Therefore, the removal of cattle from the allotment is not expected to contribute to cumulative effects to the soil when combined with past, ongoing, or reasonably foreseeable actions.

Under Alternatives C and D, changes in grazing management would move toward improved soil conditions. In combination with more range improvements, the improved cattle distribution practices would discourage cattle concentration and allow for natural soil processes to work toward recovery of wetlands and detrimental soil conditions. These effects would be localized and gradual; therefore, Alternatives C and D would be expected to contribute to cumulative effects to the soil when combined with past, ongoing, or reasonably foreseeable actions.

Forest Plan Compliance

Alternatives A, C, and D would continue to degrade soils within concentrated use areas and wetlands rated as functional at risk within the allotment boundary. Surveys found less than 1% of the total area in the allotment boundary to be detrimentally disturbed, although surveys found that a large majority of the areas of the allotment do not receive cattle use. Nine of the fourteen concentrated use areas (a total of 53 acres) would continue to exceed (not meet) regional soil quality standards and have a high potential to further degrade and expand in size. A majority of the wetlands impacted by cattle would continue to degrade and are at risk of becoming nonfunctional without cattle exclusion or restoration of some kind.

Under Alternative B, detrimental soil disturbance would be expected to decline from the existing surveyed results, therefore meeting the Forest Plan and Region Soil Quality Standards in the concentrated use areas surveyed in the long term.

Alternatives C and D have potential to protect soil and water resources if adaptive management is used to protect areas identified as exceeding regional soil quality standards or as determined as functional at risk.

Heritage Resources

Data collection

A cultural resources literature search was conducted on the proposed project area. Heritage program staff reviewed archaeological site records and cultural resources survey reports on file at the Washington Department of Archaeology and Historic Preservation and in the Colville National Forest's Heritage Program reference library. Additional information is provided in the Heritage Report, the full text of which is incorporated by reference.

Framework and Desired Future Conditions

The current conditions are evaluated against Forest Plan management objectives and desired future conditions as described by the Forest Plan, Regional Forester's Forest Plan Amendment #2, the Inland Native Fish Strategy Environmental Assessment (INFISH EA, 1995), and the National Fire Plan. Additional information related to analysis is located in FSH 2209.13, chapter 90 – grazing permit administration handbook.

Recommendations for Historic Properties

A National Register for Historic Places determination of eligibility is prescribed by the National Historic Preservation Act implementing regulations at 36 CFR 800 as the method for designing management recommendations for historic properties located on National Forest System lands. Evaluations of eligibility are performed for each property within the project boundary, when practical. The following are based on National Register eligibility determinations for historic properties.

Table 44. National Register for Historic Places determinations of eligibility, and recommendations.

Determination	Recommendations
Management Class 1 - Evaluated as Not Eligible	No further need to actively manage.
Management Class 2 - Not Evaluated	Property must be protected and preserved as if eligible. Protect historic property through avoidance.
Management Class 3 - Evaluated as Eligible to the National Register	Project will have No Effect on property. Property must be protected and preserved as defined by Regulation. Protect historic property through avoidance.
Management Class 4 - Evaluated as Eligible	Project will have an Adverse Effect on property. Property must be protected and preserved as defined by Regulation. Protect historic property through avoidance.

Sites within the LeClerc Creek Allotment have been identified as either *Evaluated as Not Eligible* or *Not Evaluated*.

Sites identified as *Evaluated as Not Eligible* have been evaluated and determined not eligible for the National Register of Historic Places. Before any activity could occur at the sites, the State Historic Preservation Office (SHPO) would need to review and concur with the determination; once that was completed, those sites would not need to be actively managed.

Not Evaluated sites must be protected and preserved as if they were eligible for the National Register of Historic Places. Either provisions must be made to avoid direct impacts to the site during the planned activities or, if it is determined this is not a viable option, a plan for site

evaluation and effects mitigation must be developed and executed by the Forest or District heritage program. There are several mitigation options that can be explored including research, interpretation, public education, site enhancement or a combination of these and other options. The SHPO concurs with these actions.

Affected Environment

Overview of Past Human Land Usage in the LeClerc Project Area

First Nation Influence

Ethnographic investigation has permitted certain generalities about the region. During the past 6,000 years, the region has been utilized by diverse groups of people for a variety of activities. The project area lies within the traditional use area of the Kalispel Tribe. The Kalispel is a sub-group of the Salishan speaking groups, which include the following cultural traditions: Wenatchee, Columbia, Chelan, Methow, Okanogan, Nespelem, Sanpoil, Spokane, Coeur D'Alene, Colville, Lakes, and Kalispel. Ethnographic accounts indicate that the Pend Oreille River Valley, specifically the eastern edge of Colville National Forest may have also been utilized by the Kootenai, Spokane, and Colville tribes (Kennedy and Bouchard 1998, Lahren 1998). Native people of the region ranged freely over the hills and valleys hunting and gathering. Compared with many other areas of the Pacific Northwest, the numbers of native peoples living in Pend Oreille County were relatively small. Ethnographic accounts indicate that the Kalispel practiced wintertime deer drives and maintained resident fisheries along the Pend Oreille River. In addition to hunting deer and fishing the Kalispel harvested camas (*Camassia* sp) (Lahren 1998). Native American cultural resource sites (on National Forest System lands) have been identified within the Area of Potential Effect.

Euro-American

The project area was largely unoccupied by non-Native Americans until the turn of the century. The early 1900s was a period of settlement and development of lumber, mining, and agriculture industries.

Beginning in 1821, the Hudson Bay Trading Company had great influence in the Colville and Pend Oreille Valley regions; this influence lasted through to the late 1800s. The Hudson Bay Trading Company was the largest trade outpost in the region serving parts of Washington, Idaho, Montana, and Canada. The company also maintained a cadre of trappers as well as purchasing furs from freelance trappers. Under the influence and guidance of the Hudson Bay Trading Company, many trails were created to facilitate trade within the region. The presence of the Hudson Bay Trading Company induced cultural changes in both Euro-American and First Nation Communities alike (Chance 1973). In 1809, David Thompson of the North West Company was the first trader to make contact with the Kalispel (Thoms 1987). Thompson traded ironworks (knives, awls, guns, etc.) for beaver pelts.

Settlers in the late 1880s introduced the timber industry into the area. With the timber industry and the passage of the Forest Homestead Act in 1906, homesteaders moved into the project area (Bamonte and Bamonte 1996). The Forest Homestead Act allowed for 160-acre homesteads on reserved forest lands. Under the Act the land parcels were supposed to have agricultural potential, but much of the land was rocky and unsuitable for farming. Settlers in the area found that timber harvest was much more profitable than farming (Bamonte and Bamonte 1996).

The timber industry became the primary industry and contributed greatly to the settlement and economic development of Pend Oreille County (Fandrich 2002). By the 1920s there were two primary companies that owned and operated sawmills in the Le Clerc Creek drainage: Diamond Match and Panhandle Lumber Companies. These two companies competed for the available timber in the Le Clerc creek drainage, building many roads, flumes, railroads, and lumber camps - including the former town site “Diamond City.”

Existing Conditions

Historic Properties

There are 46 identified archaeological and historic sites that are historic properties within the proposed planning area (a list of sites by identification number is provided in the Cultural Report). Two sites (6210500296 and 6210500300) have been determined not eligible for inclusion in the National Register for Historic Places (NRHP). The remaining 44 sites have not been evaluated for inclusion in the NRHP. In addition to the archaeological and historic sites, there are properties of traditional religious and cultural importance to an Indian Tribe that have been determined eligible for inclusion on the NRHP, and under the National Historic Preservation Act (NHPA) these are considered to be historic properties.

Because past management practices have not evaluated many of these properties for eligibility to the NRHP, unevaluated historic properties are managed as if eligible and mitigations for these properties would follow management prescriptions as specified in the next section. Currently the heritage program management attempts to relocate sites, monitor the sites for damage and deterioration, evaluate the sites for NRHP eligibility, and preserve and protect the sites.

Tribal Concerns

In 1993, the Kalispel Tribe of Indians notified staff of the Colville National Forest via written correspondence of traditional cultural properties that were located in the LeClerc drainage (482 acres located in the northernmost portion of the allotment). The letter communicated the Tribes’ intent to nominate those lands as traditional cultural historic properties for listing in the National Register of Historic Places. Through the years, the Tribe has consistently provided comments to the staff of the Forest regarding their interest and concern for activities occurring on and in the vicinity of identified parcels.

In 1993, the Forest Service received correspondence from the Kalispel Tribe, which detailed their concerns for the LeClerc watershed. It discussed in general the significance of the location to the Tribe. The letter expressed the Tribe’s belief that “preserving traditional lands is an essential facet in sustaining tribal culture for future generations” (Nenema 1993).

The Kalispel Tribe asserted continuing concern and interest for the traditional cultural properties located in the LeClerc watershed. The letter also indicated they were in the midst of ethnographic data collection for the area (Lyons 2000).

In additional correspondence, the Kalispel Tribe provided a narrative describing the traditional cultural properties located in the LeClerc watershed and the importance of that landscape to the Kalispel people. The document, via ethnographic data collection, linked the locations to the modern tribal community by discussing past and present practices and the conveyance of tribal knowledge and tradition (Lyons 2001).

The Kalispel Tribe of Indians contacted the Forest via written correspondence in October 2012, at the outset of this project; their letter emphasized their concern for these parcels. The tribe indicated that “there has been an increasing reluctance on the part of the Kalispel membership in the use of specific landforms in the existing cattle allotment for the gathering of traditional medicinal plants.” Furthermore, they believe that there is an incompatibility between free exercise of traditional beliefs, curative arts, and rites of passage and cattle grazing. Statements to this affect have been made at meetings with the Forest (February 19, 2013). The Kalispel Tribe has identified the LeClerc watershed in particular as a “Cultural Landscape”.

From 1993 to the present the tribe has reiterated their concern for this particular landscape during every project consultation that was specific to the LeClerc watershed. In addition to providing comments on FS projects, they have also been instrumental and active partners on projects in the LeClerc watershed that benefit the preservation and restoration of this natural landscape. The Kalispel Tribe is socially and economically invested in the restoration, preservation, and protection of this cultural landscape.

The National Park Service (NPS) utilizes the following definition for cultural landscape - a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein), associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values. There are four general types of cultural landscapes, not mutually exclusive: historic sites, historic designed landscapes, historic vernacular landscapes, and ethnographic landscapes (NPS 2012). More specifically the LeClerc watershed, based on meeting discussions and correspondence, is an ethnographic landscape. The NPS further defines ethnographic landscape - a landscape containing a variety of natural and cultural resources that associated people define as heritage resources. Examples are contemporary settlements, sacred religious sites, and massive geological structures. Small plant communities, animals, subsistence, and ceremonial grounds are often components. These definitions are provided in the “Guidelines for the Treatment of Cultural Landscapes”, and apply very specifically to landscapes.

Effects

Analysis Considerations

Archaeological and historic sites gradually deteriorate over time, subject primarily to natural forces (i.e., weather conditions, unexpected wildfire, etc.). Natural forces could destroy or significantly damage standing or downed historical structures, affecting potential National Register eligibility characteristics of these properties.

In general, effects on archaeological and historic sites are site specific and are not typically disturbed over the entire analysis area. Depending on the nature or use of a traditional cultural property, the effects can be site specific (traditional gathering location) or can affect a larger area (culturally significant viewshed).

Range management activities have the potential to damage or destroy these sites directly and indirectly through the movement, concentrations, and innate behavior of cattle. When range improvement projects or other associated projects (cattle management, riparian habitat restoration, protection, and improvement, and wildlife and fisheries habitat protection and improvement) are proposed, heritage program personnel identify archaeological and historic sites on the ground and coordinate with appropriate project personnel to provide location information and additional protection mitigations as needed. Design criteria (Chapter 2) are used to protect such sites.

Past, present, and reasonably foreseeable projects can be generalized into five categories: timber and vegetation management activities, road maintenance activities, riparian and fish management activities, recreation, and utility transmission special uses permit activities.

- Timber and vegetation management activities have the ability to open up the landscape (removal of natural barriers) so that cattle move across the landscape. This can also expose archaeological and historic sites that may have been previously protected by vegetative cover to ‘scratching’ and trampling. Vegetation management projects have the potential to affect traditional cultural properties. In recent and ongoing timber and vegetation management projects, design criteria are identified and implemented to protect wildlife resources, ethno-botanical resources, and culturally significant viewsheds.
- Road maintenance activities typically do not affect archaeological and historic sites; roads tend to create an easier travel corridor for cattle and can reduce the effects of trampling. Road activities can have a positive effect on traditional cultural properties in that they allow tribal members and traditional practitioners access to traditional cultural properties while at the same time allowing access to other uses (such as off-highway vehicles [OHVs]) that may not be compatible.
- Riparian and fish management activities do not typically affect archaeological and historic sites and can on occasion provide additional protection to certain archaeological and historic site types (i.e., flumes, bridges, homesteads) through enclosure fencing. Riparian and fish management activities do not typically affect traditional cultural properties.
- Recreation activities in the project area include but are not limited to the following: dispersed camping, hunting, and OHV use. The activities in general have the potential to affect (i.e., looting, vandalism, and damage) archaeological and historic sites, particularly those resources that have increased visibility and user access. Recreation activities can have an effect on traditional cultural properties when those activities (e.g., OHV use) are incompatible (for example, increased mechanized noise).
- Utility transmission transportation special uses permit typically do not affect archaeological and historic sites. Certain utility corridors allow for cattle movement and concentration typically removed from archaeological and historic sites. Utility transmission transportation special uses permit can have effects on some types of traditional cultural properties (i.e., culturally significant viewsheds).

For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek Allotment analysis area, refer to Appendix C.

Direct and Indirect Effects

Archaeological and Historic Sites

There would be **no effect** to archaeological and historic sites in the LeClerc Creek Allotment under any alternative.

By following the prescribed design criteria stated in Chapter 2, archaeological and historic sites in the LeClerc Creek Allotment would be protected under Alternatives A, C or D. Any project or treatment that results from the adaptive management strategies under Alternatives C and D would be subject to and comply with the NHPA Section 106 to ensure the protection of historic

properties and traditional cultural resources. Prior to the implementation of any of these strategies the project and project location would be assessed by the forest archaeologist. Based upon the Programmatic Agreement among the United States Department of Agriculture, Forest Service, The Advisory Council on Historic Preservation, and the Washington State Historic Preservation Officer Regarding Cultural Resources Management on National Forest in the State of Washington (1997), there are provisions in place to address specific activities associated with ecology, range, and watershed and fish and wildlife. The heritage program would follow the guidance of the programmatic agreement when considering specific adaptive management projects.

Under Alternative B, the effects from cattle grazing would be eliminated, which could slow the rate of deterioration in sites that have been affected by cattle.

Tribal Concerns

Alternative A would have an **adverse effect** in terms of tribal concerns. The concerns raised by the tribe would continue to be unresolved with regard to grazing permitted within the parcels identified as potentially NRHP eligible traditional cultural properties. In addition, the conflict between grazing activities and the tribally identified cultural landscape would persist under Alternative A.

Alternative B would have a **beneficial effect** in terms of tribal concerns. The concerns raised by the tribe with regard to traditional cultural properties would be resolved with grazing not being permitted within the parcels identified as potentially NRHP eligible traditional cultural properties. By removing cattle from the allotment, the conflict between grazing activities and the tribally identified cultural landscape in the LeClerc Creek Allotment would be resolved.

When addressing tribal concerns, Alternative C would have a **beneficial effect** in terms of traditional cultural properties. Boundary modifications were proposed in Alternative C to specifically address tribal concerns for areas they had previously identified as potentially NRHP eligible traditional cultural properties, which could have a beneficial effect on culturally significant resources that had previously been affected by cattle grazing activities.

Alternative D would have a **potential adverse effect** in terms of traditional cultural properties. The concerns raised by the tribe may not be fully resolved with regard to grazing activities within the parcels identified as potentially NRHP eligible Traditional Cultural Properties. Alternative D modifies the allotment boundary to exclude three of the four traditional cultural properties from grazing, however one TCP remains within the grazing allotment and may be affected by grazing activities. Reasonable efforts would be made to prevent effects to the TCP but the potential to affect remains.

Both Alternatives C and D would have an **adverse effect** in regard to the cultural landscape. Because cattle would continue to be grazed there, the conflict between grazing activities and the tribally identified cultural landscape would persist.

Summary of Effects

Table 45. Comparison summary of effects for each alternative on the different allotment areas

Measure	Alternative A	Alternative B	Alternative C	Alternative D
Effects on Archaeological and Historic Sites	No Effect	No Effect	No Effect	No Effect
Tribal Concerns: Traditional Cultural Properties	Adverse Effect	Beneficial Effect	Beneficial Effect	Potential for Adverse Effect
Tribal Concerns: Cultural Landscape	Adverse Effect	Beneficial Effect	Adverse Effect	Adverse Effect

Cumulative Effects

Historic Properties

Based on design criteria that would protect archaeological or historic properties, there would be no effect to any sites in the LeClerc Creek Allotment under any alternative. Because there are no direct or indirect effects, there would be no cumulative effects to these sites.

Tribal Concerns

The general effects of past, present, and reasonably foreseeable activities associated with the LeClerc Creek Allotment are discussed under Analysis Considerations (and listed in Appendix C). Effects could include trampling associated with cattle movement/concentrations and potential vandalism by humans (in the case of increased access).

Under Alternative A, there would be an adverse cumulative effect to traditional cultural properties and the cultural landscape when considering the effects of past, present and reasonably foreseeable activities in conjunction with the effects of continued cattle grazing in the area without modification (for example, effects may include destruction or damage to medicinal plant sites). Tribal concerns would not be addressed.

Under Alternative B, cattle would not be permitted in the allotment, thereby addressing Tribal concerns. The result of eliminating cattle grazing, when considered with effects of past and ongoing activities, would be a beneficial effect to traditional cultural properties and the cultural landscape.

Under Alternative C, there would be an overall beneficial effect to traditional cultural properties when considering the limited effects of past, present and ongoing activities in conjunction with the effects of the proposed allotment boundary change, which would remove cattle from grazing, trailing, and/or concentrating in or near traditional cultural properties. However, because grazing would continue, the conflict between grazing activities and the tribally identified cultural landscape would continue.

Under Alternative D would have the potential for adverse effects when considering the limited effects of past, present and ongoing activities in conjunction with the effects of proposed allotment boundary changes, because the proposed boundary changes would not exclude one

traditional cultural property from the grazing area, and the potential for cattle to impact the property would continue. As with Alternatives A and C, the conflict between grazing activities and the tribally identified cultural landscape would continue.

Forest Plan Compliance

The LeClerc Grazing Allotments Management Planning EIS projects, with the mitigation provided, meets the Forest Plan Standards and Guidelines for Cultural Resources item 2 page 4-37 and Federal regulations concerning Historic Properties (National Historic Preservation Act and its implementing regulations at 36 CFR 800). Monitoring and maintenance of these sites will continue through the heritage program's standard program of work.

Noxious Weeds

Information provided in this Environmental Impact Statement about noxious weeds is excerpted from the LeClerc Creek Grazing Allotment Noxious Weeds Report by Chase Bolyard, District Rangeland Management Specialist (2015b). The full text of this report is incorporated by reference and is part of the project record.

Framework and Desired Future Conditions

A full description of the desired future conditions for the LeClerc Creek Allotment analysis area are listed on page 7.

Direction provided in the Colville National Forest Land and Resource Management Plan is that "emphasis will be given to the control and reduction of noxious weed infestations." The Forest has also developed the Seeding and Planting Guide for the Colville National Forest, which addresses the need to seed vegetation such as grasses and legumes on highly disturbed sites and provides guidance to match sites with appropriate plant species.

Direction is also provided by the Colville National Forest Weed Prevention Guidelines (1999) document, which was developed to minimize the introduction of noxious weeds, minimize conditions that favor the establishment of noxious weeds, and minimize conditions that favor the spread of noxious weeds. The following are eight major objectives of the Colville National Forest Weed Prevention Guidelines:

1. Education: Ensure public and employee knowledge of noxious weeds to help reduce both the spread rate of existing weeds and the risk of infestation by new noxious weeds.
2. Project Need: Weigh the need of the proposed project against the risk of weed infestation.
3. Minimize Transportation of Weed Seed: Reduce the spread of existing weeds across the Forest and the risk of introducing new weed species to project sites and other areas of the Forest.
4. Incorporate Weed Prevention Measures into project planning and design, and special use permit administration: Ensure that the risks of weed introduction and/or spread, and the mitigation required to minimize that risk are properly considered before ground disturbing activities begin.
5. Pre-activity, Inventory and Analysis: Minimize the spread of existing weeds into new project areas.

6. Minimize ground disturbance and the exposure of mineral soil during project activities: Reduce the potential for weeds to become established on new sites and the need to conduct re-vegetation activities.
7. Re-vegetate disturbed areas: Re-establish desirable vegetation of exposed mineral soil due to project activity and unplanned events such as fire, flood, or other disturbances to minimize the introduction and/or spread of noxious weeds.
8. Monitor: Conduct project follow-up and review to determine success of weed treatments and re-vegetation efforts to detect new weed sites requiring treatment and make corrections as necessary. Monitoring is a part of every project and as such, needs to be covered in NEPA discussions, and planned for as a part of implementation.

The Preventing and Managing Invasive Plants Environmental Impact Statement (EIS) and Record of Decision (USDA, 2005b) provides for seven new standards for prevention of noxious weeds. The three that apply to this project are:

- Prevention of invasive plant introduction, establishment, and spread will be addressed in grazing allotment management plans; vegetation management plans and other land management assessments.
- Actions conducted or authorized by written permit by the Forest Service that will operate outside the limits of the road prism require the cleaning of all heavy equipment prior to entering National Forest System Lands.
- Use available administrative mechanisms to incorporate invasive plant prevention practices into rangeland management.

The following are the five major objectives of the USDA (2005b) EIS and Record of Decision:

Goal 1 – Protect ecosystems from the impacts of invasive plants through an integrated approach that emphasizes prevention, early detection, and early treatment. All employees and users of the National Forest recognize that they play an important role in preventing and detecting invasive plants.

Goal 2 – Minimize the creation of conditions that favor invasive plant introduction, establishment, and spread during land management actions and land use activities. Continually review and adjust land management practices to help reduce the creation of conditions that favor invasive plant communities.

Goal 3 – Protect the health of people who work, visit, or live in or near the National Forest, while effectively treating invasive plants. Identify, avoid, or mitigate potential human health effects from invasive plants and treatments.

Goal 4 – Implement invasive plant treatment strategies that protect sensitive ecosystem components, and maintain biological diversity and function within ecosystems. Reduce loss or degradation of native habitat from invasive plants while minimizing effects from treatment projects.

Goal 5 – Expand collaborative efforts between the Forest Service, our partners, and the public who share learning experiences regarding the prevention and control of invasive plants and the protection and restoration of native plant communities.

Affected Environment

Noxious weeds are nonnative plants that have been introduced and can be highly destructive, competitive, and difficult to control. Noxious weeds can displace native vegetation, increase erosion, lead to degraded plant and animal habitat, and some are toxic to animals.

The following table displays the noxious weed and invasive species known to exist within the project area and their control category as determined by the Washington State Noxious Weed Control Board (2011).

Table 46. Noxious Weed Species in the LeClerc Allotment

SPECIES	CONTROL CATEGORY
Cheatgrass	Unclassified
Common Mullein	Unclassified
Common Bugloss	Class B Non-Designate
Dalmation Toadflax	Class B Non-Designate
Diffuse and Spotted Knapweed	Class B Non-Designate
Orange Hawkweed	Class B Non-Designate
Oxeye Daisy	Class B Non-Designate
Sulfur Cinquefoil	Class B Non-Designate
Yellow Hawkweed	Class B Non-Designate
Plumeless Thistle	Class B Non-Designate
Bull Thistle	Class C
Canada Thistle	Class C
Hounds tongue	Class C
St. Johnswort	Class C

The Washington State Noxious Weed Control Board has developed control categories to prioritize noxious weed species based on the seriousness of the threat they pose. Noxious weeds are classified into three major classes: Class A, Class B, and Class C.

Class A weeds are nonnative species whose distribution in Washington State is still limited. Preventing new infestations and eradicating existing infestations are the highest priority. Eradication of all Class A plants is required by law. There are no Class A plant species known to exist within the LeClerc Creek Grazing Allotment.

Class B weeds are nonnative species which are presently limited to portions of the state. These species are designated for control in regions where they are not yet widespread. Preventing new infestations in these areas is a high priority. In areas where Class B species are already abundant, control is decided at the county level with containment as a primary goal. For species listed as Class B Designate, control is required. For species listed as Class B Non-Designate, control is required in vehicle corridors and areas of limited distribution and encouraged in areas of large infestations.

Class C weeds are species that are already present and widespread across the state and control is encouraged in areas of large infestations, but not required.

Noxious weeds within the LeClerc Creek Allotment have been present for many years and treatment is continuous and ongoing. Some of the first noxious weeds to establish in the area were common mullein, St. Johnswort, and diffuse knapweed. Noxious weed treatments have been occurring across the Colville National Forest since about 1979.

Noxious weed spread can be attributed to nearby populations that provide a seed source and the amount of roads open to vehicles (Masters and Sheley, 2001). The roads within the LeClerc Creek area have the potential to act as conduits for noxious weeds and provide habitat for their establishment. Ownership of the roads in the LeClerc Creek area is a combination of private, county, and Forest Service, therefore, there is the potential for noxious weeds to be transported within the area across jurisdictions besides Forest Service.

Existing dense forest canopy on undisturbed timbered sites provide a natural deterrent to noxious weed invasion. The noxious weeds identified in the allotment are not generally shade tolerant, although orange hawkweed can be found to inhabit areas with moderate shading. Areas of soil disturbance could create unoccupied niches for noxious weeds and invasive species to establish given that potential seed sources exist within the project area.

There has been an increasing trend in the introduction and spread of noxious weeds on the LeClerc Creek Allotment since the 1950s starting with St. John's wort followed by diffuse knapweed. During the 1960s, 1970s, and 1980s, a major increase in road construction and timber harvest created opportunity for the establishment of diffuse knapweed and many other newly introduced noxious weeds during this time. Livestock numbers were stable or in a declining trend during that same time period. With increased disturbance and access, the spread of noxious weeds increased. In the 1980s, an increase in the amount and species of noxious weeds generally went unabated except for some minor mechanical treatments until the early 1990s.

Due to the amount of roads that exist within the LeClerc Creek Allotment and the maintenance and use of these roads, noxious weed populations are expected to persist and may spread in the future regardless of livestock grazing. Soil disturbance, such as that found to be associated with roads and motorized trails, appears to be critically important in the beginning of the invasion process since it creates openings for noxious weeds to occupy (Masters and Sheley, 2001).

Effects

Analysis Considerations

Driving for pleasure, motorized recreation, hunting, hiking, firewood gathering, dispersed recreation, and camping are all expected to continue independent of the preferred alternative, therefore noxious weeds would continue to be spread by these sources. For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek Allotment analysis areas, refer to Appendix C.

There have been past wildfires, both small and large, that have burned within the LeClerc Creek Allotment that have altered the appearance of the landscape. The risk of wildfires burning in the project area exists into the future. Wildfire has the potential to create bare soil conditions and therefore there would be opportunity for invasive plant establishment and spread following a wildfire event. The timing of livestock grazing to all or portions of the LeClerc Creek Allotment post-wildfire would be determined by and documented in fire rehabilitation plans.

Timber harvest has occurred throughout the history of this allotment and is expected to continue in the future. Projects such as the Hanlon Stewardship create disturbance of the existing vegetation and soil. This project, which is currently ongoing, may increase the risk of invasive plant establishment and spread. This risk is likely to be minimal due to the pre-implementation and post-implementation noxious weed treatments that would occur, as well as the revegetation requirements for the project. Timber harvest projects on private lands within and adjacent to the LeClerc Creek Allotment also have the potential to have new populations of noxious weeds establish, which could then be spread into the project area.

National Forest System Road 1935, also known as the Middle Branch LeClerc Creek Road, was recently relocated out of the riparian zone of Middle Branch LeClerc Creek. The old roadbed was obliterated and seeded with desirable native vegetation to discourage the establishment of noxious weeds. However, there is still a possibility that noxious weeds may become established on the old road prism. Monitoring of this area by Forest Service personnel would aid in identifying any new noxious weeds populations that establish so that they may be treated to prevent them from spreading or persisting on the site.

Direct and Indirect Effects

Effects Common to Alternatives A, C, and D

Livestock grazing has the potential to influence weed establishment and spread through vegetation consumption, seed transport, and soil disturbance. Livestock grazing can affect the ability of native plant communities to outcompete and prevent invasive species from becoming established and spreading. Invasive plants can compete with and outcompete native species resulting in a decline in native species diversity and affect plant community condition and succession. Ground disturbing activities may increase the potential for invasive plants to become established, however many invasive species can become established without disturbance.

Areas where livestock are concentrated can result in soil disturbance that may lead to the establishment and spread of invasive plants. These areas include corrals and water developments and are considered high-risk areas for soil disturbance. The establishment of invasive plants as a direct result of livestock at range improvements has not been a common occurrence on the LeClerc Creek Allotment.

The most significant populations of noxious weeds within the project area are associated with roads and human activities such as logging, camping, driving, and motorized recreation. Livestock are a relatively minor vector in spreading most of the noxious weeds found to exist within the project area. Therefore, continued livestock grazing is likely to contribute very little to the spread or establishment of noxious weeds as a whole.

The ongoing presence of livestock within the LeClerc Creek Allotment may continue to spread houndstongue due to its seeds becoming attached to livestock hair. As livestock pass through areas with houndstongue plants, ripe seeds become caught in the animal's hair and get transported to other areas. The risk is that seeds could detach and be deposited in areas that do not have houndstongue, thereby creating new infestations. Since livestock are but one of the means for this plant to disperse seed, the risk of exposing new areas to houndstongue infestation with the presence of livestock is marginal.

These alternatives have prescribed utilization standards, conservative stocking rates, and a deferred grazing system that, when combined, act to reduce negative effects to plant community health. This in turn would reduce the risk of the establishment and spread of invasive species.

Effects Common to Alternatives C and D

The proposed construction of fences and water developments would result in small isolated areas of soil disturbance where noxious weeds could establish. Potential areas of noxious weed invasion associated with fencing include disturbed soils around brace posts and cattle guard installation. Potential areas of noxious weed invasion associated with water development construction and use would be denuded areas around water troughs and disturbed soils where pipelines would be buried. Because of the small size of the disturbed areas, the chances of weeds becoming established is minimal. To reduce the likelihood of new populations establishing, disturbed areas may be revegetated with desirable species in one, possibly two, growing seasons. These areas are routinely monitored both for maintenance needs and noxious weed infestations by permittees and Forest Service personnel.

In areas where construction equipment would be used for project implementation, such as the proposed cattle guard installation and hardened crossing construction, there is a risk of noxious weed seeds and reproductive plant parts being introduced. The potential for noxious weeds becoming established at the abovementioned sites would be addressed by requiring the washing or cleaning of equipment prior to entering National Forest lands, and using only aggregate and fill from sites identified to be free of noxious weeds and noxious weed seeds.

Within the LeClerc Creek Allotment, the grazing permittee has the ability to travel level 1 roads and trails with motorized vehicles to access range improvements and complete livestock management practices such as salting and livestock inspections or gathering. This motorized access has the potential to introduce invasive plant reproductive parts to these areas. Permittee use of these routes is infrequent and unlikely to create bare soil conditions, therefore the risk of invasive plant establishment is low since vegetative cover would discourage invasive plant establishment.

Alternative B

If grazing were no longer permitted on the LeClerc Creek Allotment, there would likely be little to no noticeable difference in spread of noxious weeds. This is because the known noxious weed species within the project area are spread by a wide variety of vectors including wind, birds, gravity, vehicles, humans, animals, and wildlife. Vehicles seem to be the primary vector of noxious weed spread by transporting noxious weed reproductive parts to noninfested areas. Elimination of livestock is unlikely to have an appreciable effect on rate or distance of spread since vehicle use is likely to continue, if not increase.

The exception to this is the spread of houndstongue, which may attach to hair or fur and be transported to new locations. Livestock are not the sole vector for seed dispersal and therefore the seeds from these plants would continue to be spread by other means even in the absence of livestock grazing. Because other vectors would still be operating in the project area, the rate of houndstongue spread is likely to continue as is, or change only slightly.

Yellow hawkweed, orange hawkweed, Canada thistle, bull thistle, and plumeless thistle are all spread by windblown seed. In addition to windblown seed dispersion, both yellow and orange hawkweed also spread by rhizomatous tillers (roots). These noxious weeds would continue to spread in the absence of livestock grazing.

Diffuse knapweed, spotted knapweed, common mullein, oxeye daisy, and St. John's wort all produce small seeds that are generally spread by wildlife, water, gravity, or in soil and seeds clinging to a vector. These noxious weeds would also continue to spread in the absence of livestock grazing.

Small denuded areas resulting from concentrated livestock use, such as near salting areas, corrals, and livestock trails, would eventually have vegetation establish in the absence of livestock grazing. These areas, once vegetated, would be less susceptible to noxious weed invasion assuming that they are revegetated with desirable noninvasive species. These currently denuded areas represent a small area within the LeClerc Creek Allotment and the risk they currently pose is likely inconsequential.

Often the grazing permittees are the first people to observe and identify new noxious weed infestations within their allotments since they are frequently present checking on and providing for their livestock. The Forest Service has also made noxious weed identification material available to permittees. Without the grazing permittee's presence and knowledge, some new noxious weed infestations would likely go undiscovered by district personnel.

Cumulative Effects

In spite of present and ongoing noxious weed treatments in the area, which are implemented independent of the LeClerc Creek Allotment project, populations of noxious weeds are expected to slightly increase and evolve based on trends that have been experienced to date. Effectiveness of noxious weed treatments is monitored and results have shown that the benefits of treatment can be observed for 2 to 5 years following an herbicide application event depending on the herbicide used and the type of soil present.

Under Alternatives A, C and D, continued livestock grazing is likely to contribute very little to the spread or establishment of noxious weeds as a whole. Over time, Alternatives B, C and D would improve declining resource conditions that favor noxious weed establishment. There would be little to no effect to noxious weeds under any alternative, therefore it is unlikely there would be any cumulative effects.

Forest Plan Compliance

All alternatives would be consistent with Forest Plan Standards and Guidelines for invasive plants (USDA 2005b) and the 2005 PNW ROD, Standards and Guidelines 1, 3, and 6 because prevention and mitigation measures would be implemented in each alternative, no alternative would impede ongoing noxious weed control activities.

Recreation

Affected Environment

The LeClerc project area contains eight of the Colville National Forest Plan management areas (see chapter 1). There are no system trails or developed recreation sites within the allotment. The main public recreation activities in the area include hunting, dispersed camping, fishing, driving for pleasure, fuel wood gathering, OHV riding, and forest products gathering. There are two concentrated dispersed recreation areas within the allotment that receive moderate to heavy use, Hanlon Meadow and Ball Park Meadow.

Hanlon Meadow is within management area 8 (MA-8). This site receives moderate to heavy use by campers throughout the summer and by hunters in the fall. Livestock are often present in the Hanlon Meadow pasture and corral. Very few conflicts between grazing and recreation users have been reported at this location. The site is accessed from a short spur road off of NFS Road 1935117. NFS Road 1935117 is open to all vehicles per the Colville National Forest Motorized Vehicle Use Map (MVUM).

Ball Park Meadow is within MA-7. This site consists of a handful of dispersed campsites used heavily throughout the summer and fall by campers and hunters. Bear storage lockers and fire rings have been installed in some of the sites. Unauthorized OHV use at Ball Park Meadow has been an ongoing issue for several years. Several illegal user-created OHV trails have been developed through the meadow and surrounding forest. Although fencing and signing efforts have helped in closing several of these routes over the past few years, illegal use is still a common occurrence in the open meadow on the north side of NFS Road 1935115. NFS Road 1935115 is open to all vehicles per the MVUM. In 2014 a fence was installed in Ball Park Meadow to keep vehicles out of the West Branch of LeClerc Creek riparian area.

Effects

Direct and Indirect Effects

Alternative A

Under this alternative, effects to recreation would remain unchanged from existing conditions. Campers would continue to use the existing road and campsites. Use of the existing road spur in to the campsite would continue to contribute sedimentation into the creek (Lawler 2015). Current grazing use in this area has minimal to no effect on recreation users and is not expected to affect them in the future if conditions remain unchanged.

Alternative B

Under this alternative, grazing would be eliminated. Little or no effect would result to recreation under this alternative. Vegetation in the Hanlon Meadow may change if grazing is eliminated which could affect the quality of the dispersed campsite (i.e., potentially less open areas from the encroachment of brush). However, this effect would likely be offset by wildlife grazing or continued traffic in the site by recreation users. Since complaints about the presence of livestock have been minimal in the past at this site, eliminating livestock would not likely improve the camping experience or increase the amount of recreation use in the meadow. The current access to Hanlon Meadow (NFS Road 1935117) would be closed and access would be provided via a newly constructed spur (using an old roadbed) off NFS Road 1935116. The existing gate on the entrance to NFS Road 1935116 would be moved to provide public access on the new spur road to Hanlon Meadow. The newly constructed road would be open to the same vehicle types as NFS Road 1935. The change in travel distance would be negligible. The MVUM would need to be updated to reflect the route changes.

Alternatives C and D

Alternatives C and D would have little to no effect on recreation use within the allotment. The current access to Hanlon Meadow (NFS Road 1935117) would be closed and access would be provided via a newly constructed spur (using an old roadbed) off NFS Road 1935116. The existing gate on the entrance to NFS Road 1935116 would be moved to provide public access on the new spur road to Hanlon Meadow. The newly constructed road would be open to the same

vehicle types as NFS Road 1935. The change in travel distance would be negligible. The MVUM would need to be updated to reflect the route changes. Grazing within the site would remain unchanged from current conditions.

Although the grazing allotment would be expanded to include the Ball Park Meadow area, the camping area and meadow itself would be fenced off to prevent livestock from entering areas used by campers. Therefore, little to no effect is expected on recreation use at this site.

Proposed improvements to the grazing allotment and patterns could help reduce resource damage and would likely improve watersheds and game habitat for anglers and hunters. The addition of fencing or other management actions such as moving a short section of road should not impact the recreation setting or visuals.

If any of the adaptive management strategies proposed under Alternatives C and D (including but not limited to installing additional pasture fencing, cattle guards, or other structures to reduce livestock drift between pastures, alter pasture rotation, alter use periods for pastures, increase pasture fence maintenance frequency or increase range riding) were to be implemented in the next 10 years there would not be any foreseeable impacts to recreation or the recreation scenery or experience.

Under Alternative D, the change to grazing use at Hanlon Meadow should not have an effect on recreation use since it is not a change from the existing condition.

Cumulative Effects

Based on alternative design, there would be little to no effects to recreation under any alternative, therefore there would be no cumulative effects.

Forest Plan Compliance

The overall recreation experience would remain relatively unchanged in the LeClerc Allotment under all four alternatives. Since no roads would be constructed in locations identified as MA-11 (semi-primitive, non-motorized recreation), the preferred alternative would meet the recreation goals and objectives identified in the Forest Plan page 4-7.

Transportation System

Framework and Desired Future Conditions

Guidance for transportation planning and analysis is primarily provided in Forest Service Manual (FSM 7700) and Forest Service Handbook (FSH 7700).

Affected Environment

LeClerc Creek Road (Pend Oreille County 9345) provides the main access to the northern perimeter of the analysis area. Pend Oreille County Roads 3503 and 3521 provide the main access to the southern portions while Forest Service collector roads 1932000, 1933000, 1935000 and 1936000 provide secondary access into the interior portions of this analysis area. Numerous Forest Service roads provide local access within the allotment.

Table 47. Roads by jurisdiction in the planning area

Jurisdiction	Length (miles)	Percent of total
State	0	0%
County	0	0%
Private	26	36%
USFS	45	64%

Based on a query of the corporate database INFRA-Travel Routes of the mapped transportation GIS data files on December 13, 2012, there are approximately 71 miles of existing roads in the LeClerc Creek Grazing Allotment.

Unauthorized existing roads are not intended to be part of, and are not managed as part of, the Forest transportation system, and include unplanned roads, off-road vehicle tracks, and abandoned travelways. There are likely more existing unauthorized roads in the analysis area that are not mapped.

An approximate breakdown of the 45 miles of roads under Forest Service jurisdiction in the planning area by operational/objective maintenance level yields the following estimates:

Table 48. Miles of system road under Forest Service jurisdiction in the planning area by maintenance level

Operational and Objective Maintenance Level	Length (miles)	Percent of total
Level 1/1	18.8	41.7
Level 1/2	0.0	0.0
Level 2/1	1.5	0.2
Level 2/2	13.3	29.5
Level 3/3	12.9	28.6

Maintenance levels are used to describe the intensity of maintenance effort needed on a road to allow the road to function and be used as it is intended. There are five different levels used by the Forest Service (FSH 7709.58) to describe this intensity, with Level 1 being the lowest and Level 5 the highest (Table 48). Maintenance levels are described further in the Transportation Report.

Cattle Guards: There are eight cattle guards in the LeClerc Creek Grazing Allotment. These cattle guards are in various states of repair. Location of existing cattle guards is identified in the Transportation Report.

Effects

Analysis Considerations

Existing Forest Service stewardship projects (Hanlon and Scotchman projects overlap the LeClerc Allotment) could be a concern for timing of maintenance and new installation of cattle guards. Coordination should occur between this project and any other Forest Service stewardship activities.

For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek Allotment analysis areas, refer to Appendix C.

Direct and Indirect Effects

Alternative A

System road use would remain unchanged. Cattle guard locations would remain unchanged. No new construction or decommissioning would take place. There would be no changes in maintenance intervals or locations if this alternative was selected.

Alternative B

System road use would see a minor decrease from permittee and Forest Service administration use. Road maintenance would decrease after the removal of cattle guards and signage that is associated with the cattle guards. This would be a minor saving to the Forest Service maintenance budget.

In this proposal there would be a change to the system road location accessing the Lower Bunchgrass Pasture in T. 36 N., R. 44 E., sections 20 and 29. This would require new construction of approximately 600 feet of new alignment off the existing NFS Road 1935116. Currently the NFS Road 1935116 is a gated closed road so the gate would need to be moved approximately 200 feet north. In this proposal 800 feet of existing NFS Road 1935117 would be decommissioned and closed. New construction would allow access to the meadow and allow the permittee to release and gather cows. Decommissioning the road would restore the hydrologic integrity of the wetland area.

Alternatives C and D

Alternatives C and D are very similar, as described in Chapter 2. Both propose changes to pasture boundaries, resulting in changes to system road locations, and both propose range improvements (including installation of cattle guards).

There would be a change to the system road location accessing the Lower Bunchgrass Pasture (Hanlon Meadow) in T. 36 N., R. 44 E., sections 20 and 29. This would require new construction of approximately 600 feet of new alignment of existing NFS Road 1935116. Currently NFS Road 1935116 is a gated closed road, so the gate would need moved approximately 200 feet north. Approximately 800 feet of existing NFS Road 1935117 would be decommissioned and closed. New construction would allow access to the meadow and allow the permittee to release and gather cows. Decommissioning the road would restore the hydrologic integrity of the wetland area. Aggregate for placing on the roads along or near streams would most likely come from a West Branch Pit (Scotchman Pit) on NFS Road 1933110.

All maintenance, new construction and installations of cattle guards and roads would be completed as time and funding allows. Locations of cattle guards and roads would be made in agreement with all parties involved.

Both alternatives would meet Forest Plan direction and would not negatively affect the transportation system.

Cumulative Effects

If any of the adaptive management strategies proposed under Alternatives C and D were implemented in the next 10 years, there would be no foreseeable adverse or beneficial impacts to the transportation system; therefore, there would be no cumulative effects.

Forest Plan Compliance

All alternatives would meet Forest Plan direction and do not negatively affect the transportation system due to no net increase in system roads and following BMPs for the transportation system. Forest Plan page 4-56 explains the forest wide standards and guidelines for the transportation system.

Special Use Authorizations and Minerals

Data collection

The Special Uses Database System and Bureau of Land Management (BLM) Legacy 2000 database were reviewed in 2013 and 2014.

Framework and Desired Future Conditions

A full description of the desired future conditions for the LeClerc Creek Allotment analysis area are listed on page 7.

The principle regulatory framework governing management of watershed resources on the Colville National Forest (CNF) for the analysis includes:

- National Forest Management Act of 1976 (NFMA)
- Colville National Forest Land and Resource Management Plan (USDA, 1988)
- Federal Water Pollution Act and amendments (33U.S.C. §§1251-1387, 18 Oct 1972)
- Washington State Water Quality Standards
- Executive Order 11988 - Management of Floodplains
- Executive Order 11990 – Management of Wetlands

Affected Environment

Special Uses

There are three Special Use authorizations located within the analysis areas for the LeClerc Creek Grazing Allotment including overhead power lines and road easements. Two authorizations are for roads - Forest Road and Trails Act (FRTA) easements or Federal Land Policy and Management Act (FLPMA) easements or permits. The remaining authorization is a special use permit for a power transmission line.

The Forest Service acquired a right-of-way from Burlington Northern, Inc., for portions of NFS Road 1935000, and there is a NFS Road easement, granted for the use of NFS Roads 1935000 and 1935116, located outside the analysis areas for the LeClerc Creek Grazing Allotment.

Minerals

A review of the Bureau of Land Management (BLM) Legacy 2000 database on March 24, 2014, indicates there are no active mining claims within the project area. There are no mitigation measures associated with protection of the mineral resource within the project area.

There are no active mineral material contracts issued for the project area.

Effects

Direct, Indirect, and Cumulative Effects

The project as proposed (improvements within the analysis area, as well as, cattle grazing) are not expected to impact special uses or mineral resources because the special uses are roads and power lines fixed in place and are not susceptible to displacement, and there is no on-going mineral activity in the analysis area. With the adoption of alternatives B, C, or D, there would be obliteration of an approximate 800-foot long section of the old Middle Branch LeClerc Creek Road that provides road access to Hanlon Meadow. A new access route to the meadow would be constructed off NFS Road 1935116, which is authorized under the easement to Mr. Owbridge for access to his property and would not affect the existing easement. There are no foreseeable projects bound by space or time that would cumulatively affect either special uses or the mineral resources in the analysis area. For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek Allotment analysis areas, refer to Appendix C.

Forest Plan Compliance

The project as proposed is also consistent with direction provided by the Forest Plan regarding special uses and minerals management.

Short-term Uses and Long-term Productivity

NEPA requires consideration of “the relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 CFR 1502.16). As declared by the Congress, this includes using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (NEPA Section 101).

Short-term uses are generally those that determine the present quality of life for the public. In this area, these uses include recreation, transportation, fish and wildlife habitat, livestock grazing, timber harvest, and utility corridors. Long-term productivity refers to the land’s capability to support sound ecosystems producing a continuous supply of resources and values for future generations. Short-term uses such as the relocation of the access road into Hanlon Meadow could potentially impact recreationists for the duration of the road work. Potential impacts to recreationists if cows wander near any recreation sites (Ballpark or Hanlon Meadow) could reduce the productivity of some portions of the National Forest. The long term productivity of the LeClerc Creek Grazing Allotment would be protected from unacceptable degradation by the standards and guidelines in the Forest Plan, specific project design, BMPs, and monitoring measures.

Unavoidable Adverse Effects

Implementation of any of the alternatives would inevitably result in some adverse environmental effects. These effects were all disclosed in chapter 3 under each individual resource area. The severity of the effects can be minimized by adhering to the management requirements outlined in chapter 2 of this document.

Irreversible and Irretrievable Commitments of Resources

Irreversible commitments of resources are those that cannot be regained, such as the extinction of a species or the removal of mined ore. Irretrievable commitments are those that are lost for a period of time such as the temporary loss of timber productivity in forested areas that are kept clear for use as a power line rights-of-way or road.

There are no irreversible or irretrievable commitments of resources associated with implementing this project that are not already identified in the FEIS for the Forest Plan (USDA Forest Service 1988).

Incomplete or Unavailable Information

Knowledge is, and always will be, incomplete regarding many aspects of terrestrial and aquatic species and their habitats, geology of specific areas, and the economy. However, the LeClerc Creek Grazing Allotment and the issues surrounding it have been studied for many years, and a substantial amount of credible information is known. The alternatives were evaluated using the best available information at the time. No missing information was deemed to be essential to a reasoned choice among alternatives being considered.

Rationale for Project-Scale Effects Conclusions on Climate Change

Climate change is a global phenomenon because major greenhouse gasses (GHG) mix well throughout the planet's lower atmosphere (IPCC 2013). Considering emissions of GHG in 2010 was estimated at 49 ± 4.5 gigatonnes³ globally (IPCC 2014) and 6.9 gigatonnes nationally (U.S. EPA, 2015), a project of this magnitude makes an infinitesimal contribution to overall emissions. Therefore, at the global and national scales, this preferred alternative's direct and indirect contribution to greenhouse gasses and climate change would be negligible.

In addition, because the direct and indirect effects would be negligible, the preferred alternative's contribution to cumulative effects on global greenhouse gasses and climate change would also be negligible.

The Intergovernmental Panel on Climate Change has summarized the contributions to climate change of global human activity sectors in its Fifth Assessment Report (IPCC 2014). In 2010, anthropogenic (human-caused) contributors to greenhouse gas emissions came from several sectors:

- Industry, transportation, and building – 41 percent
- Energy production – 35 percent

³ A gigatonne is one billion metric tons of CO₂; equal to about 2.2 trillion pounds.

- Agriculture – 12 percent
- Forestry and other land uses – 12 percent.

There is agreement that the forestry sector contribution has declined over the last decade (IPCC, 2014; Smith et al., 2014; FAOSTAT, 2013). The main activity in this sector associated with GHG emissions is deforestation, which is defined as removal of all trees, most notably the conversion of forest and grassland into agricultural land or developed landscapes (IPCC 2000).

This Grazing Allotment Management Plan does not fall within any of these main contributors of greenhouse gas emissions. Forested land will not be converted into a developed or agricultural condition. In fact, forest stands are being retained to maintain a vigorous condition that supports trees, and sequesters carbon long-term. U.S. forests sequestered 757.1 megatonnes⁴ of carbon dioxide after accounting for emissions from fires and soils in 2010 (U.S. EPA, 2015). However, there is growing concern over the impacts of climate change on U.S. forests and their current status as a carbon sink. There is strong evidence of a relationship between increasing temperatures and large tree mortality events in forests of the western U.S. There is widespread recognition that climate change is increasing the size and frequency of droughts, fires, and insect/disease outbreaks, which will have major effect on these forests' role in the carbon cycle (Joyce et al. 2014).

The project is in line with the suggested practice of reducing forest disturbance effects found in the National Climate Assessment for public and private forests (Joyce et al. 2014). Here specifically, the project proposes to eliminate cattle grazing on a range allotment. The release of carbon associated with this project is justified given the overall change in condition increases forest resistance to release of much greater quantities of carbon from wildfire, drought, insects/disease, or a combination of these disturbance types (Millar et al. 2007). This project falls within the types of options presented by the IPCC for minimizing the impacts of climate change on forest carbon, and represents a potential synergy between adaptation measures and mitigation. Actions aimed at enhancing forest resilience to climate change by reducing the potential for large-scale, catastrophic disturbances such as wildfire also prevents release of GHG and enhances carbon stocks (Smith et al. 2014).).

Land-use changes, specifically deforestation and regrowth, are by far the biggest factors on a global scale in forests' role as sources or sinks of carbon dioxide, respectively (IPCC, Intergovernmental Panel on Climate Change, 2000). Projects like the preferred alternative that create forests or improve forest conditions and capacity to grow trees are positive factors in carbon sequestration.

Other Required Disclosures

Consistent with NEPA (40 CFR 1502.25(a)), applicable laws and regulations were considered in this FEIS.

The Forest Service has consulted with the agencies listed below as required under the following Acts and laws:

- Wildlife Coordination Act to assist and cooperate with US Fish and Wildlife Service in developing, protecting, rearing and stocking all species of wildlife, resources thereof, and their habitat, controlling losses from disease or other causes; minimizing damages from

⁴ A megaton is one million metric tons of CO₂; equal to about 2.2 billion pounds.

overabundant species; providing public shooting and fishing areas, including easements across public lands; and carrying out other necessary measures.;

- National Historic Preservation Act for evaluating the eligibility of each property within the project boundary, when practical;
- US Fish and Wildlife Service in accordance with the ESA implementing regulations for projects with threatened or endangered species; and
- Any applicable state and county laws affected by the alternatives.

National Forest Management Act – Forest Plan Consistency

The LeClerc Creek Grazing Allotment Management Planning FEIS incorporates the Forest Plan and amendments by reference, and is tiered to the Forest Plan's FEIS (Final Environmental Impact Statement, USDA Forest Service 1988).

Consistency with the Forest Plan is addressed for each alternative in Chapter 3, by resource.

Rescissions Act - Section 504

The Rescissions Act (P.L. 104-19) became law on July 27, 1995. Section 504 addresses allotment analysis, grazing permit issuance, and compliance with National Environmental Policy Act (NEPA) and other environmental laws. This act directs the Forest Service to complete site-specific National Environmental Policy Act (NEPA) analysis and management decisions for allotments.

Compliance with the Rescissions Act is met by completion of the LeClerc Creek Grazing Allotment Management Planning project.

Public Rangelands Improvement Act

The Public Rangelands Improvement Act (P.L. 95-514) defines the current grazing fee formula, reaffirmed grazing boards, and authorized expenditure of funds for range improvements. In addition, the law required both the Secretary of the Interior and the Secretary of Agriculture to undertake, and maintain, an inventory of range conditions and trends on public rangelands. This law also reaffirmed the commitment required by sections 201 and 202 of the Federal Land Policy and Management Act to inventory and identify current public rangeland conditions and trends and manage, maintain, and improve the condition of the public rangelands so that they become as productive as feasible

American Indian Religious Freedom Act

The American Indian Religious Freedom Act (P.L. 95-341) was enacted to protect and preserve the traditional religious rights and cultural practices of American Indians, Eskimos, Aleuts, and Native Hawaiians. These rights include, but are not limited to, access to sacred sites, freedom to worship through ceremonial and traditional rights, and use and possession of objects considered sacred. The Act requires policies of all governmental agencies to eliminate interference with the free exercise of Native American religion, based on the First Amendment, and to accommodate access to and use of religious sites to the extent that the use is practicable and is not inconsistent with an agency's essential functions.

In 1993, the Kalispel Tribe of Indians identified traditional cultural properties within the LeClerc Creek drainage (and in the grazing allotment). Throughout the past several years, the Tribe has

consistently expressed to the Forest Service their interest and concern regarding activities occurring in the vicinity of those traditional cultural properties. The Kalispel Tribe has identified the LeClerc watershed in particular as a “Cultural Landscape,” and have been instrumental and active partners on projects in the LeClerc watershed that benefit the preservation and restoration of this natural landscape (Chapter 3, Social-Economic section and Social-Economic Report).

Consultation and Coordination with Indian Tribal Governments – Executive Order 13175

Executive Order 13175 requires federal agencies to establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes. Forest Service Handbook 1509.13 outlines the steps for consultation with tribes, as self-governing bodies, in 1509.11-11. These steps ensure that any tribes with potential interest in a project have the opportunity to be aware of possible projects, become involved if they are interested, having meetings between respective technical experts, and consider any relevant issues in coordination with the Forest Service.

Discussions with the Kalispel Tribe regarding the LeClerc Creek Allotment were ongoing beginning in 2013 and continuing throughout the project (Chapter 1, Tribal Consultation), consistent with Executive Order 13175 and FSH 1509.13.

National Historic Preservation Act, as Amended

The National Historic Preservation Act (P.L. 89-665) requires federal agencies to take into account whether their undertakings will affect historic properties such as archaeological sites and historic structures and, if so, consult with the State Historical Preservation Office and American Indian tribes as appropriate during the process.

All alternatives would meet the Forest Plan standards and guidelines for cultural resources and Federal regulations concerning historic properties (compliance with Section 106 of the National Historic Preservation Act) as described in this chapter (Heritage Resources section). Monitoring and maintenance of these sites would continue through the heritage program’s standard program of work.

Environmental Justice - Executive Order 12898

Executive Order 12898 requires Federal agencies to identify and address any disproportionately high and adverse human health or environmental effects on minority and low income populations.

Effects to minority and low income populations were considered during the analysis (this chapter, Social-Economic section). Pend Oreille County, in which the LeClerc Creek Allotment is located, has a higher percent American Indian population than both the state and national averages, due to the presence of the Kalispel Tribe (p. 81). The county also has a higher percentage of individuals and families living under the poverty level than both the state and national averages.

Alternatives A and D could have potential impacts to minority populations and these effects are discussed in the Heritage section of this EIS (page 187). However, effects are localized and would not cause discernable adverse impacts on Native Americans, women, minority populations or the civil rights of any American citizen (pages 91-93, 262). The project alternatives, given the size of

potential social and economic effects, are also not likely to result in civil rights impacts to Forest Service employees or customers of its programs.

Clean Water Act

The objective of this act is to restore and maintain the integrity of the nation's waters. This objective translates into two fundamental goals: (1) eliminate the discharge of pollutants into the nation's waters; and (2) achieve water quality levels that are fishable and swimmable. This act establishes a nondegradation policy for all federally proposed projects.

The Colville National Forest complies with State requirements in accordance with the Clean Water Act for protection of waters of the State of Washington (Washington Administrative Code, chapters 173-201 and 202) through planning, application, and monitoring of best management practices (BMPs) in conformance with the Clean Water Act, regulations, and federal guidance issued thereto.

Floodplain Management - Executive Order 11988

Federal Executive Order 11988 provides for the protection and management of floodplains. The rules are also incorporated as BMPs in the Washington State Water Quality Standards.

Effects to floodplains were considered in this analysis, and are addressed in the Hydrology section.

Wetlands, Executive Order 11990

Executive Order 11990 requires federal agencies to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands when carrying out their responsibilities.

Effects to wetlands were considered in this analysis, and are addressed in the Hydrology and Soils sections.

Endangered Species Act, as Amended

This project complies with the Endangered Species Act, which requires protection of all species listed as threatened or endangered by Federal regulating agencies. "Endangered" means a species is in danger of extinction throughout all or a significant portion of its range. "Threatened" means a species is likely to become endangered within the foreseeable future. Details regarding actual species found within the LeClerc Creek Allotment area and potential effects of activities on those species and their habitat are discussed in the Fish and Aquatic Habitat, Terrestrial Wildlife Species and Habitats, and Sensitive Plants sections in Chapter 3.

Appropriate coordination, conferencing, and consultation with the U.S. Fish and Wildlife Service has occurred. A Biological Evaluation was prepared and submitted to USFWS during this analysis. Full details of this analysis and Biological Opinion received is covered in Chapter 3. The range allotment is entirely included within the boundary of Pend Oreille County, Washington. For this county, the USDI Fish and Wildlife Service (FWS) presently lists five species as threatened or endangered, one candidate species and one species proposed for listing under the Endangered Species Act (ESA) of 1973 (http://www.fws.gov/wafwo/species_new.html).

The Programmatic Biological Opinion for Aquatic Restoration Activities in the States of Oregon, Washington and portions of California, Idaho and Nevada (Aquatic Restoration Biological

Opinion II, ARBO II, 2013) is the U.S. Fish and Wildlife Service's biological opinion covering 35 Endangered Species Act (ESA) listed fish, wildlife, and plant species and their applicable designated critical habitat throughout Washington and other states. ARBO II covers 20 aquatic restoration project categories and also describes how the program will be administered and conservation measures to be taken during project implementation. Adherence to ARBO II conditions and reporting of proposed and completed projects serves as Section 7 consultation under the ESA.

Migratory Bird Treaty Act and Executive Order 13186

The Migratory Bird Treaty Act, as amended, made the taking, killing or possessing of migratory birds unlawful. Executive Order 13186 of 2001 clarified the responsibilities of federal agencies regarding migratory bird conservation and directed federal agencies to evaluate the effects of federal actions on migratory birds with an emphasis on species of concern. In the 2008 Memorandum of Understanding (MOU), the Forest Service agreed to consider the FWS's most up-to-date list of Birds of Conservation Concern when developing or amending land management plans, and to evaluate the effects of agency actions on migratory birds within the NEPA process, focusing first on species of management concern along with their priority habitat and key risk factors (USDI 2008). For the CNF, the bird species of management concern are those designated as sensitive and management indicator species. Consequently, the CNF is in compliance with the MOU by considering the potential effects to these bird species and their habitat at the project level, as documented in Chapter 3, Wildlife.

Invasive Species - Executive Order 13112

Executive Order 13112 of February 3, 1999 (as amended by Executive Order 13751 of December 5, 2016) directs federal agencies to take steps to prevent the introduction and spread of invasive species, and to support efforts to eradicate and control invasive species that are established.

Noxious weeds within the LeClerc Creek Allotment have been present for many years; treatment is continuous and ongoing, in compliance with the Forest Plan (FEIS, p. 247) and Executive Order 13112 as amended.

Effects to invasive species were analyzed and addressed. Due to the amount of roads that exist within the LeClerc Creek Allotment (and the maintenance and use of these roads), noxious weed populations are expected to persist and may spread in the future regardless of livestock grazing and despite ongoing weed treatments.

Based on management requirements for invasive plants, the LeClerc Creek Grazing Allotment Management Planning EIS complies with this Executive Order.

Roadless Area Conservation Rule and Wilderness Act

This project is not adjacent to, nor would it have any effect on, existing wilderness areas. A portion of the Harvey Creek and Dry Canyon Breaks Inventoried Roadless Areas (IRA) overlap the LeClerc Creek Allotment but are located in areas that are mainly inaccessible to cattle. This project does not propose any timber harvest or road construction in any IRA. Incidental cattle access to these areas would not affect roadless characteristics or eligibility for wilderness consideration.

References

- 40 CFR. Chapter 1 (7-1-01 Edition). 2001. §130.1-130.3.
- Ahlenslager, Kathy. 2015. LeClerc Creek Grazing Allotment EIS Sensitive Plant Species Biological Evaluation. Unpublished. USDA Forest Service. Colville National Forest, Washington. 11 p.
- Allen, L. 2013. Biological assessment for threatened, endangered, and proposed species on the revision of the Land and Resource Management Plan for the Idaho Panhandle National Forests: Terrestrial wildlife. USDA Forest Service, Coeur D'Alene, ID. Unpublished.
- Almack, J. 1999. Wildlife Biologist, USDA Forest Service, Payette National Forest, Council Ranger District, Council, ID. Personal communication.
- Altman, B. 2000. Conservation strategy for landbirds in the northern rocky mountains of eastern Oregon and Washington. Version 1.0. Oregon-Washington Partners in Flight. Available online at: (http://www.orwapif.org/sites/default/files/northern_rockies.pdf).
- Altman, B. 2012. Conservation strategy for landbirds in coniferous forests of eastern Oregon and Washington: Version 2.0. Oregon-Washington Chapter, Partners in Flight. http://www.orwapif.org/pdf/western_forest.pdf.
- Amundson, R. and H. Jenny. 1997. On a State Factor Model of Ecosystems. *BioScience* 47:8 - 538-543.
- Andersen, Todd. 2000. Personal communication with Todd Andersen, Fisheries Biologist, Kalispel Natural Resource Department, Kalispel Tribe of Indians. 2000.
- Anthony, R. G., W. A. O'Connell, M. M. Pollock, J. G. Hallett. 2003. Association of mammals with riparian ecosystems in Pacific Northwest forests. Pages 510-563. In: C. J. Zabel; Anthony, R.G., eds. *Mammal community dynamics: management and conservation in the coniferous forests of North America*. Cambridge University Press, New York, New York.
- Archer, E. 2014. Understanding the relationship between livestock disturbance, the protocols used to measure that disturbance and stream conditions. Presentation by Eric Archer, PacFish/Infish Biological Opinion Monitoring Program (PIBI) to the Colville National Forest Plan revision interdisciplinary team. January 28, 2014. PowerPoint presentation available from the Colville National Forest.
- Aron, J.L., R.K. Hall, M.J. Philbin, R.J. Schafer. 2013. Using watershed function as the leading indicator for water quality. *Water Policy*, 15, 850-858.
- Baldwin, R. A. and L. C. Bender. 2008. Distribution, occupancy, and habitat correlates of American martens (*Martes americana*) in Rocky Mountain National Park, Colorado. *Journal of Mammalogy* 89: 419-427.
- Bamonte, Tony and Suzanne Schaffer Bamonte. 1996. History of Pend Oreille County. Tornado Creek Publications. Spokane, WA.

- Base, D. and S. Zender. 2008. Snow tracking survey for lynx in northeastern Washington; 2007 and 2008. Unpublished report. Washington Department of Fish and Wildlife, Spokane Valley, WA. 13 p.
- Bayley, P.B. and H.W. Li. 2008. Stream Fish Responses to Grazing Enclosures. *North American Journal of Fisheries Management* 28:135-147.
- Beat, Alicia. 2015. LeClerc Creek Grazing Allotment EIS Heritage Program Specialist Report. Unpublished. USDA Forest Service. Colville National Forest, Washington. 11 p.
- Bellrose, F. 1980. Ducks, geese, and swans of North America. Wildlife Management Institute. Washington, DC. 540 p.
- Belsky, J. and Blumenthal, D.M. 1997. Effects of livestock grazing on stand dynamics and soils in upland forests of the interior west. *Conservation Biology* 11:2 - 315-327.
- Best, T. 1993. Mammalian species: *Tamias ruficaudus*. *American Society of Mammalogists*. No. 452. 7 p.
- Bezkorowanjnyj P G, A.M. Gordon, R.A. McBride. 1993. The effect of cattle foot traffic on soil compaction in a silvo-pastoral system. *Agroforestry Systems* 21:1–10.
- Bolyard, Chase. 2013. Personal communication with Chase Bolyard, Rangeland Management Specialist, Newport-Sullivan Lake Ranger Districts, Colville National Forest. 2013.
- Bolyard, Chase. 2015a. LeClerc Creek Grazing Allotment EIS Social and Economics Specialist Report. Unpublished. USDA Forest Service. Colville National Forest, Washington. 12 p.
- Bolyard, Chase. 2015b. LeClerc Creek Grazing Allotment EIS Noxious Weeds Specialist Report. Unpublished. USDA Forest Service. Colville National Forest, Washington. 17 p.
- Bolyard, Chase. 2015c. LeClerc Creek Grazing Allotment EIS Range Specialist Report. Unpublished. USDA Forest Service. Colville National Forest, Washington. 37 pg.
- Bolyard, C. 2016. LeClerc Creek Allotment Range Report. USDA Forest Service, Colville National Forest, Newport-Sullivan Lake Ranger Districts, Newport, WA. Unpublished.
- Bonneville Power Administration. 2001. Genetic and Phenotype Catalog of Native Resident Trout of the Interior Columbia River Basin. Populations of the Pend Oreille, Kettle and San Poil River Basins of the Colville National Forest. Annual Report 1998-1999.
- Borysewicz, Michael A. 1999. Accomplishment Report: Riparian Protection/Restoration Work in the LeClerc Creek Grazing Allotment. [Unpublished report]. U.S. Department of Agriculture, Forest Service. On file at: Colville National Forest, Newport-Sullivan Lake Ranger District, Newport, WA. 8p.
- Borysewicz, Michael A. 2015a. LeClerc Creek Grazing Allotment EIS Analysis of Effects to Management Indicator Species and Landbirds. Unpublished. USDA Forest Service. Colville National Forest, Washington. 52 p.
- Borysewicz, Michael A. 2015b. LeClerc Creek Grazing Allotment EIS Biological Evaluation of Effects to Terrestrial Wildlife Species. Unpublished. USDA Forest Service. Colville National Forest, Washington. 81 p.

- Boyd, C.S. and T.J. Svejcar. 2004. Regrowth and production of herbaceous riparian vegetation following defoliation. *Journal of Range Management* 57(5):448-454.
- Bradford, David, Floyd Reed, Robbie Baird LeValley, Calvin Campbell and Steve Kossler. 2002. Livestock Grazing On the National Forests- Why Continue to Do It? *Rangelands* 24(2):3-11.
- Brogan, Scott, B. Hicks. 2014. LeClerc Creek Grazing Allotment EIS Silviculture and Fire/Fuels Specialist Input. USDA Forest Service. Colville National Forest, Washington. 3 page email.
- Brogan, Scott, B. Hicks. 2014. Personal communication with Scott Brogan, Silviculturist, and Brian Hicks, Fire/Fuels Specialist, Newport-Sullivan Lake Ranger Districts, Colville NF. 2014.
- Buckhouse, J. C. and J. F. Gifford. 1976. Water Quality Implications of Cattle Grazing on a semi-Arid Water Shed in Southeastern Utah. *J. Range Manage.* 29 (2):109 -113.
- Bull, E.L., C.G. Parks, T.R. Torgersen. 1997. Trees and Logs Important to Wildlife in the Interior Columbia River Basin. General Technical Report PNW-GTR-391. USDA, Forest Service, Pacific Northwest Research Station. Portland, OR. 55 p.
- Bull, E.L., T. W. Heater, J. F. Shepard. 2005. Habitat selection by the American marten in northeastern Oregon. *Northwest Science* 79:37-43.
- Burritt, B. and R. Banner. 2013. Elk and cattle grazing can be complimentary. *Rangelands* 35(1): 34-39.
- Burton, T.A., S.J. Smith, and E.R. Cowley. 2011. Riparian area management: Multiple indicator monitoring (MIM) of stream channels and streamside vegetation. Technical Reference 1737-23. BLM/OC/ST-10/003+1737+REV. U.S. Department of the Interior, Bureau of Land Management, National Operations Center, Denver, CO. 155 p. (<http://www.blm.gov/nstc/library/pdf/MIM.pdf>)
- Busso, C.A., and J.H. Richards. 1995. Drought and clipping effects on tiller demography and growth of two tussock grasses in Utah. *Journal of Arid Environments*, 29: 239-251.
- Catlin, Teresa. 2005. Personal communication with Teresa Catlin, Range Conservationist, Newport-Sullivan Lake Ranger Districts, Colville NF. 2005.
- The Cattle Range. 2017. <http://cattlerange.com/> (accessed January 9, 2017).
- Chamberlain, D. J., and M. S. Doverspike. 2001. Water tanks protect streambanks. *Rangelands* 23(2):3-5. <http://www.jstor.org/stable/4001574>
- Chance, David H. 1973. "Influences of the Hudson's Bay Company on the Native Cultures of the Colville District." *Northwest Anthropological Research Notes Memoir*, Vol. 7, No. 1, Part 2. University of Idaho, Moscow.
- City-Data.com. February 21, 2014. Pend Oreille County Washington. Website (http://www.city-data.com/county/Pend_Oreille_County-WA.html)

- Clark, Patrick E., William C. Krueger, Larry D. Bryant, and David R. Thomas. 1998. Spring defoliation effects on bluebunch wheatgrass: I. Winter forage quality. *Journal of Range Management*, 51: 519-525.
- Clark, Patrick E., William C. Krueger, Larry D. Bryant, and David R. Thomas. 1998b. Spring defoliation effects on bluebunch wheatgrass: II. Basal area. *Journal of Range Management*, 51: 526-530.
- Clary, W.P., and B.F. Webster. 1989. Managing grazing of riparian areas in the intermountain region. General Technical Report INT-263. Odon, UT: USDA Forest Service, Intermountain Forest and Range Experiment Station.
- Clary, W.P. and W.C. Leininger. 2000. Stubble height as a tool for management of riparian areas. *Journal of Range Management* 53:562-573.
- Clawson, J. E. 1993. The use of off-stream water developments and various water gap configurations to modify the watering behavior of grazing cattle. Master's thesis. Oregon State University, Corvallis, OR. 80 p.
<http://ir.library.oregonstate.edu/xmlui/handle/1957/9749>
- Clough, G. C.; Albright, J.J. 1987. Occurrence of the northern bog lemming, *Synaptomys borealis*, in the northeastern United States. *Canadian Field-Naturalist*. 101: 611-613.
- Coggins, R., R. Dixon, and L. Seminara. 1987. Habitat use by three-toed and black-backed woodpeckers, Deschutes National Forest, Oregon. Nongame Project Number 87-3-02, Oregon Department of Fish and Wildlife, USDA Forest Service, Deschutes National Forest.
- Cook, Wayne C. and R. Dennis Child. 1971. Recovery of Desert Plants in Various Stages of Vigor, *Journal of Range Management*, 24(5): 339-343.
- Cooper, D.J. and D.M. Merritt. 2012. Assessing the water needs of riparian and wetland vegetation in the western United States. General Technical Report RMRS-GTR-282. USDA Forest Service, Rocky Mountain Research Station.
- Copeland, J.P. 1996. The biology of the wolverine in Central Idaho. M.S. Thesis, Univ. of Idaho, Moscow, ID. 138 pgs.
- Darling, L. A. and G. B. Coltharp. 1973. Effects of Livestock Grazing on the Water Quality of Mountain Streams, in *Water-Animal Relations Proc. Water-Animal Relation Committee*. Kimberly, Idaho. 239 pgs.
- DeByle, N. V., and R. P. Winkour, editors. 1985. *Aspen; ecology and management in the western United States*. Gen. Tech. Rep. RM-119. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. 283 pp.
- Donald R. Gunderson. 1968. Floodplain Use Related to Stream Morphology and Fish Populations. *The Journal of Wildlife Management*. Vol. 32, No. 3. pp. 507-514.
- Donart, Gary B. 1969. Carbohydrate Reserves of Six Mountain Range Plants as Related to Growth, *Journal of Range Management*, 22(6): 411-415.

- Donkor, N.T., J.V. Gedir, R.J. Hudson, E.W. Bork, D.S. Chanasyk, M.A. Naeth. 2002. Impacts of grazing systems on soil compaction and pasture production in Alberta. *Canadian Journal of Soil Science* 82:1–8.
- Duncan, S. 2008. Species fact sheet for the fir pinwheel. USDA Forest Service, Pacific Northwest Region, Portland, OR.
- Dunham, J.B., E.B. Taylor, and F.W. Allendorf. In Press. Bull trout in the Boundary: managing connectivity and the feasibility of a reintroduction in the lower Pend Oreille River.
- Eames, Michelle. 2014. Personal communication with Michelle Eames, Wildlife Biologist, USDI Fish and Wildlife Service, Eastern WA Field Office, Spokane, WA. 2014.
- EESC. 2010. Middle Branch LeClerc Creek General Habitat Surveys. Prepared for Box Canyon Hydroelectric Project Fish Sub-Committee. Submitted by the Public Utility District No. 1 of Pend Oreille County as part of the Trout Habitat Restoration Program. March 25, 2010.
- Ehrenfeld, J. 2003. Effects of exotic plant invasions on soil nutrient cycling processes. *Ecosystems*. 6:503-523.
- Ellison, C.A., Q.D. Skinner, L.S. Hicks. 2009. Assessment of best-management practice effects on rangeland stream water quality using multivariate statistical techniques. *Rangeland Ecol. Manage.* 62(4), 371-386.
- Executive Order 11988 Floodplain Management. 1977. 3 C.F.R. Federal Register Vol. No. 42, 1977, p. 26951.
- Executive Order 11990: Protection of Wet Lands. 1977. 3 C.F.R. 42 Federal Register Vol. No. 42, 1977, p. 26961.
- Fandrich, Blaine. 2002. Pend Oreille River: An Evaluation of 23 Historic Sites Located Between Albeni Falls Dam and Box Canyon Dam. EES Consulting Inc., Bellevue, WA.
- FAOSTAT. 2013. FAOSTAT database. Food and Agriculture Organization of the United Nation. <http://faostat.fao.org/>
- Fleckenstein, J. 2006. Species fact sheets for the Great Basin fritillary, meadow fritillary, Rosner's hairstreak. Natural Heritage Program, Washington Department of Natural Resources. Olympia, WA.
- Foltz Jordan, S. 2008. Species fact sheets for sensitive invertebrates. Xerces Society for Invertebrate Conservation, Portland, OR.
- Fountain, S. 2014. Personal communication with Steve Fountain, LeClerc Creek Grazing Allotment permittee. 2014.
- Frest, T. J., and E. J. Johannes. 1995. Interior Columbia Basin mollusk species of special concern. Final report: Interior Columbia Basin Ecosystem Management Project, Walla Walla, WA. Deixis Consultants, Seattle, WA. Contract #43-0E00-4-9112. 274 pages plus appendices.
- FSC. 2012. Box Canyon Hydroelectric Project - Fish Subcommittee September Meeting Minutes. 6 p.

- Ganjugunte, G.K., G.F. Vance, C.M. Preston, G.E. Schuman, L.J. Ingram, P.D. Stahl, & J.M. Welker. 2005. Soil Organic Carbon Composition in a Northern Mixed-Grass Prairie: Effects of Grazing. *Soil Science Society of America Journal*, 69: 1746–1756.
- Ganskopp, D. C., A. J. Svejcar, M. Vavra. 2006. Improving Late-Summer and Winter Forage Quality with Livestock Grazing, Eastern Oregon Agricultural Research Center, SR1057: 57-58.
- Ganskopp, D. L., L. Aguilera, and M. Vavra. 2007. Livestock forage conditioning among six northern Great Basin grasses. *Rangeland Ecology and Management* 60:71-78.
- George, M.R., R.D. Jackson, C.S. Boyd, K. W. Tate. 2011. A scientific assessment of the effectiveness of riparian management practices. In: D.D. Briske [ed.]. *Conservation benefits of rangeland practices: assessment, recommendations, and knowledge gaps*. Washington, DC, USA: United States Department of Agriculture, Natural Resources Conservation Service. pp. 213-252f.
- Goebel, C. J. 1956. Water development on the Starkey Experimental Forest and Range. *Journal of Range Management* 9(5):232-234. <http://www.jstor.org/stable/3894061>
- Groves, C.; Yenson, E. 1989. Rediscovery of the northern bog lemming (*Synaptomys borealis*) in Idaho. *Northwest Naturalist*. 70: 14-15.
- Gunderson, Donald R. 1968. Floodplain Use Related to Stream Morphology and Fish Populations. *The Journal of Wildlife Management*. Vol. 32, No. 3. pp. 507-514.
- Haas, Paul. 2013. Personal communication with Paul Haas, Forestry Technician, Newport-Sullivan Lake Ranger Districts, Colville NF. 2013.
- Hallock, L. 2003. Amphibian inventory of lentic habitats in the CNF: 2001-2002 survey results. Washington State Department of Natural Resources Natural Heritage Report 2003-02. Olympia, WA. 10 pgs.
- Halls, L.K., C. House, R.E. McCabe, and L.J. Jahn, editors. 1984. *White-tailed deer ecology and management*. Wildlife Management Institute. Stackpole Books. Harrisburg, PA. 870 p.
- Hamilton, E.W. III, D.A. Frank, P.M. Hinchey, and T. R. Murray. 2008. Defoliation induces root exudation and triggers positive rhizosphere feedbacks in a temperate grassland. *Soil Biology and Biochemistry* 40 (11): 2865-2873.
- Hanna, D. 1999. Pine Butte Swamp Preserve Manager, The Nature Conservancy, Choteau, MT. Personal communication.
- Hansen, H. J. 1986. *Wolves of Northern Idaho and Northeastern Washington*. U.S. Fish and Wildlife Service, Montana Cooperative Research Unit, University of Montana, Missoula, MT. 88 pp.
- Harris, R. W. 1954. Fluctuations in forage utilization of ponderosa pine range in eastern Oregon. *Journal of Range Management*. 7:250-5.
- Hayes G. E. and J. B. Buchanan. 2001. Washington State status report for the peregrine falcon. Washington Department of Fish and Wildlife, Olympia, WA. 108 p.

- Hayward, G. D., and J. Verner, tech. editors. 1994. Flammulated, boreal, and great gray owls in the United States: A technical conservation assessment. Gen. Tech. Rep. RM-253. Fort Collins, CO: 214 p.
- Headwaters Economics. 2006. NASA MODIS Land Cover Type Yearly L3 Global 1km MOD12Q1, <http://headwaterseconomics.org> (accessed January 9, 2017).
- Headwaters Economics. 2009. A SocioEconomic Profile: Pend Oreille County, Washington. (http://headwaterseconomics.org/pubs/protected-lands/LWCF_Economic_Benefits.pdf). (accessed January 9, 2017).
- Headwaters Economics. 2017. A Profile of Agriculture: Pend Oreille County, Washington. <https://headwaterseconomics.org/tools/economic-profile-system/#agriculture-report-section> (accessed January 9, 2017).
- Heady, Harold and Dennis Child. 1994. Rangeland Ecology and Management. Westview Press Inc.
- Heike, J.D., R.C. Henderson, B.B. Roper, E.K. Archer. 2008. Evaluating Livestock Grazing Use with Streambank Alteration Protocols: Challenges and Solutions. Rangeland Ecol. Manage. 61.647-655.
- Heinemeyer, K.S., B.C. Alber, and D.F. Doak. 2001. Aerial surveys for wolverine presence and potential winter recreation impacts to predicted wolverine denning habitats in the Southwestern Yellowstone Ecosystem. Unpublished report. University of California, Santa Cruz Department of Environmental Studies. 33 p.
- Holechek, Jerry L., Rex D. Pieper and Carlton H. Herbel. 2001. Range Management: Principles and Practices. Prentice Hall.
- Holt, B. 2012 and 2014. Personal communication with B. Holt, Threatened and Endangered Species Coordinator, USDI Fish and Wildlife Service, Spokane Ecological Services Office, Spokane, WA. 2012 and 2104.
- Hornocker, M. and H. Hash. 1981. Ecology of the wolverine in northwestern Montana. Can. J. Zoology. 59(7): 1286-1301.
- Hudson, Tipton D. 2008. Livestock Management and Water Quality. Washington State University Extension. 10 p.
- Interagency Lynx Biology Team. 2013. Canada lynx conservation assessment and strategy. 3rd edition. USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Forest Service Publication R1-13-19, Missoula, MT. 128 p.
- IPCC. 2000. Intergovernmental Panel on Climate Change (IPCC), Special Report on Land Use, Land Use Change and Forestry, Summary for Policy Makers, 2000. IPCC, Geneva, Switzerland, 20 pp. http://www.ipcc.ch/ipccreports/sres/land_use/index.php?idp=0
- IPCC. 2013. Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Stocker, T.F., D. Quin, G. K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y.

- Xia, V. Bex and P.M. Midgley (eds.). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp. <http://www.ipcc.ch/report/ar5/wg1/>
- IPPC. 2014. Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Core Writing Tea, R.K. Pachauri and L.A. Meyer (eds.). IPCC, Geneva, Switzerland, 151 pp. <http://www.ipcc.ch/report/ar5/syr/>
- Irwin, L.L., J.G. Cook, R.A. Riggs, and J.M. Skovlin. 1994. Effects of long term grazing by big game and livestock in the Blue Mountains forest ecosystems. General technical report PNW-325. U.S. Forest Service, Pacific Northwest Research Station, Portland, Oregon.
- James D. G. and D. Nunalee. 2011. Life histories of Cascadia butterflies. Oregon State Univ. Press. Corvallis, OR. 448 p.
- Jimenez, J. 2014. Soils Scientist, USDA Forest Service, Colville National Forest Supervisor's Office, Colville, WA. Personal communication
- Jimenez, Jason. 2015. LeClerc Creek Grazing Allotment EIS Soil Specialist Report. Unpublished. USDA Forest Service. Colville National Forest, Washington. 18 p.
- Johnson, R.E. and K.M. Cassidy. 1997. Terrestrial mammals of Washington State: Location data and predicted distributions. Volume 3 in Washington State Gap Analysis - Final report; Cassidy, K.M., C.E. Grue, M.R. Smith, and K.M. Dvornich, eds. Washington Cooperative Fish and Wildlife Research Unit, University of Washington, Seattle. 304pp.
- Johnson, S. R., H. L. Gary and S. L. Ponce. 1978. Range Cattle Impacts on Stream Water Quality in the Colorado Front Range. USDA For. Ser. Res. Not. RN-359.
- Joyce, Linda A.; Running, Steven W.; Breshears, David D.; Dale, Virginia H.; Malmsheimer, Robert W.; Sampson, R. Neil; Sohngen, Brent; Woodall, Christopher W. 2014. Chapter 7: Forests. In: Milillo, Jerry; Richmond, Terese (T.C.); Yohe, Gary, eds. Climate change impacts in the United States: The third national climate assessment. U.S. Global Change Research Program: 176-194. <http://nca2014.globalchange.gov/report/sectors/forests>
- Kauffman, J.B., D.A. Pyke. 2001. Range ecology, global livestock influences. In: Levin S (ed) Encyclopedia of Biodiversity, Vol. 5. Academic Press, New York. pp. 33-52.
- Kennedy, Dorothy and Randall T. Bouchard. 1998. "Northern Okanagan, Lakes, and Colville." Handbook of North American Indians-Plateau. Volume 12. Smithsonian Institute, Washington DC.
- Kinley, T. A. and C.D. Apps. 2007. Caribou habitat modeling for the South Selkirk Ecosystem including habitat assessments for the Priest Lake Endowment Lands. Idaho Department of Lands, Boise, Idaho.
- Knapp, A.K. and T.R. Seastedt. 1986. Detritus accumulation limits productivity of tallgrass prairie. Bioscience 36:662-668.
- Knight, R. L., W. C. Gilgert, and E. Marston. 2002. Ranching west of the 100th meridian: culture, ecology, and economics. Washington, DC, USA: Island Press. 196 p.

- Kombreck, T. 1999. Personal communication with T. Kombreck, Wildlife Biologist, Wisdom Ranger District, Beaverhead National Forest. 1999.
- Krzix, M., R.F. Newman, K. Broersma, A.A. Bomke. 1999. Soil compaction of forest plantations in interior British Columbia. *Journal of Range Management* 52:671-677
- Lahren, Sylvester L. 1998. "Kalispel." *Handbook of North American Indians-Plateau*. Volume 12. Smithsonian Institute, Washington DC.
- Lawler, Rob 2014. Hydrologist, USDA Forest Service, Colville National Forest, Newport-Sullivan Lake Ranger Districts, Newport, WA. Personal communication.
- Lawler, Rob. 2015. LeClerc Creek Grazing Allotment EIS Hydrology Specialist Report. Unpublished. USDA Forest Service. Colville National Forest, Washington. 57 p.
- Layser, E. F. and T. E. Burke. 1973. The northern bog lemming and its unique habitat in northeastern Washington. *Murrelet* 54:7-8.
- Layser, T. 2013. Aerial wolverine track survey, USDA Forest Service, CNF, Sullivan Lake Ranger District. Selkirk Conservation Alliance, Priest River, ID. Unpublished report. 7 p.
- Lee, D.C., J.R. Sedell, B.E. Rieman, R.F. Thurow and J.E. Williams. (1997). Broad-scale assessment of aquatic species and habitat. Pages 1081-1496 in Quigley, T.M., M. Arbelbide and J. Sylvia editors. *An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath and Great Basin*. General Technical Report PNW-GTR-405, Pacific Northwest Research Station USDA Forest Service, Portland, OR.
- Lewis, J. C. and D. Kraege. 2003. Management recommendations for Washington's priority habitats and species; harlequin ducks. Washington Department of Fish and Wildlife, Olympia, WA.
- Littlefield, C. D. and G. Ivey. 2001. Washington State recovery plan for the sandhill crane. Washington Department of Fish and Wildlife, Olympia, WA. 62 p.
- Loggers, C. and R. A. Moore. 2011. Surveys for odonates at high-elevation wetlands on the CNF in Northeast Washington; summer, 2011. Colville, WA. 9 p.
- Lowe, John E. 1995. Regional forester's forest plan amendment #2: Revised interim standards for timber sales on Eastside Forests. 1920 memo from USDA Forest Service, Pacific Northwest Regional Forester to Forest Supervisors of the Colville, Deschutes, Fremont, Malheur, Ochoco, Okanogan, Umpqua, Wallowa-Whitman, and Winema National Forests. Portland, OR.
- Lucid, M., Robinson, L., Cushman, S., Allen, L., and Cook, S. 2010. Inland maritime initiative: maintaining multi-species connectivity in a changing climate, 2010 progress report. Idaho, Department of Fish and Game, USDA Forest Service Rocky Mountain Research Station, Idaho Panhandle National Forests, University of Idaho. Unpublished. 15 p.
- Lyon, J. 1999. Personal communication with J. Lyon, Research Wildlife Biologist (retired), USDA Forest Service, Intermountain Research Station, Missoula, MT. 1999.
- Lyons, Kevin J. 2000. Official written correspondence from the Kalispel Tribe of Indians.

- Lyons, Kevin J. 2001. "A Brief Narrative Regarding for Kalispel Traditional Cultural Properties within the Head Waters of the West LeClerc Creek Drainage, Pend Oreille County, Washington" Kalispel Natural Resources Department, Usk, WA.
- Mack, R.N. 2003. Global plant dispersal, naturalization and invasion: pathways, modes and circumstances. In "Global Pathways of Biotic Invasions" (G. Ruiz and J Carlton, eds.) Island Press. Pages 3–30.
- Madel, M. 1999. Personal communication with M. Madel, Wildlife Biologist, Montana Division of Fish, Wildlife, and Parks, Choteau, MT. 1999.
- Maloney, S.B., A.R. Tiedemann, D.A. Higgins, T.M. Quigley, D.B. Marx. 1999. Influence of stream characteristics and grazing intensity on stream temperatures in eastern Oregon. Gen. Tech. Rep. PNW-GTR-459. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 19 p.
- Marshall, D.B., 1992. Three-toed woodpecker. In: Sensitive invertebrates of Oregon. Oregon Department of Fish and Wildlife, Portland, OR.
- Masters, Robert A. and Roger L. Sheley. 2001. Principles and Practices for Managing Rangeland Invasive Plants, *Journal of Range Management*, 54(5): 502-517.
- McComb, W. C., J. R. Sedell, and T. D. Buchholz. 1990. Dam-site selection by beavers in an eastern Oregon basin. *Great Basin Naturalist* 50:273-281.
- McInnis, M. L., and J. McIver. 2001. Influence of off-stream supplements on streambanks of riparian pastures. *Journal of Range Management* 54(6):648-652.
<http://www.jstor.org/stable/4003665>
- Mech, D. L. 1991. *The way of the wolf*. Voyageur Press, Inc., 123 N. Second Street, Stillwater, MN 55082. 120 p.
- Mellen, K., B. Marcot, J. Ohman, K. Waddell, S. Livingston, E. Wilhite, B. Hosteter, C. Ogden, and T. Dreisbach. 2003. DecAid, the decayed wood advisor for managing snags, partially dead trees, and down wood for biodiversity in forests of Washington and Oregon. Version 1.10. USDA Forest Service, Pacific Northwest Research Station; USDI Fish and Wildlife Service, Oregon State Office; Portland, OR.
- Mellen-McClean, K., B. Wales, and B. Bresson. 2013. A conservation assessment for the white-headed Woodpecker (*Picoides albolarvatus*). USDA Forest Service, Region 6 and USDI Bureau of Land Management, Oregon and Washington. Portland, OR. 41 p.
- Millar, Constance I.; Stephenson, Nathan L.; Stephens, Scott L. 2007. Climate change and forests of the future: Managing in the face of uncertainty. *Ecological Applications*. 17(8): 2145-2151. <http://www.nrs.fs.fed.us/pubs/31774>
- Miner, J.R., J.C. Buckhouse and J.A. Moore. 1992. Will a water trough reduce the amount of time hayfed livestock spend in the stream (and therefore improve water quality)? *Rangelands* 14(1); 35-38.
- Mueggler, W. F. (1975) Rate and Pattern of Vigor Recovery in Idaho Fescue and Bluebunch Wheatgrass, *Journal of Range Management*, 28(3): 198-208.

- Naeth, M.A., D.J. Pluth, D.S. Chanasyk, A.W. Bailey, and A.W. Fedkenheuer, A.W. 1990. Soil compacting impacts of grazing in mixed prairie and fescue grassland ecosystems of Alberta. *Canadian Journal Soil Science*. 70: 157-167.
- Naiman, R.J., Melillo, J.M. and Hobbie, J.E. 1986. Ecosystem alteration of boreal forest streams by beaver (*Castor canadensis*). *Ecology* 67:1254-69.
- Napper, C., S. Howes, D. Page-Dumroese. 2009. Soil Disturbance Field Guide. USDA, Forest Service, National Technology and Development Program, 0819 1815 – SdTDC.
- NatureServe. 2012. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available online at: <http://www.natureserve.org/explorer>. (July 31, 2012).
- Nenema, Glen. 1993. Official written correspondence from the Kalispel Tribe of Indians.
- Ng, Kawa. 2014a. A Profile of Agriculture; Pend Oreille County, WA. Produced by Economic Profile System- Human Dimensions Toolkit (EPS-HDT). August 19, 2014.
- Ng, Kawa. 2014b. A Profile of Socioeconomic Measures; Pend Oreille County, WA. Produced by Economic Profile System- Human Dimensions Toolkit (EPS-HDT). August 19, 2014.
- Ng, Kawa. 2014c. A Summary Profile; Pend Oreille County, WA. Produced by Economic Profile System- Human Dimensions Toolkit (EPS-HDT). August 19, 2014.
- National Forest Foundation. 2013. Survey Reveals Americans overwhelming Support for our National Forests, <https://www.nationalforests.org/who-we-are/press-news/survey-reveals-americans-overwhelming-support-for-our-national-forests> (accessed 19 January 2017).
- Nooney, Karen. 2014. LeClerc Creek Grazing Allotment EIS Specialist Report for Special Uses and Minerals. Unpublished. USDA Forest Service. Colville National Forest, Washington. 3 p.
- Obermiller, Frederick W. 1992. Costs Incurred by Permittees in Grazing Cattle on Public and Private Rangelands and Pastures in Eastern Oregon: 1982 and 1990. Special Report 903. Corvallis, OR: Oregon State University Extension Service.
- Osterman, Deane. 2012. Official written correspondence from the Kalispel Tribe of Indians.
- Page-Dumroese, D, R. Miller, J. Mital, P. McDaniel, D. Miller, D. 2007. Volcanic Ash Derived Forest Soils of the Inland Northwest: Properties and Implications for Management and Restoration. 9-10 November 2005; Coeur d'Alene, ID. Forest Service, Rocky Mountain Research Station. Proceedings RMRS-P-44.
- Page-Dumroese, D.S., A.M. Abbott, T.M. Rice. 2009a. Forest Soil Disturbance Monitoring Protocol – Volume I: Rapid Assessment. USDA Forest Service General Technical Report WO-82a.
- Page-Dumroese, D.S., A.M. Abbott, T.M. Rice. 2009b. Forest Soil Disturbance Monitoring Protocol – Volume II: Supplementary Methods, Statistics, and Data Collection. USDA Forest Service General Technical Report WO-82b.

- Parks, N. 2009. Science Findings 576-043. On the track of the elusive wolverine. USDA Pacific Northwest Research Station, Portland, OR.
- 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* 56:334-341.
- Paulson, D. 1999. *Dragonflies of Washington*. Seattle Audubon Society, Seattle WA. 32 p.
- Pend Oreille County. 2005. Pend Oreille County, Washington Comprehensive Plan. Board of County Commissioners. 2013 Update. 143 p.
- Pend Oreille County. 2016. Official written correspondence from Pend Oreille County, Washington Board of County Commissioners.
- Perkins, P.J., F.G. Lindzey, and J.A. Gessaman. 1991. Physical characteristics of blue grouse winter use-trees and roost sites. *Great Basin Naturalist* 51 (3). Pp. 244-248.
- Pierce, Wade (forester). 2013. Personal communication with Wade Pierce, Forester, Stimson Lumber Company, Newport, WA. 2013.
- Platts, W.S. 1991. Livestock grazing. Pages 389–424 in W. R. Meehan, editor. Influences of forest and rangeland management on salmonid fishes and their habitats. American Fisheries Society, Special Publication 19. Bethesda, Maryland.
- Porath, M. L., P. A. Momont, T. DelCurto, N. R. Rimbey, J. A. Tanaka, and M. McInnis. 2002. Offstream water and trace mineral salt as management strategies for improved cattle distribution. *Journal of Animal Science* 80:346-356.
<http://www.pcwp.tamu.edu/docs/lshs/end-notes/offstream%20water%20and%20trace%20mineral%20salt%20as%20ma-1949384732/offstream%20water%20and%20trace%20mineral%20salt%20as%20management%20strategies%20for%20improved%20cattle%20distribution.pdf>
- Public Utility District No. 1 of Pend Oreille (PUD). 2010. Middle Branch LeClerc Creek General Habitat Surveys. Prepared for Box Canyon Hydroelectric Project Fish Sub-Committee. Submitted by the Public Utility District No. 1 of Pend Oreille County as part of the Trout Habitat Restoration Program. March 25, 2010.
- Public Utility District No. 1 of Pend Oreille County (PUD). 2012. Trout Habitat Restoration Plan project pre-proposal, Upper Middle Branch LeClerc Creek Enhancement Project. Prepared for the Box Canyon Hydroelectric Project Technical Committee. February 9, 2012.
- Raish C, A.M. McSweeney. 2003. Economic, social, and cultural aspects of livestock ranching on the Española and Canjilon Ranger Districts of the Santa Fe and Carson National Forests: a pilot study. General Technical Report RMRS-GTR-113. Fort Collins, CO: USDA Forest Service, Rocky Mountain Research Station. 89 p.
- Reichel, J.D.; Beckstrom, S.G. 1994. Northern bog lemming survey. Montana Natural Heritage Program, Helena, Montana. 87 p.

- Richardson, S., D. Hays, R. Spencer, J. Stofel. 2000. Washington State status report for the common loon. Washington Department of Fish and Wildlife. Olympia, WA. 53 p.
- Rief, Amee. 2015. LeClerc Creek Grazing Allotment EIS Biological Assessment for Bull Trout. Unpublished. USDA Forest Service. Colville National Forest, Washington. 40 p.
- Rief, Amee, and K. Honeycutt. 2015. LeClerc Creek Grazing Allotment EIS Aquatic Specialist Report. Unpublished. USDA Forest Service. Colville National Forest, Washington. 53 p.
- Rieman, B.E. and J.D. McIntyre, 1993. Demographic and habitat requirements of bull trout *Salvelinus confluentus*. General Technical Report INT-GTR-302. Intermountain Research Station, USDA Forest Service, Ogden, UT.
- Robinson, S K., S. Rothstein, M. Brittingham, L. Petit, J. Grzybowski. 1995. "Ecology and behavior of cowbirds and their impact on host populations." Ecology and management of neotropical migratory birds. Oxford University Press, New York (1995): pp. 428-460.
- Roche, L.M., L. Kromschroeder, E.R. Atwill, R.A. Dahlgren, and K.W. Tate. 2013. Water quality conditions associated with cattle grazing and recreation on national forest lands. Plos One 8(6): e68127.
- Rodrick, E, R. Milner, G. Huekel, R. Johnson, D. Kraege, D. Ware, H. Allen, D. Brittell, J Andrews, and D. Hayes. 1991. Management recommendations for Washington's priority habitats and species; blue grouse. Washington Department of Fish and Wildlife, Olympia, WA.
- Rosenstock, Steven S., Warren B. Ballard and James C. Devos, Jr. 1999. Viewpoint: Benefits and Impacts of Wildlife Water Developments, *Journal of Range Management*, 52(4): 302-311.
- Rosgen, D. 1996. Applied River Morphology. Wildland Hydrology. Pagosa Springs, Colorado. 250 p.
- Ruediger, B., J. Claar, , S. Gniadek, B. Holt, L. Lewis, S. Mighton, B. Naney, G. Patton, T. Rinaldi, J. Trick, A. Vandehey, F. Wahl, N. Warren, D. Wenger, and A. Williamson. 2000. Canada Lynx conservation assessment and strategy. USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, USDI National Park Service. Forest Service Publication #R1-00-53, Missoula, MT. 142 p.
- Ruggiero, L., K. Aubrey, S. Buskirk, G. Koehler, C. Krebs, K. McKelvey and J. Squires, tech. editors. 1994. Ecology and conservation of lynx in the United States. Gen. Tech. Rep. RMRS-GTR-30WWW. USDA Forest Service, Rocky Mountain Research Station. 480 p.
- Ruggiero, L., K. Aubrey, S. Buskirk, L. Lyon, W. Zielinski, J. Williams, tech. editors. 1994. The scientific basis for conserving forest carnivores: American marten, fisher, lynx, and wolverine in the Western U. S. Gen. Tech. Rep. RM-254. Ft. Collins, CO: USDA Forest Service, Rocky Mountain Forest Range and Experiment Station. 184 p.
- Sallabanks, R.; Marcot, B.G.; Riggs, R.A.; Mehl, C.A.; Arnett, E.B. 2001. Wildlife of eastside (interior) forests and woodlands. In: Johnson, D.H.; O'Neil, T.A., eds. Wildlife-habitat relationships in Oregon and Washington. Oregon State University Press, Corvallis, OR: 213-238.

- Salmon Recovery. <https://www.salmonrecovery.gov/Partners/FishAccords/KalispelTribe> (accessed 3/11/2017).
- Schott, R. 1999. Personal communication with R. Schott, Resource Assistant, Madison Ranger District, Beaverhead National Forest. 1999.
- Schuman, G.E., J.D. Reeder, J.T. Manley, R.H. Hart, and W.A. Manley. 1999. Impact of grazing management on the carbon and nitrogen balance of a mixed-grass rangeland. *Ecol. Appl.* 9:65–71.
- Schweitzer, D.F., N.A. Capuano, B.E. Young, and S.R. Colla. 2012. Conservation and management of North American bumble bees. NatureServe, Arlington, Virginia, and USDA Forest Service, Washington, D.C.
- Shields, D. J., I.M. Martin, W. E. Martin, and M. Haefele. 2002. Survey results of the American public's values, objectives, beliefs, and attitudes regarding forests and grasslands, RMRS-GTR-95, Rocky Mountain Research Station, Fort Collins, CO.
- Simanton, J. R., M. A. Weltz and H. D. Larsen. 1991. Rangeland Experiments to Parameterize the Water Erosion Prediction Project Model: Vegetation Canopy Cover Effects, *Journal of Range Management*, 44(3): 276-282.
- Smith, Mae L., Paul J. Meiman and Joe E. Brunner. 2012. Characteristics of Hummocked and Non-hummocked Colorado Riparian Areas and Wetlands. *Wetlands Ecology and Management* 20:409-418.
- Smith, M.R., P.W. Mattocks, Jr., and K.M. Cassidy. 1997. Breeding birds of Washington State. Vol. 4 in K.M. Cassidy, C.E. Crue, M.R. Smith, and M.K. Dvornich, eds. Washington State gap analysis - final report. Seattle Audubon Society Publ. in Zool. No. 1. 538 p.
- Smith P., M. Bustamante, H. Ahammad, H. Clark, H. Dong, E.A. Elsiddig, H. Haberl, R. Harper, J. House, M. Jafari, O. Masera, C. Mbow, N.H. Ravindranath, C.W. Rice, C. Robledo Abad, A. Romanovskaya, F. Sperling, and F. Tubiello. 2014. Agriculture, Forestry and Other Land Use (AFOLU). In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. 121 p. http://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_chapter11.pdf
- Sowell, B.F., J.C. Mosley, and J.G. P. Bowman. 1999. Social behavior of grazing beef cattle: Implications for management. *Proceedings of the American Society of Animal Science*.
- Stalmaster, M. 1987. The bald eagle. Universe Books, 381 Park Avenue South, New York, NY 10016. 227 p.
- State of Washington. 2016. Monthly Employment Report. <https://fortress.wa.gov/esd/employmentdata/docs/economic-reports/current-monthly-employment-report.pdf> (accessed January 9, 2017).

- Stephenson, G. R. and L. V. Street. 1978. Bacterial Variations in Streams from a Southwest Idaho Rangeland Watershed. *J. Environ. Qual.*, Vol. 7, no.1, 1978.
- Stevens County. Stevens County Noxious Weed Control Board (website).
http://www.co.stevens.wa.us/weedboard/weed_list.htm. (Accessed January 23, 2012).
- Stoddard, L. A., A. D. Smith, and T. W. Box. 1975. *Range Management*. Third Edition. McGraw-Hill, Inc. United States of America.
- Talbott-Williams, H. J. 2005. Changes in Heavily Grazed Meadow Soils after Ten Years of Grazing Exclusion. Unpublished Masters' Thesis. University of Idaho.
- Thomas, J.W., tech. editor, R.G. Anderson, H. Black, E.L. Bull, P.R. Canutt, B.E. Carter, K. Cormack Jr., F.C. Hall, R.E. Martin, C. Maser, R.J. Miller, R.J. Pedersen, J.E. Rodiek, R.J. Scherzinger, H.L. Wick, J.T. Williams. 1979. *Wildlife habitats in managed forests of the Blue Mountains of Oregon and Washington*. USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, Agricultural Handbook No. 533. Portland, OR. 512 p.
- Thoms, A.V. 1987. Upland Land Use and the Initial Assessment of 45PO148: The Sullivan Lake Archaeological Project, Northeastern Washington. Center of Northwest Anthropology, Washington State University, Pullman.
- U.S. Army Corps of Engineers (ACOE). 2012. Regional General Permit – 8 (RGP-8) with WADOE 401 certification in accordance of Clean Water Act section 404 (33 U.S.C. 1344). U.S. Forest Service (USFS) Aquatic Restoration Program within the State of Washington. Permit Number: CENWSOD-RG-RPG-8.
- U.S. Congress. 1972. Federal Water Pollution Control Act (Public Law, P.L. 92-500), commonly known as the Clean Water Act (as amended in 1977, 1981, 1987, and 2002). Washington DC.
- U.S. Congress. 1973. Section 7 of the Endangered Species Act of 1973 (19 U.S.C. 1536(c) as amended).
- U.S. Congress. 1976. Public Law 94-488, National Forest Management Act (NFMA) of 1976. 94th Congress. Washington DC.
- U.S. Congress, Office of Technology Assessment. 1993. *Harmful Non-Indigenous Species of the United States*, U.S. Government Printing Office, Washington, D.C.
- USDA Census of Agriculture. 2007. County Profile, Pend Oreille County, WA.
(http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/County_Profiles/Washington/cp53051.pdf)
- USDA Forest Service. *Forest Service Manual and Handbooks*. USDA Forest Service Headquarters, Washington D.C. Available online at: <http://www.fs.fed.us/im/directives/>
- USDA Forest Service. 1988a. Colville National Forest Land and Resource Management Plan Final Environmental Impact Statement and Record of Decision. Pacific Northwest Region. Portland, OR.

- USDA Forest Service. 1988b. Colville National Forest Land and Resource Management Plan, including Appendices A-L.
- USDA Forest Service. 1988c. Region 6 – Water Quality Best Management Practices.
- USDA Forest Service. 1988d. Forest Service Handbook 2509.22 – Soil and Water Conservation Practices Handbook. R-1/R-4 Amendment No. 1. Chapter 10. – Soil and Water Conservation Practices Documentation. 71 pgs.
- USDA Forest Service. 1990a. Forest Service Manual, Section 2672; Wildlife, fish, and sensitive plant habitat management.
- USDA Forest Service. 1990b. Idaho Panhandle National Forests land and resource management plan. Coeur D’Alene, ID.
- USDA Forest Service. 1992, 1994, 2004, 2005 and 2007. Colville National Forest Stream Surveys, LeClerc Creek. Region 6 Hankin and Reeves Surveys, located in the Colville National Forest Stream Survey Files in the Supervisor’s Office. Colville, WA
- USDA Forest Service. 1995. Inland Native Fish Strategy Environmental Assessment: Decision Notice and Finding of No Significant Impact.
http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_033158.pdf.
- USDA Forest Service. 1995a. Inland Native Fish Strategy Environmental Assessment. Intermountain, Northern and Pacific Northwest Regions.
- USDA Forest Service (FS), USDI Bureau of Land Management (BLM). 1995b. Environmental Assessment for the Implementation of Interim Strategies for Managing Anadromous Fish-Producing Watersheds on Federal Lands in Eastern Oregon and Washington, Idaho, and Portions of California. US Department of Agriculture, Forest Service and US Department of the Interior, Bureau of Land Management. 163 p. This document is known as PACFISH.
- USDA Forest Service. 1996. Utilization Studies and Residual Measurements, Interagency Technical Reference No. 1734-3.
(http://www.blm.gov/style/medialib/blm/wo/blm_library/tech_refs.Par.92958.File.dat/TR_1734-03.pdf)
- USDA Forest Service. 1998a. Environmental Assessment for Integrated Noxious Weed Treatment. Colville National Forest. Colville, WA.
- USDA Forest Service. 1998b. LeClerc Creek Allotment Biological Evaluation for Bull Trout. September 22, 1998.
- USDA, Forest Service. 1998c. Region 6 Soil Quality Standard and Guidelines. FSM 2520. R-6 Supplement 2500.98-1, Effective August 24, 1998.
- USDA Forest Service. 1999. Colville National Forest Weed Prevention Guidelines. USDA Forest Service Memo 2080, November 18, 1999. Colville National Forest. Colville, WA. 7 p,
- USDA Forest Service. 2000. Landbird strategic plan. Washington D.C. 21 pp.

- USDA Forest Service. 2003. Managing the National Forest System: Great Issues and Great Diversions. Dale Bosworth Speech to the Commonwealth club, San Francisco, CA.
- USDA Forest Service. 2005a. Forest Service Manual 2600, Wildlife, Fish, and Sensitive Plant Habitat Management, Chapter 2670, Threatened, Endangered and Sensitive Plant and Animals. 22 p.
- USDA Forest Service. 2005b. Invasive Plant Program Preventing and Managing Invasive Plants and accompanying Record of Decision. Pacific Northwest Region. Portland OR. November 14, 2005.
- USDA Forest Service. 2008a. Forest Service Handbook 1909.15 - Environmental Policy and Procedures Handbook. Washington, DC.
- USDA Forest Service. 2008b. Forest Service Manual 2000, National Forest Resource Management, Chapter 2070, Vegetation Ecology. 12 p.
- USDA Forest Service. 2009. Hanlon Timber and Fuels Management Project Biological Evaluation for Bull Trout. September 24, 2009.
- USDA Forest Service. 2010b. Forest Service Handbook 1909.15, Chapter 50-Implementation and Monitoring. National Headquarters (WO). Washington DC. p. 4.
- USDA Forest Service. 2011. Final Region 6 Regional Forester Special Status Species List, December 1, 2011. Unpublished report, Portland, OR.
- USDA Forest Service. 2011a. Final Region 6 Regional Forester Special Status Species List, December 1, 2011. Unpublished report, Portland, OR.
- USDA Forest Service. 2011b. Forest Service Handbook 1909.15, Chapter 10-Environmental Analysis. National Headquarters (WO). Washington DC. pp. 33-34.
- USDA Forest Service. 2012. National Best Management Practices for Water Quality Management on National Forest System Lands. FS-990a. Volume 1: National Core BMP Technical Guide. Washington DC: U.S. Department of Agriculture, Forest Service. 165 p.
- USDA Forest Service. 2014a. Alternative D Synopsis, August 6, 2014, LeClerc Creek Grazing Allotment. Unpublished report, Colville National Forest, Colville, WA. 2 pgs.
- USDA Forest Service. 2014b. LeClerc Creek Grazing Allotment EA – Summary of Alternatives, version 20131125. Unpublished report, Colville National Forest, Colville, WA. 6 pgs.
- USDA Forest Service. 2014a. Native Plant Materials Policy and Authorities. Website (http://www.fs.fed.us/wildflowers/Native_Plant_Materials/policy.shtml).
- USDA Forest Service. 2014b. Natural Resources Management Database, Sensitive Plant Species Sightings and Surveys for the Colville National Forest. Unpublished reports. Colville National Forest, Colville, WA.
- USDA Forest Service. 2014d. Project Initiation Letter - LeClerc Creek Cattle Grazing Allotment Management Planning, May 19, 2014. Unpublished report, Colville National Forest, Colville, WA. 5 pgs.

- USDA Forest Service. 2015. Final Region 6 Regional Forester Special Status Species List, July 13, 2015. Unpublished report, Portland, OR.
- USDA Forest Service. 2016. Natural Resources Management Database, Sensitive Plant Species Sightings and Surveys for the Colville National Forest. Unpublished reports, Colville National Forest, Colville, WA.
- USDA Forest Service. 2016. Jaworski and Grinspoon. Draft Social Analysis for the Colville National Forest Plan Revision Final Environmental Impact Statement.
- USDA Forest Service Handbook 1909.15 (2011). Chapter 10-Environmental Analysis. National Headquarters (WO) Washington, DC, pg. 33-34.
- USDA Forest Service Handbook 1909.15 (2010). Chapter 50-Implementation and Monitoring. National Headquarters (WO) Washington DC, pg. 4.
- USDA Forest Service. Forest Service Handbook 2209.13 part 16.24 – Grazing Permit Administration Handbook. Washington, DC.
- USDA Forest Service. Forest Service Handbook 2509.22 – Soil and Water Conservation Practices Handbook. R-1/R- Amendment No. 1. 1988. Chapter 10. – Soil and Water Conservation Practices Documentation. Washington, DC. 71 p.
- USDA Forest Service. Forest Service Handbook 7709.55 - Travel Planning Handbook. Washington, DC.
- USDA Forest Service. Forest Service Handbook 7709.57 - Road Construction Handbook. Washington, DC.
- USDA Forest Service. Forest Service Handbook 7709.58 – Transportation System Maintenance Handbook. Washington, DC.
- USDA Forest Service. 2008. Forest Service Manual 2000, National Forest Resource Management, Chapter 2070, Vegetation Ecology. 12 pgs.
- USDA Forest Service. Forest Service Manual 2202.1 and 2203.1 – Range Management Objectives and Policy. Washington, DC.
- USDA Forest Service. Forest Service Manual 2204.2 and 2204.3 – Range Management Responsibilities. Washington, DC.
- USDA Forest Service. 2005. Forest Service Manual 2600, Wildlife, Fish, and Sensitive Plant Habitat Management, Chapter 2670, Threatened, Endangered and Sensitive Plant and Animals. 22 pgs.
- USDA Forest Service. Forest Service Manual direction (Section 2672.4 through 2672.42) – XX. Washington, DC.
- USDA Forest Service. Forest Service Manual 7712 – Travel Analysis. Washington, DC.
- USDA Forest Service. Forest Service Manual 7734 – Road Decommissioning. Washington, DC.

- USDA National Agricultural Statistics Service (NASS). 2014. 2012 Census of Agriculture, Washington State and County Data, Volume 1, Geographic Area Series, Part 47. 545 p.
- USDA Soil Conservation Service. 1992. Soil Survey of the Pend Oreille County Area, Washington.
- USDI Bureau of Land Management and USDA Forest Service. 1994. Final Environmental Impact Statement, Rangeland Reform 1994. Available online at: (<https://archive.org/stream/rangelandreform25unit#page/n3/mode/2up>).
- USDI Bureau of Land Management. 1998. Riparian Area Management – A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas. TR 1737-15.
- USDI Bureau of Land Management. 2003. Riparian Area Management – A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lentic Areas. TR 1737-16.
- USDI Bureau of Land Management. 2011. Riparian Area Management; Multiple Indicator Monitoring (MIM) of Stream Channels and Streamside Vegetation. Technical Reference 1737-23. BLM/OC/ST-10/003+1737. National Operations Center, Denver, CO. 155 pp.
- USDI Fish and Wildlife Service, USDI Bureau of Land Management, USDI National Park Service, USDA Forest Service, Idaho Fish and Game, Wyoming Game and Fish Department, Montana Department of Fish, Wildlife and Parks, Washington Department of Game. 1986. Interagency grizzly bear guidelines. Unpublished. 100 p.
- USDI Fish and Wildlife Service. 1993. Grizzly bear recovery plan. Missoula, MT. 181 p.
- USDI Fish and Wildlife Service. 1994. Recovery plan for the Selkirk Mountains woodland caribou. Portland, OR. 59 pages with appendices.
- USDI Fish and Wildlife Service (USFWS). 1998. A Framework to Assist in Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Bull Trout Subpopulation Watershed Scale.
- USDI Fish and Wildlife Service. 2001. Amended biological opinion for the continued implementation of the Colville National Forest land and resource management plan: FWS Reference 1-9-00-F-4 (118.0000). Spokane, WA.
- USDI Fish and Wildlife Service. 2002. Bull Trout (*Salvelinus confluentus*) Draft Recovery Plan (Klamath River, Columbia River, and St. Mary-Belly River Distinct Population Segments). US Fish and Wildlife Service, Portland, Oregon.
- USDI Fish and Wildlife Service. 2004. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Klamath River and Columbia River Populations of Bull Trout; Final Rule.
- USDI Fish and Wildlife Service. 2007. National bald eagle management guidelines. 23 p.
- USDI Fish and Wildlife Service. 2008. Birds of conservation concern: 2008. USDI, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 p. [Online version available at <http://www.fws.gov/migratorybirds/>]

- USDI Fish and Wildlife Service. 2011. Washington endangered species website: (http://www.fws.gov/wafwo/species_new.html).
- USDI Fish and Wildlife Service. 2012. Endangered and threatened wildlife and plants; Designation of critical habitat for the southern Selkirk Mountains population of woodland caribou. Final rule. Docket No. 3, FWS–R1–ES–2011–0096. Boise, ID.
- USDI Fish and Wildlife Service. 2013. Programmatic Biological Opinion for Aquatic Habitat Restoration Activities in the States of Oregon, Washington and Portions of California, Idaho and Nevada (ARBO II).
- USDI Fish and Wildlife Service. 2014a. Revised draft recovery plan for the coterminous United States population of bull trout (*Salvelinus confluentus*). Portland, Oregon. xiii + 151 pgs.
- USDI Fish and Wildlife Service, Pacific Region. 2014b. Washington endangered species website. (http://www.fws.gov/wafwo/species_new.html; <http://www.fws.gov/wafwo/speciesmap/PendOreilleCounty042413.pdf>).
- USDI Fish and Wildlife Service. 2016. Biological Opinion: LeClerc Creek Cattle Grazing Allotment Project. USFWS Reference: 01EWF00-2015-F-0285. On file at Colville National Forest, Newport-Sullivan Lake Ranger District, Newport, WA. 44p.
- USDI National Park Service. 1995. The Secretary of the Interior's Standards for the Treatment of Historic Properties: Guidelines for the Treatment of Cultural Landscapes. DOI-NPS: Washington DC.
- USDI Washington Fish and Wildlife Office, Pacific Region. 2014. Washington endangered species website. [Online] http://www.fws.gov/wafwo/species_new.html.
- U.S. Environmental Protection Agency. 1994. Background for NEPA reviewers: Grazing on Federal lands. Office of Federal Activities. Washington, DC. 43 p.
- US Environmental Protection Agency. 2015. US Inventory of Greenhouse Gas Emissions and Sinks: 1990 – 2013. Executive Summary. EPA 430-R15-004 United States Environmental Protection Agency. Washington, D.C. 27 pp. <http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html>
- Vennesland, R. G. and R. W. Butler. 2011. Great blue heron (*Ardea herodias*), The birds of North America online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/025> doi:10.2173/bna.25
- Wakkinen, W. 2013. Personal communication with Wayne Wakkinen, Research Wildlife Biologist, Idaho Department of Fish and Game. 2013.
- Walton, Kevin. 2015. LeClerc Creek Grazing Allotment EIS Recreation Specialist Report. Unpublished. USDA Forest Service. Colville National Forest, Washington. 2 p.
- Ware, D. 2003. Washington Department of Fish and Wildlife priority habitats and species; Volume IV: Birds; blue grouse.
- Washington State Department of Ecology (WADOE). Amended July 2003. Water Quality Standards for Surface Waters of the State of Washington. Chapter 173-201A WAC. 101 p.

- Washington State Department of Ecology. 2005. Colville National Forest Temperature, Bacteria, and pH Total Maximum Daily Load (Water Cleanup Plan) Submittal Report. 80 p.
- Washington State Department of Ecology. 2006. Colville National Forest Temperature and Bacteria Total Maximum Daily Load Water Quality Implementation Plan. 43 p.
- Washington Department of Ecology. 2012. Water Quality Assessments for Washington. <http://www.ecy.wa.gov/programs/wq/303d/index.html>
- Washington Department of Fish and Wildlife. 1991. Management recommendations for Washington's priority species. Olympia, WA.
- Washington Department of Natural Resources (WADNR). 1997. LeClerc Creek Watershed Analysis.
- Washington Natural Heritage Program. 2014. List of Plants Tracked by the Washington Natural Heritage Program, March 2014. Available online at: <http://www1.dnr.wa.gov/nhp/refdesk/lists/plantrnk.html>.
- Washington Natural Heritage Program. 2015. List of Plants Tracked by the Washington Natural Heritage Program, May 2015 [Online] <http://www1.dnr.wa.gov/nhp/refdesk/lists/plantrnk.html>.
- Washington Natural Heritage Program. 2016. Washington Natural Heritage Program Database. Washington Department of Natural Resources, August, 2016.
- Washington Natural Heritage Program and US Department of the Interior, Bureau of Land Management. 2014. Washington Natural Heritage Program Field Guide to Selected Rare Plants, Available online at: <http://www1.dnr.wa.gov/nhp/refdesk/fguide/htm/fsfgabc.htm>.
- Washington Natural Heritage Program and U.S. Department of the Interior, Bureau of Land Management. 2016. Washington Natural Heritage Program Field Guide to Selected Rare Plants, [Online] <http://www1.dnr.wa.gov/nhp/refdesk/fguide/htm/fsfgabc.htm>.
- Washington State Department of Ecology. Amended July 2003. Water Quality Standards for Surface Waters of the State of Washington. Chapter 173-201A WAC. 101 p.
- Washington State Department of Ecology. 2005. Colville National Forest Temperature, Bacteria, and pH Total Maximum Daily Load (Water Cleanup Plan) Submittal Report. 80 p.
- Washington State Department of Ecology. 2006. Colville National Forest Temperature and Bacteria Total Maximum Daily Load Water Quality Implementation Plan. 43 p.
- Washington State Department of Ecology. 2012. Water Quality Assessments for Washington. (<http://www.ecy.wa.gov/programs/wq/303d/index.html>)
- Washington State Noxious Weed Control Board. 2011. 2011 Washington State Noxious Weed List, Olympia, Washington. (<http://www.nwcb.wa.gov/>)
- Weaver, T.M and R.G. White. 1985. Coal Creek fisheries monitoring study III. Montana State Cooperative Fisheries Research Unit. Quarterly Progress Report. Bozeman, MT.

- White, Larry M. 1973. Carbohydrate Reserves of Grasses: A Review, *Journal of Range Management*, 26(1): 13-18.
- Wilcox, Bradford P. and M. Karl Wood. 1989. Factors Influencing Interrill Erosion From Semiarid Slopes in New Mexico, *Journal of Range Management*, 42(1): 66-70.
- Wiles, G., H. Allen, and G. Hayes. 2011. Wolf conservation and management plan. Washington Department of Fish and Wildlife, Olympia, WA. 301 p.
- Williams, E. J. 2012. Conservation assessment for great gray owl (*Strix nebulosa*). USDA Forest Service, Region 6, and USDI Bureau of Land Management. Portland, OR. 55 p.
- Williamson, S.J., D. Keppie, R. Davidson, D. Budeau, S. Carriere, D. Rabe and M. Schroeder. 2008. Spruce grouse continental conservation plan. Association of Fish and Wildlife Agencies. Washington, DC. 60 p.
- Willms, Walter D., Orin R. Kenzie, Tim A. McAllister, Doug Colwell, Doug Veira, John F. Wilms, Toby Entz and Merle E. Olson. 2002. Effects of Water Quality on Cattle Performance, *Journal of Range Management*, 55(5): 452-460.
- Winward, A.H. 2000. Monitoring the vegetation resources in riparian areas. Gen. Tech. Rep. RMRS-GTR-47. Ogden, Utah: US Department of Agriculture, Forest Service, Rocky Mountain Research Station. 49 p.
- Wisconsin Department of Natural Resources (website). Plumeless or Bristly Thistle (*Carduus acanthoides*) http://dnr.wi.gov/invasives/fact/thistles_plum.htm. (Accessed January 23, 2012).
- Wisdom, M. J., R. Holthausen, B. Wales, C. Hargis, V. Saab, D. Lee, W. Hann, T. Rich, M. Rowland, W. Murphy, M. Eames. 2000. Source habitats for terrestrial vertebrates of focus in the interior Columbia basin: broad-scale trends and management implications. Gen. Tech. Rep. PNW-GTR-485. USDA Forest Service, Pacific Northwest Research Station, Portland, OR.
- Woodbridge, B. and C. D. Hargis. 2006. Northern goshawk inventory and monitoring technical guide. General Technical Report WO-71. USDA, Forest Service. 80 p.
- Wyman, S., D. W. 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. Technical Reference, 1737-20. BLM/ST/ST-06/002+1737, U.S. Department of the Interior, Bureau of Land Management, National Science and Technology Center, Denver, Colorado. 105 p. <http://www.blm.gov/nstc/library/pdf/TR%201737-20.pdf>
- Youkey, D. 2012. Status of management indicator species on the Colville National Forest: August 2012. Unpublished report. 91 p.
- Zema, Monte. 2015. LeClerc Creek Grazing Allotment EIS Transportation System Specialist Report. Unpublished. USDA Forest Service. Colville National Forest, Washington. 3 p.

Zender, S. (area wildlife biologist). 2005. Personal communication with Steve Zender, Area Wildlife Biologist (retired), Washington Department of Fish and Wildlife, Chewelah, WA. 2005.

Acronyms/Glossary

Acronyms

AIRFA	American Indian Religious Freedom Act	NEPA	National Environmental Policy Act of 1969
AMP	Allotment Management Plan	NFMA	National Forest Management Act
AOI	Annual Operating Instructions	NFS	National Forest System
AUM	Animal Unit Month	NHPA	National Historic Preservation Act
BE	Biological Evaluation (plants, fish, wildlife)	NRHP	National Register of Historic Places (heritage)
BLM	Bureau of Land Management	OHV	Off-highway Vehicle
BMP	Best Management Practice (water)	PUD	Public Utility District
CFR	Code of Federal Regulations	RHCA	Riparian Habitat Conservation Area (fish)
CR	County Road	RMO	Riparian Management Objective (fish)
DEIS	Draft Environmental Impact Statement	RNA	Research Natural Area
DOE	Department of Ecology	ROD	Record of Decision
EA	Environmental Assessment	ROS	Recreation Opportunity Spectrum (recreation)
EIS	Environmental Impact Statement	SHPO	State Historic Preservation Office (cultural resources)
FEIS	Final Environmental Impact Statement	SUP	Special Use Permit
FPA	Forest Practice Applications (WA state land)	TES	Threatened, Endangered and Sensitive (wildlife, plants)
FR	Forest Road	THRP	Trout Habitat Restoration Program
FS	Forest Service	TMDL	Total Maximum Daily Load (hydrology)
FSH	Forest Service Handbook	USACE	United States Army Corps of Engineers
FSM	Forest Service Manual	USDA	United States Department of Agriculture
FY	Fiscal Year	USDI	United States Department of Interior
GBMU	Grizzly Bear Management Unit	USFWS	US Fish and Wildlife Service (wildlife)
GIS	Geographic Information System (computerized mapping and analysis software)	VQO	Visual Quality Objective (scenery management)
HPA	Hydraulic Project Approval process	WADNR	WA State Department of Natural Resources
HUC	Hydrologic Unit Code		
ID or IDT	Interdisciplinary Team		
INFISH	Inland Native Fish Strategy (fish)		
LAU	Lynx Analysis Unit		
LRMP	Land and Resources Management Plan, also known as the Forest Plan		
MA	Forest Plan management area		
MIS	Management Indicator Species (wildlife)		
MVUM	Motor Vehicle Use Map (recreation)		

Glossary

Adaptive management - An approach to natural resource management where actions are designed and executed and effects are monitored for the purpose of learning and adjusting future management actions, which improves the efficiency and responsiveness of management (36 CFR 219.16).

Animal Unit Month (AUM) - The quantity of forage required by one mature cow (1,000 pounds), or the equivalent for one month, based upon average daily forage consumption of 26 pounds of dry matter per day (800 pounds/month).

Bear Management Unit (BMU) - Areas established for use in grizzly bear analysis. BMUs generally a) approximate female home range size; and b) include representations of all available habitat components.

Code of Federal Regulations (CFR) - The listing of various regulations pertaining to management and administration of the National Forest.

Cultural resources - Such resources as archeological, historical, or architectural sites, structures, places, objects, ideas, and traditions that are identified by field inventory, historical documentation, or other evidence and that are important to specified social or heritage groups or scientific and management endeavors.

Cumulative effects - The combined effects of two or more management activities. The effects may be related to the number of individual activities, or to the number of repeated activities on the same piece of ground. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Decommission (roads) - Activities that result in restoration of unneeded roads to a more natural state (FSM 7734).

Developed recreation site - Distinctly defined area where facilities are provided for concentrated public use; e.g. campgrounds, picnic areas, boating sites, and ski areas.

Endangered species - Any species of animal or plant that is in danger of extinction throughout all or a significant portion of its range. An endangered species must be designated by the Secretary of Interior as endangered in accordance with the Endangered Species Act of 1973.

Exclosure - Exclosures are fenced areas where livestock are not permitted to enter. They typically protect sensitive resources like springs, marshes, and sensitive plant populations. They can be temporary, or permanent. Temporary exclosures may be constructed from brush or cut trees generated by meadow retention, or by electric fence. Permanent exclosures are typically constructed with wire or post and pole fencing. Responsibility for fence maintenance varies with fence location.

Forage - All browse and non woody plants available to livestock or wildlife for grazing or harvestable for feed.

Forb - Any herb other than grass.

Forest land - Land at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for non-forest use. Lands developed for non-forest

use include areas for crops, improved pasture, residential or administrative areas, improved roads of any width and adjoining road clearing, and power line clearings of any width. (36 CFR 219.16)

Grazing allotment - A designated area containing land suitable and available for livestock grazing use upon which a specified number and kind of livestock are grazed under an approved allotment management plan. It is the basic management unit of the range resource on National Forest System lands administered by the Forest Service.

Grizzly bear core habitat - An area of secure habitat within a bear management unit that contains no motorized travel routes or high use non-motorized trails during the non-denning season and is more than 0.3 miles (500 meters) from a drivable road. Core areas do not include any gated roads but may contain roads that are impassible due to vegetation or constructed barriers. Core areas strive to contain the full range of seasonal habitats that are available in the bear management unit.

Grizzly bear management unit (GBMU) - A subunit of the Selkirk Grizzly Bear Recovery Area. Each BMU is intended to approximate the size of a female grizzly bear home range, include some portion of all seasonal habitats, and not cross political boundaries of land management agencies. Boundary lines follow natural features such as rivers, streams, and watershed boundaries; and man-made features such as roads, ownership and Public Land Survey System (PLSS) section lines. A project analysis unit upon which direct, indirect and cumulative effects analyses are performed.

Heritage resources - Archaeological and historic sites, structures, buildings, artifacts, sacred sites, and traditional cultural properties identified through research, field inventory, and historic documentation that are important to the American public and American Indian Tribes.

Hydrologic unit code (HUC) - The United States Geological Survey created a hierarchical system of hydrologic units originally called regions, sub-regions, accounting units, and cataloging units. Each unit was assigned a unique Hydrologic Unit Code (HUC). As of 2010 there are six levels in the hierarchy, represented by hydrologic unit codes from 2 to 12 digits long, called regions, subregions, basins, subbasins, watersheds, and subwatersheds.

Interdisciplinary team (ID Team) - A group of people that collectively represent several disciplines and whose duty is to coordinate and integrate the planning activities.

Invasive species - Non-native species whose introduction does or is likely to cause economic or environmental harm or harm to human health. Non-native species are any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem (with respect to a particular ecosystem). (EO13112)

Inventoried roadless area - Areas identified in a set of inventoried roadless area maps, contained in the Forest Service Roadless Area Conservation, Final Environmental Impact Statement, Volume 2, dated November 2000, and any subsequent update or revision of those maps through the land management planning process. (36 CFR 294.11)

Lynx analysis unit (LAU) - An area of at least the size used by an individual lynx, from about 25 to 50 square miles. A project analysis unit upon which direct, indirect and cumulative effects analyses are performed.

Maintenance level (roads) - Maintenance levels define the level of service provided by, and maintenance required for, a specific road. Maintenance levels must be consistent with road

management objectives and maintenance criteria. The objective maintenance level is the maintenance level to be assigned at a future date considering future road management objectives, traffic needs, budget constraints, and environmental concerns. The objective maintenance level may be the same as, or higher or lower than, the operational maintenance level. (FSH 7709.59)

Management area - A specifically identified area on National Forest system lands to which specific plan components (desired conditions, objectives, identification of suitable and unsuitable land uses, or special designations) are applied.

Management indicator species (MIS) - A species selected because its welfare is presumed to be an indicator of the welfare of other species using the same habitat. A species whose condition can be used to assess the impacts of management actions on a particular area.

Mitigation measures - Modifications of actions taken to: a) avoid impacts by not taking a certain action or parts of an action; b) minimize impacts by limiting the degree or magnitude of the action and its implementation; c) rectify impacts by repairing, rehabilitating, or restoring the affected environment; d) reduce or eliminate impacts over time by preservation and maintenance operations during the life of the action; or, e) compensate for impacts by replacing or providing substitute resources or environments.

Monitoring - A systematic process of collecting information to evaluate changes in actions, conditions, and relationships over time and space or progress toward meeting desired conditions or plan objectives.

Potential wilderness area - Inventoried lands within National Forest System lands that satisfy the definition of wilderness found in section 2(c) of the 1964 Wilderness Act. (FSH 1909.12, chapter 70, 01/31/2007)

Project design - The process of developing specific information necessary to describe the location, timing, activities, outputs, effects, accountability, and control of a project.

Public involvement (public participation) - A Forest Service process designed to broaden the information base upon which agency approvals and decisions are made by: (a) informing the public about Forest Service activities, plans, and decisions, and (b) encouraging public understanding about and participation in the planning processes that lead to final decision making.

Range allotment - A designated area containing land suitable and available for livestock grazing use upon which a specified number and kind of livestock are grazed under an approved allotment management plan. It is the basic management unit of the range resource on National Forest System lands administered by the Forest Service.

Rangeland - Land on which the indigenous vegetation (climax or natural potential) is predominately grasses, grass-like plants, forbs, or shrubs and is managed as a natural ecosystem. If plants are introduced, they are managed similarly. Rangeland includes natural grasslands, savannas, shrub lands, many deserts, and meadows.

Reach - A relatively homogenous section of stream having a repetitious sequence of habitat types and relatively uniform physical attributes such as channel slope, habitat width, habitat depth, streambed substrate and degree of interaction with its floodplain. (PNW Region 6 Stream Inventory Handbook [2010 version 2.1])

Record of decision (ROD) - A document separate from but associated with an Environmental Impact Statement which states the decision, identifies all alternatives, specifying which were environmentally preferable, and states whether all practicable means to avoid environmental harm from the alternative have been adopted, and if not, why not. (40 CFR 1505.2)

Recovery area - A management sub-unit for a federal ESA listed species, geographically or otherwise identifiable, that is essential to the recovery of the entire listed species; conserves genetic or demographic robustness, important life history stages, or other feature for long-term sustainability of the entire listed species. Recovery criteria for the listed species should address each identified recovery unit, and every recovery unit must be recovered before the species can be delisted.

Responsible official - The official with the authority and responsibility to oversee the planning process and to approve plans, plan amendments, and plan revisions. (36 CFR 219.16)

Riparian management area - Lands along permanently-flowing streams, ponds, lakes, wetlands, seeps, springs, intermittent streams, and unstable sites that may influence these areas where management activities are designed to maintain, restore or enhance the ecological health of aquatic and riparian ecosystems and dependent resources.

Sensitive species - Those species of plants or animals that have appeared in the Federal Register as proposed for classification and are under consideration for official listing as endangered or threatened species, that are on an official state list, or that are recognized by the Regional Forester as needing special management to prevent their being placed on federal or state lists.

Special use authorization - A permit, term permit, lease, or easement that allows occupancy, use, rights, or privileges of National Forest System land.

Threatened species - Any species of animal or plant which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range and which has been designated in the Federal Register by the Secretary of Interior as a threatened species.

Preparers and Contributors

The LeClerc Creek Allotment review has been in progress since 1998, so not surprisingly there have been many changes to the project interdisciplinary team over the years. The following agency personnel participated in the preparation of this EIS.

Kathy Ahlenslager	Forest Botanist
Kerry Arneson	District Environmental Coordinator (acting)
Alicia Beat	Forest Archaeologist
Chase Bolyard	District Rangeland Management/Noxious Weed Specialist
Mike Borysewicz	District Wildlife Biologist
Scott Brogan	Forest Silviculturist
Tessa Chicks	Writer/Editor (acting)
Cindy Cleveland	Teams Fish Biologist
Terri Contreras	GIS Coordinator
Amy Dillon	Forest Environmental Coordinator
Travis Fletcher	Forest Range and Noxious Weeds Program Manager
Lisa Green	Forest Environmental Coordinator (acting)
Daniale Harbick	Writer/Editor (acting)
Mike Herrin	District Ranger
Brian Hicks	District Assistant Fire Management Officer
Karen Honeycutt	Natural Resource and Wildlife Program Manager
Jason Jimenez	Forest Soil Scientist
Joseph Johndreau	Writer/Editor (acting)
Joshua D. Jones	District Fish Biologist
Dean Kiefer	Writer-Editor (acting)
Julie Knutson	Regional Environmental Coordinator
Jean Lavell	West Zone Environmental Coordinator
Rob Lawler	District Hydrologist
Megan Lyons	District Biological Technician
Craig Newman	Recreation Engineering Lands and Minerals Staff Officer
Kawa Ng	Washington Office Economist
Karen Nooney	Forest Special Uses Administrator/Minerals
Michelle Paduani	District Environmental Coordinator/ID Team Leader
Brian Peck	Forest Fish & Watershed Program Manager
Amea Rief	Teams Fish Biologist
Marcy Rumelhart	Writer/Editor
Gayne Sears	District Ranger
Anne Thomas	Region 6 Environmental Coordinator (acting)
Kevin Walton	District Recreation Officer
Kathleen Ward	Natural Resources Staff Officer
Monte Zema	Forest Transportation Planner

Index

A

Abstract, i

Adaptive Management, 3, 1, 12, 16, 23, 24, 26, 27, 28, 29, 30, 32, 34, 40, 54, 56, 59, 60, 62, 73, 74, 77, 80, 81, 83, 103, 105, 116, 130, 131, 132, 133, 135, 143, 166, 167, 168, 174, 175, 176, 177, 181, 182, 183, 186, 188, 198, 200, 205, 215, 218

Affected Environment, 4, 43, 44, 45, 65, 88, 121, 185, 191, 201, 209, 214, 216, 219

Allotment Management Plan (AMP), 10, 26, 36, 37, 43, 45, 64, 144, 147, 152, 166, 222

Alternative

- A (no change), i, 1, 2, 19, 40, 41, 56, 77, 102, 129, 130, 135, 141, 147, 148, 149, 151, 159, 160, 161, 187, 189, 199, 215, 217
- B (No Action), i, 1, 2, 19, 40, 41, 57, 78, 104, 130, 131, 135, 141, 142, 147, 148, 149, 152, 159, 160, 161, 169, 177, 179, 183, 187, 189, 193, 194, 198, 213, 215, 217
- C, i, 1, 2, 40, 41, 59, 80, 81, 105, 131, 132, 135, 148, 159, 199, 200, 206
- D, 59, 80, 105, 131
- D (Modification of Alternative C), i, 1, 2, 40, 41, 62, 135, 148, 159, 199, 205, 207, 216, 18

Alternatives, 19

- Comparison, 40
- Considered in Detail, 19
- Eliminated from Analysis, 39

AMP. *See* Allotment Management Plan

Animal Unit Month (AUM), 46, 69

B

Background, 22

Bull Trout, 14, 41, 69, 76, 80, 81, 82, 92, 93, 96, 120, 121, 122, 127, 130, 131, 132, 134, 135, 136, 13, 21

C

Cattle Guard, 22, 25, 26, 28, 212

Clean Water Act, 5, 85, 86, 191, 225, 16

Comments, 1, 3, 10, 11, 13, 16, 17, 39, 65, 75, 138, 165, 171, 202, 203

Compaction. *See* Soil: Compaction

Concentrated Use Areas, 190, 192, 196, 197, 198, 199

Consultation, 224

Critical Habitat, 14, 41, 76, 80, 81, 82, 92, 93, 122, 130, 131, 132, 134, 135, 136, 157, 226, 21

Cumulative Effect(s), 43, 44, 76, 77, 79, 80, 84, 128, 142, 143, 152, 153, 154, 157, 161, 168, 177, 183, 186, 187, 189, 196, 199, 221

CWA. *See* Clean Water Act

D

Decision(s), 3, 17, 208, 16, 17, 18

E

Endangered. *See* Threatened and Endangered Species

Environmental Consequences

- Effects, 4, 43, 44, 140, 147, 156, 159, 166, 173, 179

Environmental Justice, 224

Existing Condition(s), 1, 44, 151, 161, 182, 196, 216

F

Fencing, 1, 4, 14, 15, 21, 22, 23, 24, 25, 26, 28, 30, 32, 36, 38, 40, 41, 51, 57, 60, 65, 74, 76, 77, 81, 89, 92, 129, 130, 131, 132, 133, 141, 142, 144, 149, 150, 151, 152, 153, 154, 168, 174, 175, 181, 188, 189, 204, 212, 214, 215

Fish Habitat, 8, 30, 92, 93, 101, 129, 132, 161

Forage, 2, 4, 23, 24, 30, 32, 36, 39, 40, 45, 46, 47, 48, 52, 53, 55, 56, 58, 59, 61, 62, 63, 69, 70, 71, 72, 73, 92, 103, 116, 129, 138, 139, 140, 141, 142, 143, 145, 150, 151, 152, 153, 154, 156, 158, 159, 160, 161, 163, 164, 166, 167, 168, 169, 174, 175, 182, 193, 195, 4, 6, 7

Rating, 2, 58, 4

Forest Plan, 1, 3, 6, 7, 8, 9, 16, 17, 19, 26, 27, 30, 44, 52, 61, 64, 65, 84, 85, 86, 120, 135, 136, 162, 169, 172, 173, 178, 183, 184, 185, 186, 189, 191, 193, 199, 200, 207, 214, 216, 218, 219, 220, 221, 1, 16, 19

Forest Service Handbook, 9, 19, 26, 38, 85, 200, 216, 217

Forest Service Manual, 4, 20, 24, 44, 65, 79, 137, 186, 216, 17

G

Grazing

- Fee, 69, 73
- Number, 13, 23, 46, 47, 69, 98, 99, 212
- Permit, 21, 73, 104, 200
- Rotation, 15, 39, 48
- Season, 24, 30, 32, 37, 46, 48, 49, 52, 53, 54, 63, 70, 74, 88, 92, 99, 129, 133, 142, 152

H

Hanlon Meadow, 23, 24, 25, 27, 38, 49, 51, 62, 76, 82, 148, 149, 198, 214, 215, 216, 220

Hardened Crossing, 24, 132, 212

Heritage Properties, 205, 206, 207

High Use Areas (soils), 101, 191, *See* Concentrated Use Areas
Hydropower License, 76, 77, 79, 80, 84

I

Incomplete or Unavailable Information, 221
INFISH, 7, 8, 27, 30, 45, 85, 88, 120, 121, 123, 126, 132, 135, 200
Interdisciplinary Team (IDT), 1, 9, 10, 13, 35, 62, 136, 191, 1
Invasive Plants, 187, 208, 209, 211, 214, 226
Irretrievable, 44, 221
Irreversible, 44, 221
Issue 1, 2, 13, 41
Issue 2, 2, 14, 41
Issue 3, 2, 14, 41
Issue 4, 2, 15, 41
Issue 5, 2, 16, 41
Issue(s), Issue(s), 20
Issue(s), Significant Issue(s), 1, 2, 3, 9, 10, 11, 12, 13, 16, 19, 22, 24, 28, 41, 76, 85, 100, 144, 178, 197, 198, 221

L

Lead Agency
Forest Service, i, 1, 3, 1, 4, 7, 9, 10, 11, 13, 19, 20, 23, 24, 26, 27, 28, 35, 39, 44, 45, 46, 52, 55, 57, 60, 66, 68, 69, 71, 73, 74, 77, 79, 80, 81, 82, 85, 86, 98, 120, 136, 137, 141, 142, 143, 149, 150, 151, 152, 154, 162, 168, 169, 177, 178, 183, 184, 186, 187, 191, 194, 198, 202, 205, 208, 209, 210, 211, 212, 213, 216, 217, 218, 219, 221, 222, 225, 1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 1
List of Agencies, Organizations, and Individuals
Receiving Notifications (chapter 4), 7

M

Management Indicator Species (MIS), 136, 169
Migratory Landbirds, 178, 3
MIM. *See* Multiple Indicator Monitoring
Mitigation, 38, 155, 162, 169, 15
Monitoring, 3, 26, 27, 30, 31, 32, 33, 40, 56, 57, 60, 83, 97, 98, 123, 130, 132, 133, 142, 151, 152, 166, 167, 168, 174, 190, 192, 207, 208, 211, 1, 12, 18, 19, 20, 24
Multiple Indicator Monitoring (MIM), 27, 30, 31, 33, 53, 127, 3, 20

N

Native Plant(s), 37, 100, 140, 209, 211
Noxious Weed(s), 20, 32, 38, 54, 59, 122, 149, 154, 161, 169, 175, 182, 187, 188, 207, 209, 210, 211, 212, 213, 214

O

Open Range. *See* Range Areas
Other Required Disclosures, 6

P

Pasture Rotation, 23, 30, 36, 81, 89, 215
Permittee, 1, 2, 11, 15, 20, 21, 22, 24, 28, 36, 37, 38, 39, 41, 45, 46, 48, 49, 51, 55, 56, 59, 61, 65, 68, 70, 71, 72, 73, 77, 78, 79, 80, 82, 84, 144, 147, 151, 152, 157, 159, 212, 213, 217, 218, 6, 7
PIBO (PACFISH/INFISH Biological Opinion), 22, 27, 62, 98, 123, 126, 127, 133
Preferred Alternative, i, 3, 17, 19, 187, 196, 211, 216, 221, 222
Project File. *See* Project Record
Project Location. *See* Appendix A
Project Record
Project File, 12, 13, 43, 207
Public
Comments, 2, 3, 9, 10, 13, 17, 19, 65, 66, 67, 69, 71, 72, 74, 79, 84, 86, 161, 187, 201, 207, 209, 214, 215, 220, 222, 15
Purpose and Need, 3, 1, 8, 17, 39

R

Range Areas, 4, 47, 56, 153, 198, *See* Open Range
Range Improvement(s), 27, 51, 73, 77, 79, 204
Recovery, 8, 14, 60, 78, 80, 84, 127, 130, 133, 135, 136, 144, 153, 157, 158, 159, 160, 196, 197, 198, 10, 21
Responsible Official, i, 3, 10, 17, 19, 26
Restoration, 1, 5, 7, 8, 68, 74, 75, 76, 77, 78, 79, 80, 84, 88, 92, 98, 127, 128, 129, 136, 187, 196, 198, 199, 203, 204, 209, 226
Riparian Exclosure, 2, 19, 57, 187
Riparian Habitat, 37, 127, 130, 132, 151, 174, 175, 176, 178, 181, 183, 204
Riparian Habitat Conservation Areas (RHCAs), 7, 22, 36, 52, 61, 88, 92, 101, 120, 129
Riparian Management Objectives, 1, 7, 32, 88, 120, 121, 135
Riparian Vegetation, 54, 57, 58, 59, 61, 93, 94, 98, 120, 127, 128, 133, 140, 141, 143, 153, 174, 177, 3
Road Maintenance, 20, 38, 129, 161, 187, 196, 204

S

Season of Use, 2, 19, 45, 51, 54, 130, 158, 187
Sediment Levels, 133
Sensitive Plant(s), 1, 32, 33, 37, 184, 185, 186, 187, 188, 189, 190, 17
Sensitive Species, 121, 127, 156, 162, 166, 168, 173, 178, 183, 184, 185, 186
Sensitive Wildlife Species, 162
Soil
Compaction, 13, 47, 54, 56, 100, 187, 195, 2, 5
Disturbance, 38, 191, 192, 197, 199, 210, 211, 212
Productivity, 55, 191, 192, 194, 195, 196, 197

Stability, 45
 State Water Quality Standard, 96
 Stream
 Bank Alteration, 27, 53
 Bank Stability, 30, 89, 101, 121, 128, 130
 Crossing, 5, 14, 24, 31, 41, 75, 80, 123, 135, 196
 Habitat, 74, 75, 128, 129, 135
 Temperature, 1, 36, 55, 69, 92, 93, 94, 121, 131, 132, 134
 Stubble Height, 27, 32, 53, 57, 127, 132
 Suitability, 148, 150, 167, 193, 194
 Summary, 1, 13, 16, 19, 40, 47, 65, 121, 135, 166, 168, 174, 175, 181, 186, 189, 192, 206, 8, 12, 19, 22
 Sustainability, 127

T

Threatened. *See* Threatened and Endangered Species
 Threatened and Endangered Species, 137, 7
 Transitory Range, 128, 153
 Trend, 45, 53, 57, 58, 59, 61, 72, 80, 94, 98, 101, 105, 131, 135, 151, 154, 169, 174, 175, 176, 178, 181, 182, 183, 189, 193, 198, 199, 210
 Tribal or Tribe(s), 1, 5, 6, 9, 10, 11, 12, 16, 22, 39, 51, 67, 68, 69, 74, 75, 76, 77, 78, 79, 80, 84, 94, 187, 201, 202, 203, 1, 10, 11, 12, 7
 Trigger Point(s), Trigger(s), 3, 26, 27, 28, 81
 Trout Habitat Restoration Program, 5, 68, 74, 75, 76, 77, 79, 84, 123, 133

U

U.S. Fish and Wildlife Service (USFWS), 76, 120, 121, 135, 184, 226, 7
 Upward Trend, 8, 142, 152, 177, 183, 193

W

Water Development(s), 28, 61, 89, 212
 Water Quality and TMDL Status, 1, 85, 86, 87, 93, 94, 191, 219, 225, 3, 5, 8, 16, 18, 22, 23, 24
 Wetland(s), 20, 22, 24, 27, 31, 48, 54, 62, 92, 93, 101, 128, 129, 132, 134, 136, 149, 165, 174, 175, 177, 187, 188, 189, 190, 191, 193, 195, 197, 198, 199, 218, 4, 24
 Wilderness, 16, 17
 Wildlife
 Bees, 165
 Birds, 155, 163, 178, 180, 181, 183, 213, 14, 15, 22, *See also* Migratory Landbirds
 Butterflies, 164, 8
 Dragonflies and Damselflies, 165
 Invertebrates, 164, 167, 168, 169, 6, 10
 Mammals, 155, 164, 166, 1, 8
 Mollusks, 165
 Wildlife Habitat, 8, 31, 68, 74, 75, 79, 86, 143, 194, 220

Appendix A: Maps

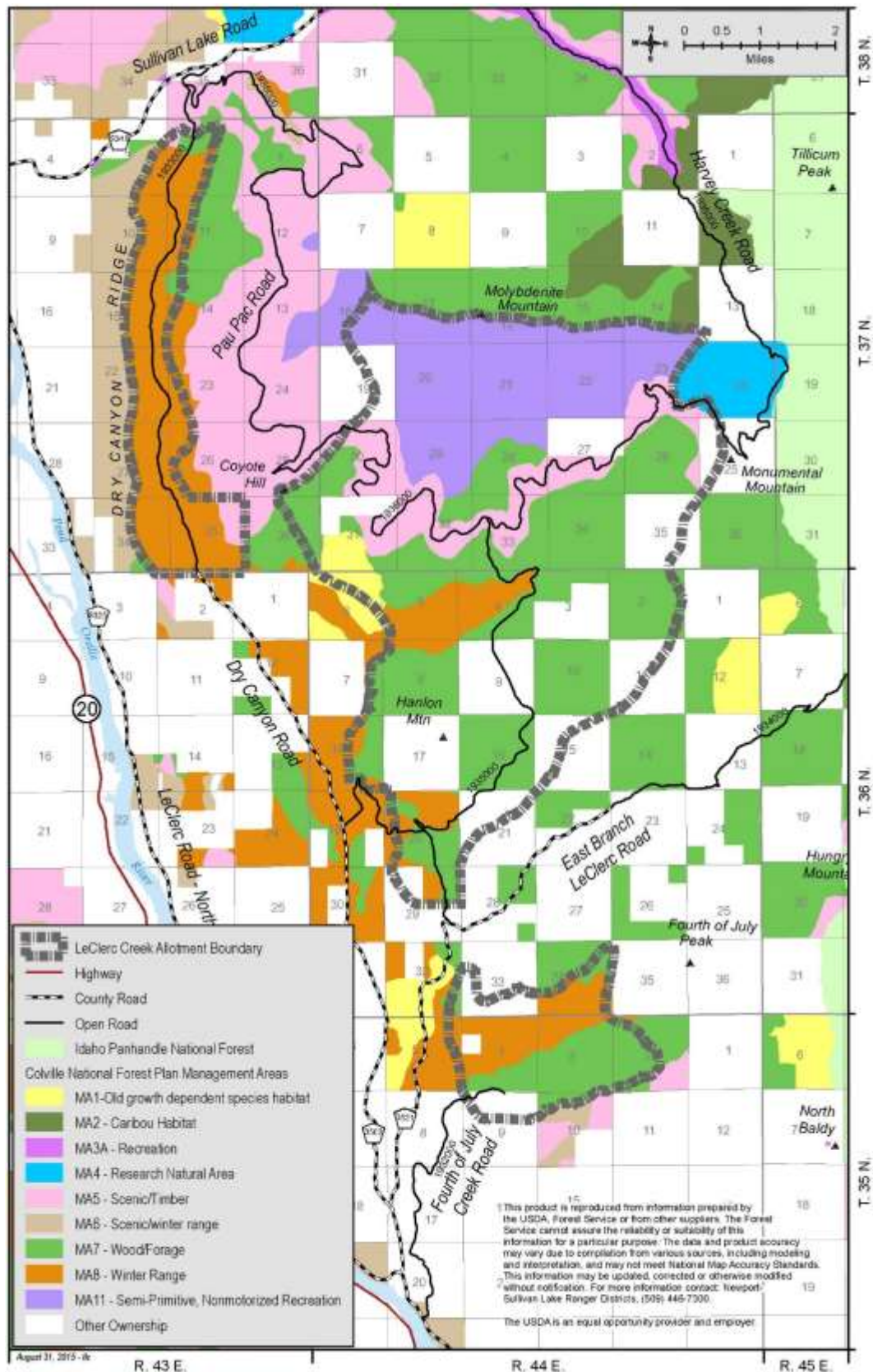


Figure A-1. LeClerc Creek Allotment management areas

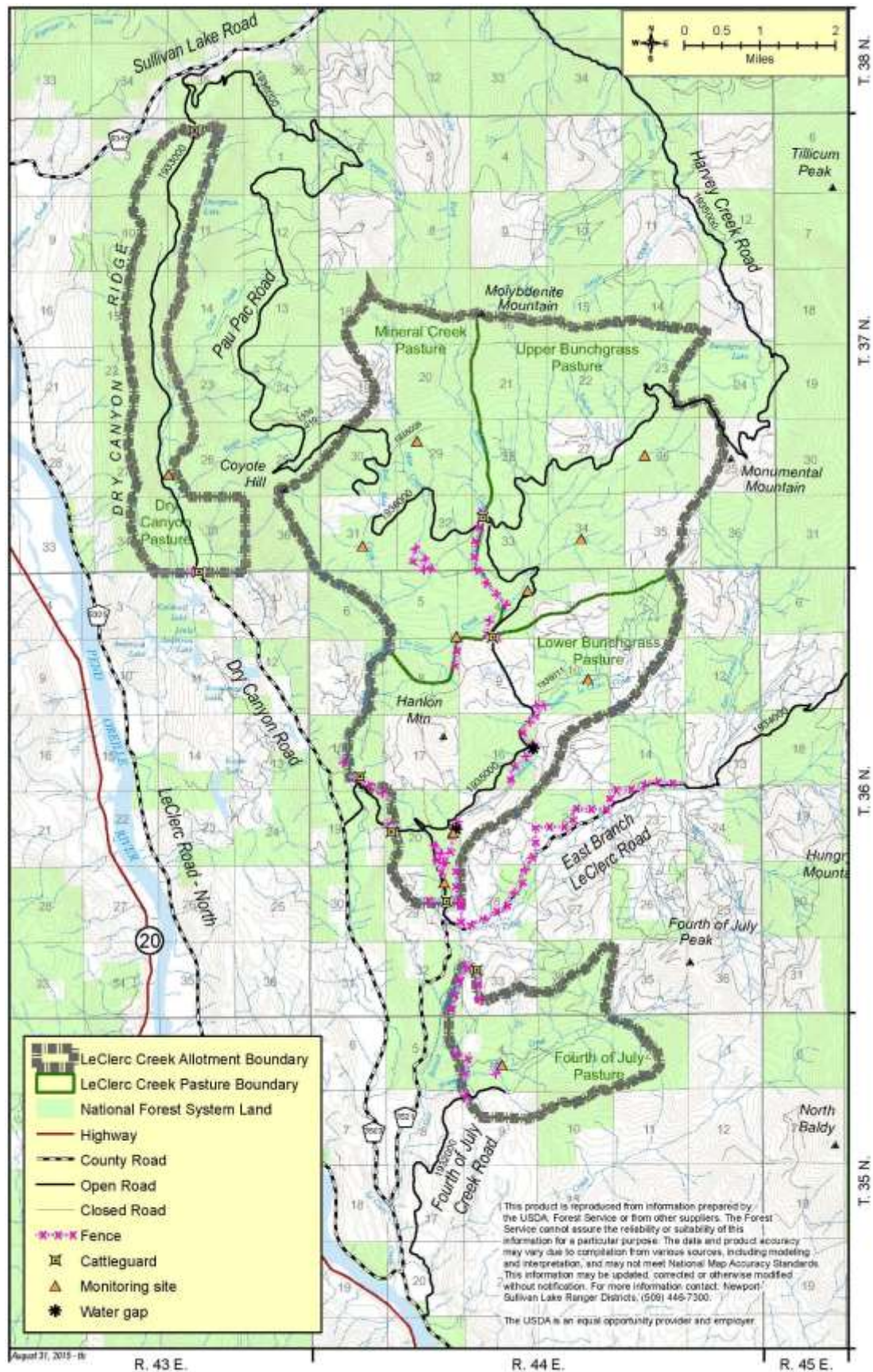


Figure A-2. LeClerc Creek Allotment existing condition

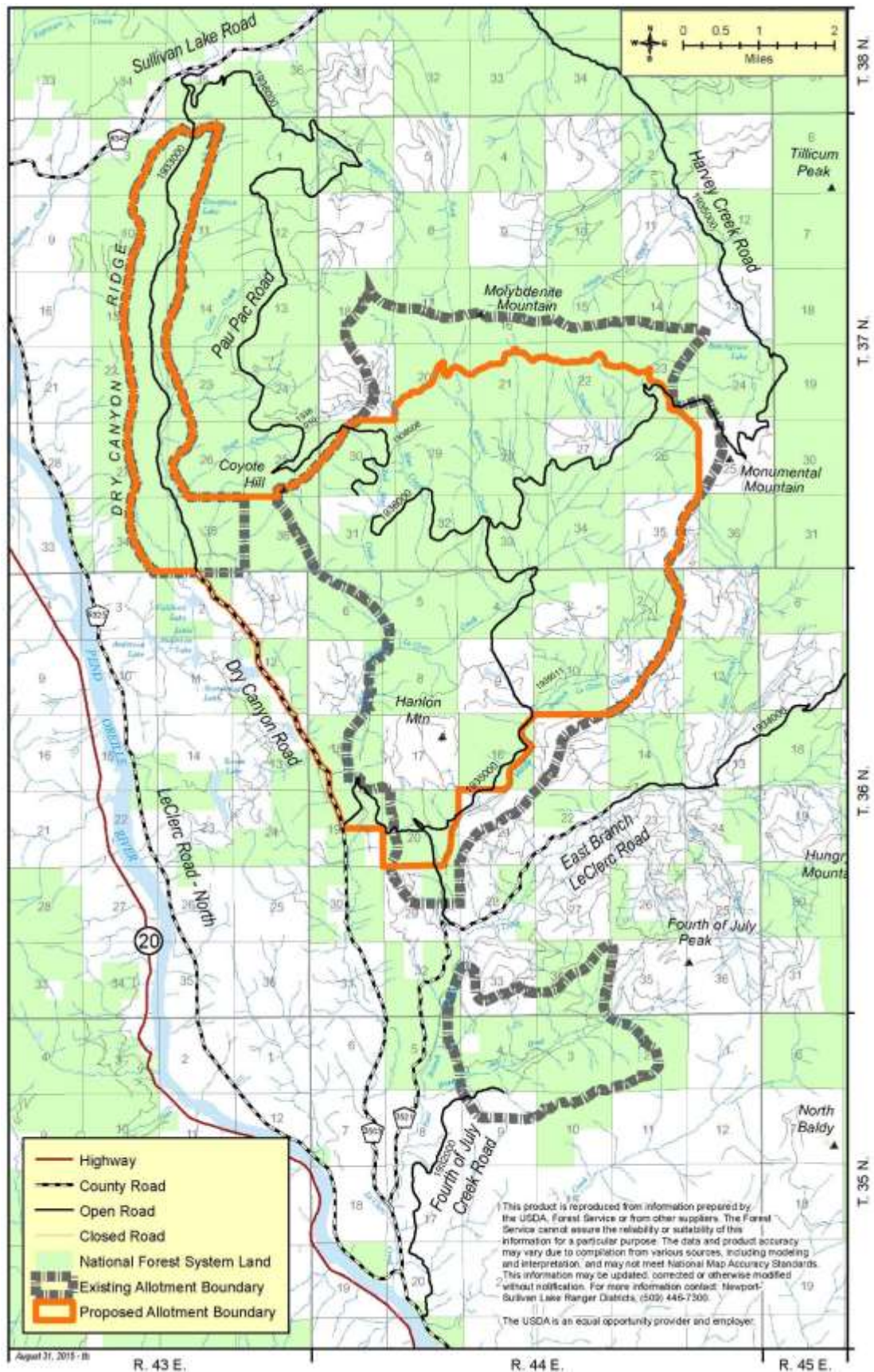


Figure A-3. LeClerc Creek Allotment Alternative C proposed boundary changes

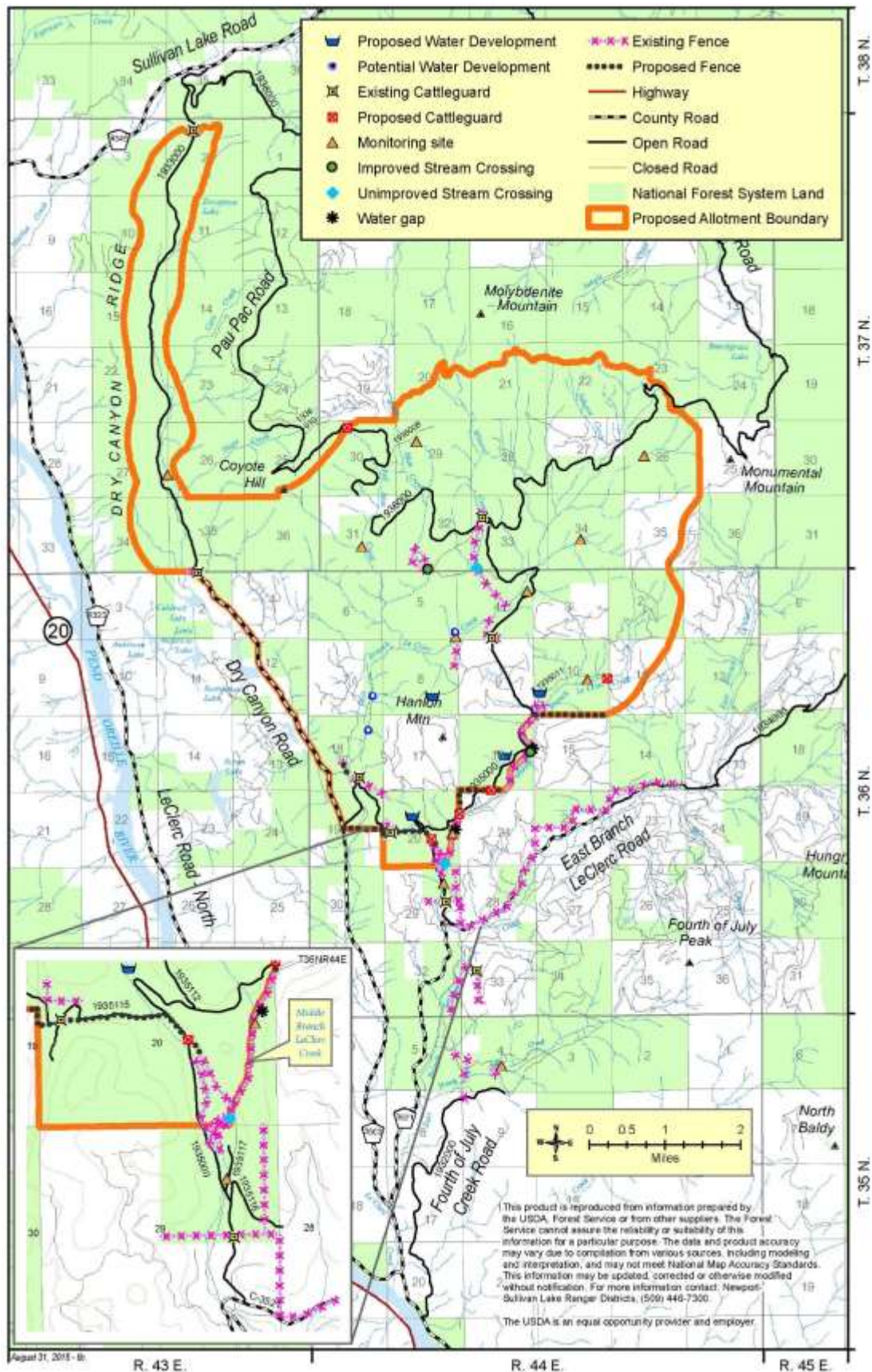


Figure A-4. LeClerc Creek Allotment Alternative C proposed range improvements

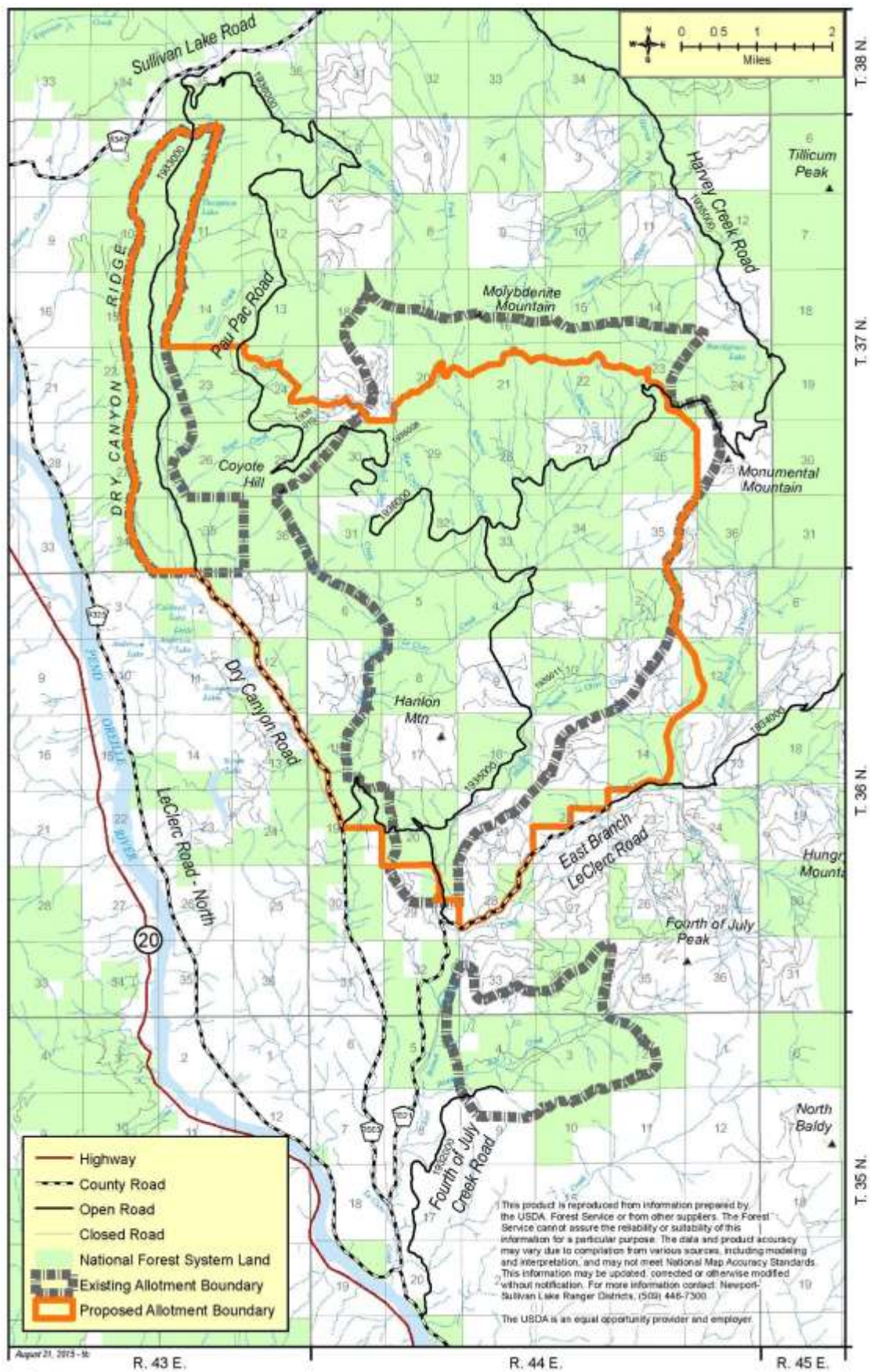


Figure A-5. LeClerc Creek Allotment Alternative D proposed boundary changes

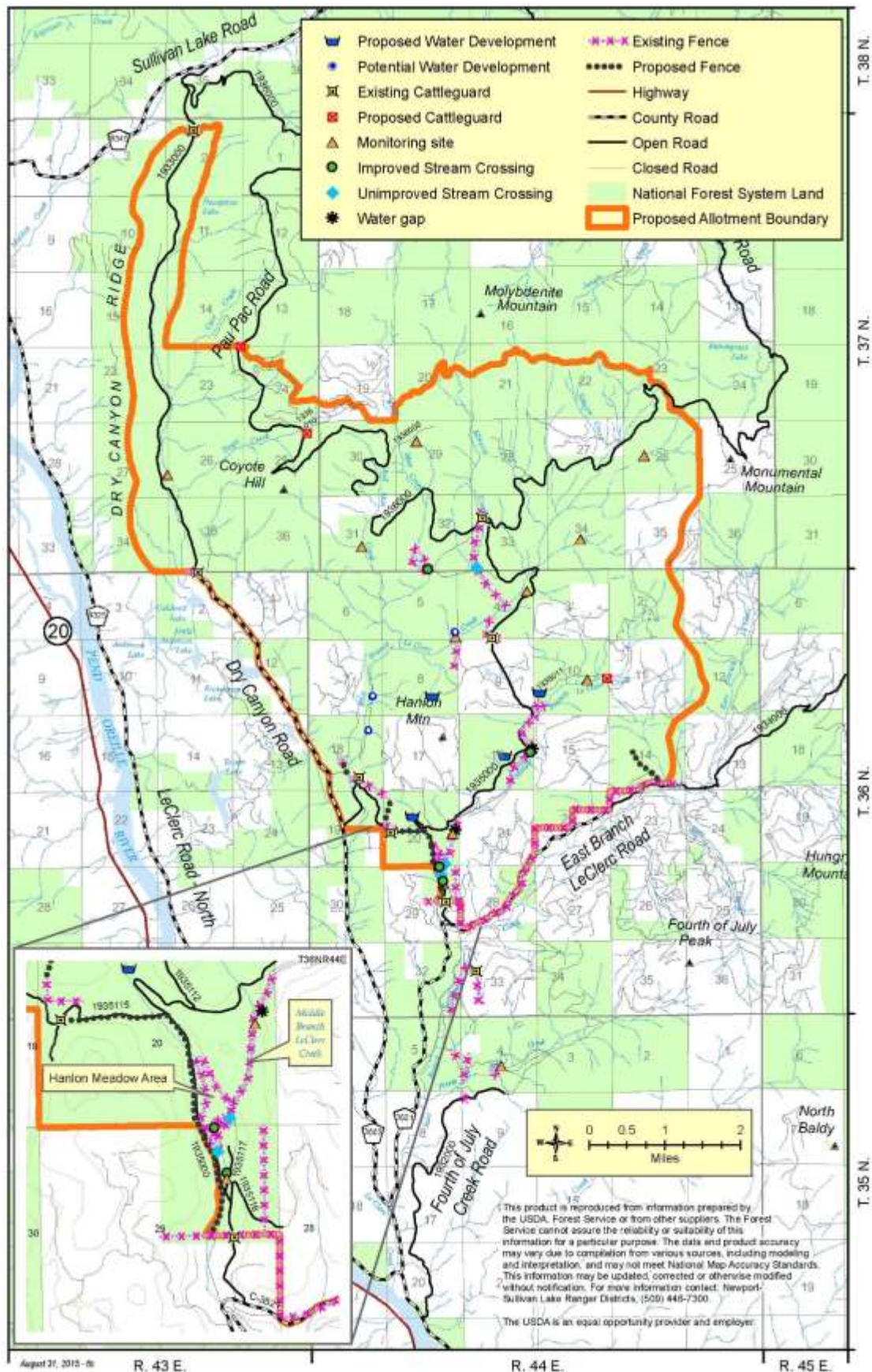


Figure A-6. LeClerc Creek Allotment Alternative D proposed range improvements

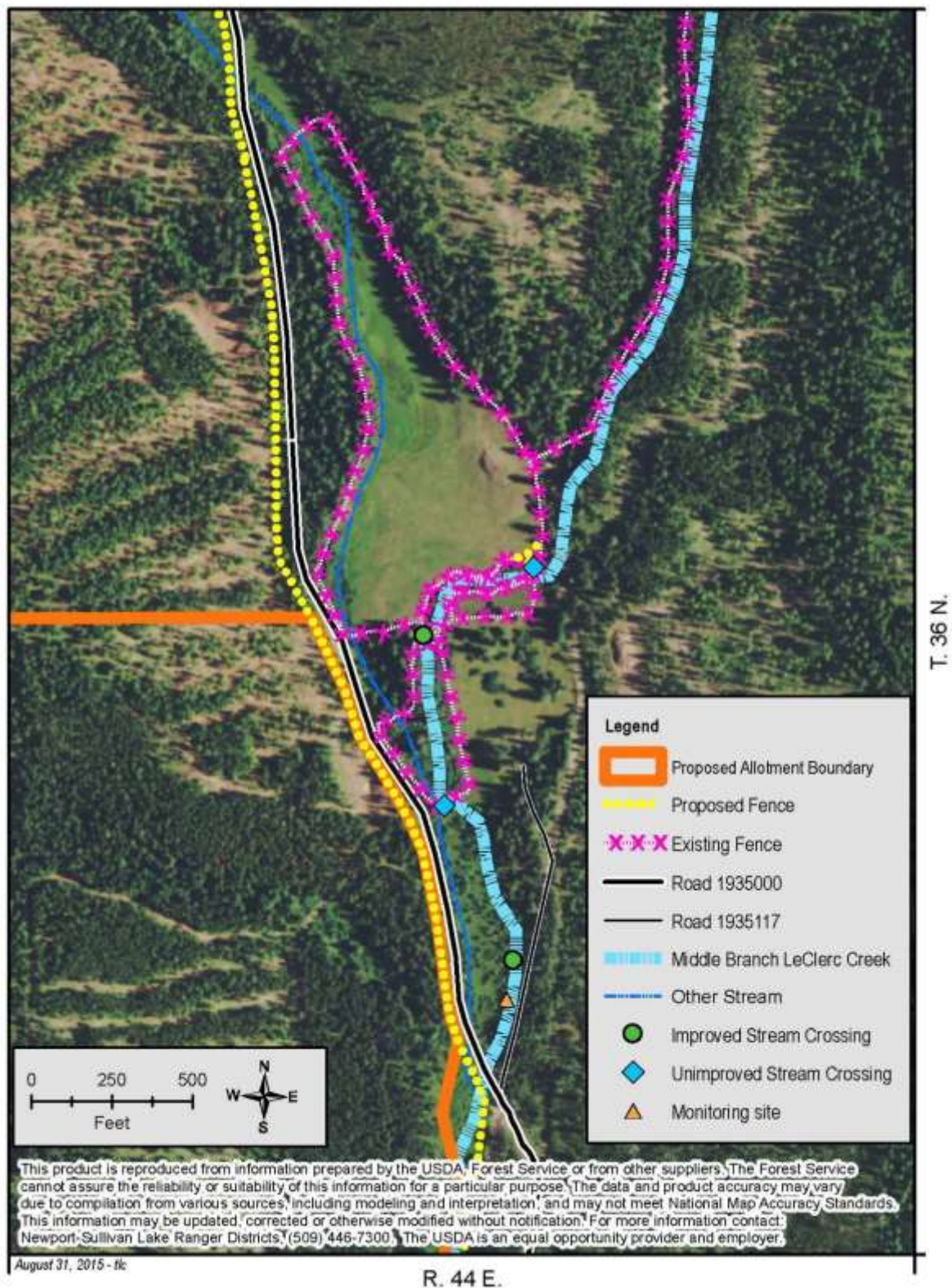


Figure A-7. LeClerc Creek Allotment Alternative D proposed Hanlon Meadow pasture

Appendix B: Best Management Practices

High quality water is one of the most important natural resources coming from the National Forests. In addition to drinking water and other municipal needs, water on National Forest Service (NFS) lands is important to sustaining populations of fish and wildlife, providing various recreation opportunities, and providing supplies to meet agricultural and industrial needs across the country.

Preventing negative water quality impacts is more efficient and effective than attempting to restore the damage. To ensure water quality is protected, the Forest Service has developed procedures, methods and controls, consistent with federal and state requirements, to address potential pollutants and pollution at their source. Implementation and monitoring of Best Management Practices (BMPs) is the fundamental basis of the Forest Service water quality management program to protect, restore or mitigate water quality impacts from activities on NFS lands.

Forest Service Strategy

The Forest Service strategy for control of pollution is to apply appropriate BMPs using adaptive management principles. This strategy involves the application of approved BMPs, monitoring the implementation and effectiveness of the BMPs, and using the monitoring results to inform and improve management activities.

BMP Scope, Selection, and Design

The National Core BMPs were compiled from Forest Service manuals, handbooks, contract and permit provisions, and policy statements, as well as State or other organizations' BMP documents. The National Core BMPs are not intended to supersede or replace existing regional, State, forest, or grassland BMPs. Rather, the National Core BMPs provide a foundation for water quality protection on NFS lands and facilitate national BMP monitoring. The primary intent of the National Core BMPs is to carry out one of the Clean Water Act (CWA) purposes to maintain the chemical, physical, and biological integrity of the Nation's waters.

Water quality goals and objectives are established in the Forest Plan (see BMP Plan-1 Forest and Grassland Planning). These goals are specific to each individual National Forest or Grassland and meet or exceed applicable legal requirements including the Clean Water Act and state water quality regulations.

The project planning process starts when a project or resource management activity is proposed. When a project is initiated, the Responsible Official, usually the local District Ranger or Forest Supervisor, appoints an Interdisciplinary Team (IDT) to complete the appropriate environmental analysis as required by the National Environmental Policy Act (NEPA) to inform the decision on the project or activity.

BMPs are selected by the IDT to fit local conditions, resource values, and designated uses of water. Site-specific prescriptions are developed based on the proposed activity, water quality objectives, soils, topography, geology, vegetation, climate, and other site-specific factors. Selected BMPs and site-specific prescriptions are designed to avoid, minimize, or mitigate potential adverse impacts to soil, water quality, and/or riparian resources. The Responsible

Official considers the information provided by the IDT and makes a decision on which practices will be applied to the project. These final selected practices constitute the BMPs for the project.

BMP Monitoring

Implementation and effectiveness of applied BMPs are monitored in order to inform and improve future management activities. BMP implementation monitoring asks the question: “did we do what we said we were going to do?” BMP effectiveness monitoring evaluates if the BMPs were effective in meeting management objectives and protecting designated uses.

Projects to monitor specific monitoring sites are selected in a manner that results in objective and representative data on BMP implementation and effectiveness. Results of BMP monitoring are summarized in Forest or Grassland Plan monitoring reports.

In addition to BMP monitoring by the Forest Service, many states monitor BMP implementation and effectiveness on timber sale projects on NFS lands. These state audits are generally completed every three to five years, or annually in some states. The audit teams are comprised of state employees, Forest Service and other federal agency employees, representatives from the timber industry, and landowners. Selected timber sale projects on private and state lands are audited along with projects on NFS lands. In general, BMP implementation and effectiveness on NFS lands as rated by these state audit teams compares favorably with, and often exceeds, the BMP performance on private or state lands.

BMP Implementation Process

This part describes the Forest Service National Core Best Management Practices (BMPs). The National Core BMPs are grouped into the following resource categories:

Table 49. Core BMP Descriptions

Category	Description
Plan	General Planning Activity
AqEco	Aquatic Ecosystems Management Activities
Chem	Chemical Use Management Activities
Fac	Facilities and Nonrecreation Special Uses Management Activities
Fire	Wildland Fire Management Activities
Min	Minerals Management Activities
Range	Rangeland Management Activities
Rec	Recreation Management Activities
Road	Road Management Activities
Veg	Mechanical Vegetation Management Activities
Uses	Water Uses Management Activities

With the exception of the General Planning Activity being listed first, the sequence in which these resource categories are presented has no intended significance. Planning is important to managing potential management activity impacts to achieve water quality goals and objectives and therefore is listed first.

Each BMP is organized according to the format identified in the table below.

Table 50. BMP Format

Section	Description
Title	Includes the sequential number of the BMP within the resource category and title of the BMP.
Reference	Identifies the Forest Service Manual or Handbook direction pertinent to the BMP.
Objective	Describes the desired results or attainment of the BMP as it relates to maintaining chemical, physical, and biological water quality.
Explanation	Provides background information to provide context for the BMP. Describes criteria or standards used when applicable.
Practices	Lists recommended practices to achieve the BMP objectives.

The National Core BMPs cannot include all possible practices or techniques to address the range of conditions and situations on all NFS lands. **Each BMP in this document has a list of recommended practices that should be used, as appropriate or when required, to meet the objective of the BMP. Not all recommended practices will be applicable in all settings; and there may be other practices not listed in the BMP that would work as well, or better, to meet the BMP objective in a given situation.** The specific practices or methods to be applied to a particular project should be determined based on site evaluation, past experience, monitoring results, new techniques based on new research literature and other requirements. State BMPs, Forest Service regional guidance, Forest or Grassland Plans, BMP monitoring information and professional judgment should be used to develop site-specific prescriptions.

Acronyms Associated with the BMPs

AML – Abandoned Mine Lands	LID – Low Impact Design
AMP – Allotment Management Plan	MIST – Minimum Impact Suppression Tactics
AMZ – Aquatic Management Zone	MSDS – Material Safety Data Sheet
AOI – Annual Operating Instructions	MVUM – Motor Vehicle Use Map
ARBO – Aquatic Restoration Biological Opinion	NEPA – National Environmental Policy Act
BAER – Burned Area Emergency Response	NFMA – National Forest Management Act
BLM – Bureau of Land Management	NFS – National Forest System
BMP – Best Management Practice	NPDES – National Pollutant Discharge Elimination System
CFR – Code of Federal Regulations	NRCS – Natural Resources Conservation Service
COE – U.S. Army Corps of Engineers	OHV – Off Highway Vehicle
CWA – Clean Water Act	RMO – Road Management Objectives
CWE – cumulative watershed effects	ROS – Recreation Opportunity Spectrum
DSR – Damage Survey Report	SDWA – Safe Drinking Water Act
EPA – U.S. Environmental Protection Agency	SMZ – Streamside Management Zone
ERFO – emergency relief for federally owned roads	SPCC – Spill Prevention Control and Countermeasure
FERC – Federal Energy Regulatory Commission	TMDL – Total Maximum Daily Load
FLPMA – Federal Land Policy and Management Act	USDA – United States Department of Agriculture
FY – Fiscal Year	USDI – United States Department of Interior
FSH – Forest Service Handbook	USFS – United States Forest Service
FSM – Forest Service Manual	USGS – United States Geological Survey
IDT – Interdisciplinary Team	WDFW – Washington Department of Fish and Wildlife
IMT – Incident Management Team	

Site Specific Best Management Practices for the LeClerc Grazing Allotment Project

Plan-1	Forest and Grassland Planning
Plan-2	Project Planning and Analysis
Plan-3	Streamside Management Zone and Planning
AqEco-1	Aquatic Ecosystem Improvement and Restoration Planning
AqEco-2	Operations in Aquatic Ecosystems
AqEco-3	Ponds and Wetlands
AqEco-4	Stream Channels and Shorelines
Range-1	Rangeland Management Planning
Range-2	Rangeland Permit Administration
Range-3	Rangeland Improvements
Road-3	Road Construction and Design
Road-6	Road Storage and Decommissioning
Road-7	Stream Crossings
WatUses-1	Water Uses Planning
WatUses-3	Administrative Water Developments
WatUses-4	Water diversions and Conveyances

Plan-1. Forest and Grassland Planning

Manual or Handbook Reference:

Forest Service Manual (FSM) 1900, FSM 1920, Forest Service Handbook (FSH) 1909.12, and FSM 2511.

Objective:

Use the land management planning and decision making processes to incorporate direction for water quality management consistent with laws, regulation, and policy into land management plans.

Explanation:

The overall goal of managing NFS lands is to sustain the multiple uses of renewable resources in perpetuity; while maintaining the long-term productivity of the land. Federal laws, such as the National Forest Management Act and the CWA, provide additional goals to protect or maintain and improve or restore the quality of soil and water on NFS lands. These goals are codified as policy in the Forest Service manuals and handbooks.

Forest Service planning is an integrated process composed of discrete parts—the strategic plan, land management plans, and project and activity plans. The Forest Service Strategic Plan identifies long-term strategic priorities and is the basis for integrated delivery of the agency’s mission. The land management plan blends national and regional priorities from the strategic plan with local forest or grassland capability and needs. The land management plan establishes desired conditions to be achieved through management of NFS lands in the planning area to best meet the needs of the American people. The land management plan provides desired conditions, objectives, and guidance for site-specific project and activity decisions. Project-level plans describe on-the-ground projects and activities designed to achieve long-term objectives and desired conditions described in the land management plan while reflecting current local needs and issues.

The land management plan provides integrated direction for the management, protection, and use of all resources in the planning area under the principles of multiple use and sustained yield. In the land management plan, issues, concerns, and opportunities related to soil and water resources are resolved; desired conditions, goals, and objectives for soil, water, and riparian resources are established; and standards and guidelines for management of soil, water quality, and riparian resources are provided.

Practices:

- Establish desired conditions, goals, and objectives for soil, water quality, and riparian resources that contribute to the overall sustainability of social, economic, and ecological systems in the plan area consistent with established State or national water quality goals for the plan area.
 - Consider the water quantity, quality, location, and timing of flows needed to provide water supplies for municipal, agricultural, commercial, and industrial uses; hydropower generation; water recreation, transportation, and spiritual uses; aesthetic appreciation; and tourism to contribute to social and economic sustainability.
 - Consider the water quantity, quality, location, and timing of flows needed to provide the ecological conditions to support diversity of native and desired nonnative plants and animal species in the plan area to contribute to ecological sustainability.
- Include plan objectives to maintain or, where appropriate, improve or restore watershed conditions to achieve desired conditions of soil, water quality, and riparian resources.

- Consider watershed characteristics, current and expected environmental conditions (including climate change), and potential effects of land uses when determining suitability of NFS lands within the planning area for various uses.
- Include standards and guidelines to maintain and, where appropriate, improve over time the quality of soil, water resources, and riparian areas when implementing site-specific projects and activities.
 - ✓ Follow all applicable ARBO II restoration Categories (e.g. livestock fencing, stream crossings, off channel Livestock watering, and obtain all applicable water rights permit from the appropriate agencies prior to implementing new range improvements).
- Include monitoring questions and associated performance measures to address watershed condition and water quality goals and objectives.

Plan-2. Project Planning and Analysis

Manual or Handbook Reference:

FSM 1950, FSH 1909.15, and FSM 2524.

Objective:

Use the project planning, environmental analysis, and decision making processes to incorporate water quality management BMPs into project design and implementation.

Explanation:

The project planning, environmental analysis, and decision making process is the framework for incorporating water quality management BMPs into project design and implementation. The process should identify likely direct, indirect, or cumulative impacts from the proposed project or documents (plans, contracts, permits, etc.) should include site-specific BMP prescriptions to meet water quality objectives as directed by the environmental analysis. Project planning should ensure that activities are consistent with land management plan direction; State BMPs, floodplain, wetland, coastal zone; and other requirements including CWA 401 certification, CWA 402 permits, and CWA 404 permits; wilderness or wild and scenic river designations; and other Federal, State, and local rules and regulations.

Practices:

- Include watershed specialists (hydrologist, soil scientist, geologist, and fish biologist) and other trained and qualified individuals on the interdisciplinary team for project planning, environmental analysis, and decision making to evaluate onsite watershed characteristics and the potential environmental consequences of the proposed activity(s).
 - ✓ Site visit and design review by Forest Engineer, District Fish Biologist, and District Hydrologist shall be completed prior to implementation of range improvements.
 - ✓ Springs and associated riparian areas developed for trough use are to be inside an enclosure and troughs will not be allowed to overflow by returning excess water from diversion to stream outside of area of use and cattle influence.
 - ✓ Troughs will be monitored bi-annually (pre- and post-season) to maintain proper function of the trough, spring, and stream complex.
- Determine water quality management objectives for the project area.

- Identify water quality management desired conditions and objectives from the land management plan.
- Identify and evaluate the condition of water features in the project area (e.g., streams, lakes, ponds, reservoirs, wetlands, riparian areas, springs, groundwater-dependent ecosystems, recharge areas, and floodplains).
- Identify State-designated beneficial uses of waterbodies and the water quality parameters that are critical to those uses.
- Identify locations of dams and diversions for municipal or irrigation water supplies, fish hatcheries, stock water, fire protection, or other water uses within the project area.
- Identify any impaired (e.g., 303[d] listed) waterbodies in the project area and associated Total Maximum Daily Load (TMDL) analyses or other restoration plans that may exist.
- Identify threatened, endangered, or sensitive species in or near water, wetlands, and riparian areas in the project area and their habitat needs related to water quality.
- Determine potential or likely direct and indirect impacts to chemical, physical, and biological water quality, and watershed condition from the proposed activity.
 - Always assume hydrological connections exist between groundwater and surface water in each watershed, unless it can reasonably be shown none exist in a local situation.
 - Consider the impacts of current and expected environmental conditions such as atmospheric deposition and climate change in the project area when analyzing effects of the proposed activities.
 - Evaluate sources of water body impairment, including water quantity, stream flows, and water quality, and the likelihood that proposed activities would contribute to current or future impairment or restoration to achieve desired watershed conditions.
 - Identify and delineate unstable areas in the project area.
 - Identify soil limitations and productivity impacts of proposed activities.
 - Verify preliminary findings by inspecting the sites in the field.
 - Develop site-specific BMP prescriptions, design criteria, and mitigation measures to achieve water quality management objectives. Consult local, regional, State, or other agencies' required or recommended BMPs that are applicable to the activity.
 - Consider enhanced BMPs identified in a TMDL or other watershed restoration plan to protect impaired water bodies within the project area.

- Use site evaluations, professional experience, monitoring results, and land management plan standards, guidelines, and other requirements.
- Identify Federal, State, and local permits or requirements needed to implement the project. Examples include water quality standards, CWA 401 certification, CWA 402 permits (including storm water permits), CWA 404 permits, and Coastal Zone Management Act requirements.
- Plan to limit surface disturbance to the extent practicable while still achieving project objectives. Designate specific AMZs around water features in the project area (see BMP Plan-3 [AMZ Planning]).
- Design activities on or near unstable areas and sensitive soils to minimize management induced impacts.
- Use local direction and requirements for prevention and control of terrestrial and aquatic invasive species.
- Use suitable tools to analyze the potential for cumulative watershed effects (CWE) to occur from the additive impacts of the proposed project and past, present, and reasonably foreseeable future activities on NFS and neighboring lands within the project watersheds.
 - Consider the natural sensitivity or tolerance of the watershed based on geology, climate, and other relevant factors.
 - Consider the existing condition of the watershed and water quality as a reflection of past land management activities and natural disturbances.
 - Estimate the potential for adverse effects to soil, water quality, and riparian resources from current and reasonably foreseeable future activities on all lands within the watershed relative to existing watershed conditions.
 - Use land management plan direction; Federal, State, or local water quality standards; and other regulations to determine acceptable limits for CWE.
 - Modify the proposed project or activity as necessary by changing project design, location, and timing to reduce the potential for CWE to occur.
 - Consider including additional mitigation measures to reduce project effects.
 - Identify and implement opportunities for restoration activities to speed recovery of watershed condition before initiating additional anthropogenic disturbance in the watershed.
 - Coordinate and cooperate with other Federal, State, and private landowners in assessing and preventing CWE in multiple ownership watersheds.
- Integrate restoration and rehabilitation needs into the project plan.
 - Consider water quality improvement actions identified in a TMDL or other watershed restoration plan to restore impaired water bodies within the project area.

- Identify project-specific monitoring needs.
 - Site specific items include the following:
 - * Water related range improvements (i.e. stock troughs) initial implementation and bi-annual effectiveness monitoring.
 - * Road/stream crossings along NFS Road 193500 and NFS Road 1936000 to be monitored annually cattle impacts negatively affecting integrity of fill slopes at crossing sites.
- Document site-specific BMP prescriptions, design criteria, mitigation measures, and restoration, rehabilitation, and monitoring needs in the applicable National Environmental Policy Act (NEPA) documents, design plans, contracts, permits, authorizations, and operation and maintenance plans.
 - Delineate all protected or excluded areas, including, for example, AMZs and water bodies, 303(d) listed and TMDL water bodies, and municipal supply watersheds, on the project map.

Plan-3 Aquatic Management Zone Planning

Manual or Handbook Reference:

FSM 2526.

Objective:

To maintain and improve or restore the condition of land around and adjacent to waterbodies in the context of the environment in which they are located, recognizing their unique values and importance to water quality while implementing land and resource management activities.

Explanation:

The land around and adjacent to waterbodies plays an important ecologic role in maintaining the structure, function, and processes of the aquatic ecosystem. These areas provide shading, soil stabilization, sediment and water filtering, large woody debris recruitment, and habitat for a diversity of plants and animals. The quality and quantity of water resources and aquatic habitats may be adversely affected by ground-disturbing activities that occur on these areas. Because of the importance of these lands, various legal mandates have been established pertaining to management of these areas, including, but not limited to, those associated with floodplains, wetlands, water quality, endangered species, wild and scenic rivers, and cultural resources. Protection and improvement of soil, water, and vegetation are to be emphasized while managing these areas under the principles of multiple use and sustained yield. Riparian-dependent resources are to be given preferential consideration when conflicts among land use activities occur. Designation of a zone encompassing these areas around and adjacent to a waterbody is a common BMP to facilitate management emphasizing aquatic and riparian-dependent resources. These management zones are known by several common terms such as streamside management area or zone, riparian management area, stream environment zone, and water influence zone. For purposes of the National Core BMPs, these areas will be referred to as AMZs. AMZs are intended to be large enough to protect a waterbody and its associated beneficial uses and aquatic and riparian ecosystems. AMZs along streams and rivers may be linear swaths extending a prescribed distance from a bank, though widths are usually adjusted to include features such as riparian

vegetation and unstable landforms as well as critical floodplain components necessary to sustain water body integrity and protect beneficial uses. AMZ areas around wetlands, lakes, and other nonlinear features may be irregular in shape to encompass sensitive riparian areas and other water-dependent features. Local regulation often stipulates the area and extent of AMZs and may be listed in land management plans; biological opinions, evaluations, or assessments; and other regional or State laws, regulations, and policies. Virtually all States have BMPs that include AMZs, as do most land management plans.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using State BMPs, Forest Service regional guidance, land management plan direction, BMP monitoring information, and professional judgment.

- Proactively manage the AMZ to maintain or improve long-term health and sustainability of the riparian ecosystem and adjacent water body consistent with desired conditions, goals, and objectives in the land management plan.
 - Balance short-term impacts and benefits with long-term goals and desired future conditions, considering ecological structure, function, and processes, when evaluating proposed management activities in the AMZ.
- Determine the width of the AMZ for waterbodies in the project area that may be affected by the proposed activities:
 - Evaluate the condition of aquatic and riparian habitat and beneficial riparian zone functions and their estimated response to the proposed activity in determining the need for and width of the AMZ.
 - Use stream class and type, channel condition, aspect, side slope steepness, precipitation and climate characteristics, soil erodibility, slope stability, groundwater features, and aquatic and riparian conditions and functions to determine appropriate AMZ widths to achieve desired conditions in the AMZ.
 - Include riparian vegetation within the designated AMZ and extend the AMZ to include steep slopes, highly erodible soils, or other sensitive or unstable areas.
 - Establish wider AMZ areas for waters with high resource value and quality.
- Design and implement project activities within the AMZ to:
 - Avoid or minimize unacceptable impacts to riparian vegetation, groundwater recharge areas, steep slopes, highly erodible soils, or unstable areas.
 - Maintain or provide sufficient ground cover to encourage infiltration, avoid or minimize erosion, and to filter pollutants.
 - Avoid, minimize, or restore detrimental soil compaction.
 - Retain trees necessary for shading, bank stabilization, and as a future source of large woody debris.

- Retain floodplain function.
- Restore existing disturbed areas that are eroding and contributing sediment to the water body.
- Mark the boundaries of the AMZ and sensitive areas like riparian areas, wetlands, and unstable areas on the ground before land disturbing activities.

AqEco-1. Aquatic Ecosystem Improvement and Restoration Planning

Manual or Handbook Reference:

Forest Service Manual (FSM) 2020.

Objective:

Reestablish and retain ecological resilience of aquatic ecosystems and associated resources to achieve sustainability and provide a broad range of ecosystem services.

Explanation:

Every water body has unique characteristics that should be considered when developing a site specific maintenance, improvement, or restoration strategy. Planning is critical to ensure that the project is conducted in a timely and cost-efficient manner and that the ecological and water quality goals are met. A rigorous approach that uses a combination of best available science and professional experience to inform planning is necessary to enhance the potential for long-term success. When planning aquatic ecosystem projects, it is important to understand all the factors that may affect the watershed currently and in the future. These factors include water quantity, quality, flow, or storage capacity; habitat suitability for native plants, fish, and wildlife; climate change; the primary uses of the watershed and water body by people, domestic animals, and wildlife; and past alterations to the water body.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using State BMPs, Forest Service regional guidance, land management plan direction, BMP monitoring information, and professional judgment.

- Use a watershed perspective and available watershed assessments when planning aquatic ecosystem improvement or restoration projects.
 - Consider how existing water quality and habitat conditions at the project site have been affected by past habitat alterations, hydrologic modification, and riparian area changes in the watershed.
 - Consider how past, current, and future land use patterns may affect the proposed project site.
 - Recognize that inhabitants and users at the site (beaver, deer, birds, and people) may change the current ecosystem state to suit their needs.

- Use desired future conditions to set project goals and objectives.
 - Establish desired future conditions that are consistent with the land management plan's goals and direction.
 - Use a reference condition to determine the natural potential water quality and habitat conditions of a water body.
 - Consider the potential for future changes in environmental conditions, such as changes in precipitation and runoff type, magnitude and frequency, community composition and species distribution, and growing seasons that may result from climate change.
 - Consider water quality and other habitat needs for sensitive aquatic or aquatic-dependent species in the project area.
- Favor project alternatives that correct the source of the degradation more than alternatives that mitigate, or treat symptoms of, the problem.
 - Consider the risk and consequences of treatment failure, such as the risk that design conditions could be exceeded by natural variability before the treatment measures are established, when analyzing alternatives.
 - Consider as a first priority treatment measures that are self-sustaining or that reduce requirements for future intervention.
- Use natural stabilization processes consistent with stream type and capability where practicable rather than structures when restoring damaged stream banks or shorelines.
- Prioritize sites to implement projects in a sequence within the watershed in such a way that they will be the most effective to achieve improvement or restoration goals.

AqEco-2. Operations in Aquatic Ecosystems

Manual or Handbook Reference:

None known.

Objective:

Avoid, minimize, or mitigate adverse impacts to water quality when working in aquatic ecosystems.

Explanation:

Common construction or maintenance operations in waterbodies often involve ground disturbance. The close proximity to, and contact with, the waterbody increases the potential for introducing sediment and other pollutants that can affect water quality. This BMP includes practices for minimizing direct and indirect water quality impacts when working in or adjacent to waterbodies.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using State BMPs, Forest Service regional guidance, land management plan direction, BMP monitoring information, and professional judgment.

- Use applicable practices of BMP Plan-2 (Project Planning and Analysis) and BMP Plan-3 (AMZ Planning) when planning operations in aquatic ecosystems.
- Identify the aquatic and aquatic-dependent species that live in the waterbody, Aquatic Management Zone (AMZ), or on the floodplain and their life histories to determine protection strategies, such as timing of construction, sediment management, species relocation, and monitoring during construction.
- Coordinate stream channel, shoreline, lake, pond, and wetland activities with appropriate State and Federal agencies.
 - Incorporate Clean Water Act (CWA) 404 permit requirements and other Federal, State, and local permits or requirements into the project design and plan.
- Use suitable measures to protect the waterbody when preparing the site for construction or maintenance activities.
 - Clearly delineate the work zone.
 - Locate access and staging areas near the project site but outside of work area boundaries, AMZs, wetlands, and sensitive soil areas.
 - Refuel and service equipment only in designated staging areas (see BMP Road-10 [Equipment Refueling and Servicing]).
 - Develop an erosion and sediment control plan to avoid or minimize downstream impacts using measures appropriate to the site and the proposed activity (see BMP Fac-2 [Facility Construction and Stormwater Control]).
 - Prepare for unexpected failures of erosion control measures.
 - Consider needs for solid waste disposal and worksite sanitation.
 - Consider using small, low ground pressure equipment, and hand labor where practicable.
 - Ensure all equipment operated in or adjacent to the waterbody is clean of aquatic invasive species, as well as oil and grease, and is well maintained.
 - Use vegetable oil or other biodegradable hydraulic oil for heavy equipment hydraulics wherever practicable when operating in or near water.
- Schedule construction or maintenance operations in waterbodies to occur in the least critical periods to avoid or minimize adverse effects to sensitive aquatic and aquatic-dependent species that live in or near the waterbody.
 - Avoid scheduling instream work during the spawning or migration seasons of resident or migratory fish and other important life history phases of sensitive species that could be affected by the project.

- Avoid scheduling instream work during periods that could be interrupted by high flows.
 - Consider the growing season and dormant season for vegetation when scheduling activities within or near the waterbody to minimize the period of time that the land would remain exposed, thereby reducing erosion risks and length of time when aesthetics are poor.
- Use suitable measures to protect the waterbody when clearing the site.
 - Clearly delineate the geographic limits of the area to be cleared.
 - Use suitable drainage measures to improve the workability of wet sites.
 - Avoid or minimize unacceptable damage to existing vegetation, especially plants that are stabilizing the bank of the waterbody.
- Use suitable measures to avoid or minimize impacts to the waterbody when implementing construction and maintenance activities.
 - Minimize heavy equipment entry into or crossing water as is practicable.
 - Conduct operations during dry periods.
 - Stage construction operations as needed to limit the extent of disturbed areas without installed stabilization measures.
 - Promptly install and appropriately maintain erosion control measures.
 - Promptly install and appropriately maintain spill prevention and containment measures.
 - Promptly rehabilitate or stabilize disturbed areas as needed following construction or maintenance activities.
 - Stockpile and protect topsoil for reuse in site re-vegetation.
 - Minimize bank and riparian area excavation during construction to the extent practicable.
 - Keep excavated materials out of the waterbody.
 - Use only clean, suitable materials that are free of toxins and invasive species for fill.
 - Properly compact fills to avoid or minimize erosion.
 - Balance cuts and fills to minimize disposal needs.
 - Remove all project debris from the waterbody in a manner that will cause the least disturbance.

- Identify suitable areas offsite or away from waterbodies for disposal sites before beginning operations.
- Contour site to disperse runoff, minimize erosion, stabilize slopes, and provide a favorable environment for plant growth.
- Use suitable species and establishment techniques to re-vegetate the site in compliance with local direction and requirements per FSM 2070 and FSM 2080 for vegetation ecology and prevention and control of invasive species.
- Use suitable measures to divert or partition channelized flow around the site or to dewater the site as needed to the extent practicable.
 - Remove aquatic organisms from the construction area before dewatering and prevent organisms from returning to the site during construction.
 - Return clean flows to channel or waterbody downstream of the activity.
 - Restore flows to their natural stream course as soon as practicable after construction or before seasonal closures.
- Inspect the work site at suitable regular intervals during and after construction or maintenance activities to check on quality of the work and materials and identify need for mid-project corrections.
- Consider short- and long-term maintenance needs and unit capabilities when designing the project.
 - Develop a strategy for providing emergency maintenance when needed.
- Include implementation and effectiveness monitoring to evaluate success of the project in meeting design objectives and avoiding or minimizing unacceptable impacts to water quality.
- Consider long-term management of the site and nearby areas to promote project success.
 - Use suitable measures to limit human, vehicle, and livestock access to site as needed to allow for recovery of vegetation.

AqEco-3. Ponds and Wetlands

Manual or Handbook Reference:

None known.

Objective:

Design and implement pond and wetlands projects in a manner that increases the potential for success in meeting project objectives and avoids, minimizes, or mitigates adverse effects to soil, water quality, and riparian resources.

Explanation:

Ponds and wetlands are developed for a variety of reasons including recreation, water sources, stock ponds, gravel extraction, wetland mitigation, and wildlife improvement. The excavation of material and construction of berms, dikes, dams, channels, wildlife water sources, and waterfowl

nesting islands have the potential to introduce sediment and other pollutants into adjacent waterbodies, alter flows, and cause physical damage to the ponds and adjacent stream channels both during and after construction. Constructing the projects to withstand potential overflow and flooding is a primary consideration during project planning and design.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using State BMPs, Forest Service regional guidance, land management plan direction, BMP monitoring information, and professional judgment.

- Use applicable practices of BMP AqEco-2 (Operations in Aquatic Ecosystems) when working in or near waterbodies.
- Obtain and manage water rights.
- Clearly define goals and objectives in the project plan appropriate to the site for desired hydrology, wetland plant community associations, intended purpose, and function of the pond or wetland and expected values.
- Select sites based on an analysis of landscape structure and associated ecological functions and values.
 - Construct ponds and wetlands on sites that have easy construction access where practicable.
 - Construct wetlands in landscape positions and soil types capable of supporting desired wetland functions and values.
 - Construct ponds outside of active floodplain to minimize overflow of groundwater-fed ponds into adjacent streams and avoid or minimize erosion of pond embankments by floods, unless location in the floodplain is integral to achieving project objectives.
 - Construct ponds with surface water supply off-channel rather than placing a dam across a stream.
 - Construct ponds and wetlands on sites with soils suitable to hold water with minimal seepage loss and that provide a stable foundation for any needed embankments.
 - Construct ponds and wetlands in locations where polluted surface water runoff or groundwater discharge do not reach the pond.
 - Consider the consequences of dam or embankment failure and resulting damage from sudden release of water on potentially affected areas.
- Ensure that the natural water supply for the pond or wetland is sufficient to meet the needs of the intended use and that it will maintain the desired water levels and water quality.
 - Design the wetland to create hydrologic conditions (including the timing of inflow and outflow, duration, and frequency of water level fluctuations) that provide the desired wetland functions and values.

- Avoid or minimize drawdown effects in a stream source by limiting timing and rate of water withdrawal to allow sufficient downstream water flow to maintain desired conditions in the source stream (see BMP WatUses-1 [Water Uses Planning]).
- Design the wetland project to create a biologically and hydrologically functional system.
 - Design for function, not form.
 - Keep the design simple and avoid over engineering.
 - Design the project for minimal maintenance needs.
 - Use natural energies, such as gravity flow, in the design.
 - Avoid use of hard engineering structures or the use of supplemental watering to support system hydrology.
 - Plan to allow wetland system time to develop after construction activities are complete.
 - Design the pond or wetland to be of sufficient size and depth appropriate for the intended use and to optimize hydrologic regimes and wetland plant community development.
 - Size the pond or wetland appropriately for the contributing drainage area such that a desired water level can be maintained during drought conditions and that excess runoff during large storms can be reasonably accommodated without constructing large overflow structures.
 - Size the pond or wetland to an adequate depth to store sufficient amounts of water for the intended use and offset probable evaporation and seepage losses.
 - Integrate design with the natural topography of the site to minimize site disturbance.
 - Design the pond or wetland to have an irregular shape to reduce wind and wave impacts, disperse water flows, maximize retention times, and better mimic natural systems.
 - Create micro-topography and macro-topography in wetlands to mimic natural conditions and achieve hydrologic and vegetative diversity.
 - Avoid creating large areas of shallow water to minimize excessive evaporation losses and growth of noxious aquatic plants.
 - Avoid steep-sloped shorelines in areas with potential substrate instability problems to reduce erosion and sedimentation.
- Include water control structures to manage water levels as necessary.
 - Design spillway or outlet to maintain desired water level under normal inflows from snowmelt, groundwater flow, and precipitation.

- Design discharge capacity using a suitable hydrologic analysis of the drainage area to be sufficient to safely pass the flow resulting from the design storm event.
- Size the spillway to release floodwaters in a volume and velocity that do not erode the spillway, the area beyond the outlet, or the downstream channel.
- Consider the need for suitable measures to drain the pond or wetland.
- Return overflow back to the original source to the extent practicable.
- Use suitable measures to maintain desired downstream temperatures, dissolved oxygen levels, and aquatic habitats when water is released from the pond or impoundment.
- Use materials appropriate for the purpose of the pond and site.
 - Select materials for a dam or embankment that will provide sufficient strength and, when properly compacted, will be tight enough to avoid or minimize excessive or harmful percolation of water through the dam or embankment.
 - Design the side slopes appropriately for the material being used to ensure stability of the dam or embankment.
- Use wetland vegetation species and establishment methods suitable to the project site and objectives, consistent with local direction and requirements per FSM 2070 and FSM 2080 for vegetation ecology and prevention and control of invasive species.
 - Consider the timing of planting to achieve maximum survival, proposed benefit of each plant species, methods of planting, proposed use of mulch, potential soil amendment (organic material or fertilizer), and potential supplemental watering to help establish the plant community.
- Properly maintain dams, embankments, and spillways to avoid or minimize soil erosion and leakage problems.
 - Use suitable measures to avoid or minimize erosion of dams and shores due to wind and wave action.
 - Design sufficient freeboard to avoid or minimize overtopping by wave action or other causes.
 - Stabilize or armor spillways for ponds with continuous flow releases or overflow during heavy rainfall events.
- Manage uplands and surrounding areas to avoid or minimize unacceptable impacts to water quality in the pond or wetland.

AqEco-4. Stream Channels and Shorelines

Manual or Handbook Reference:

None known.

Objective:

Design and implement stream channel and lake shoreline projects in a manner that increases the potential for success in meeting project objectives and avoids, minimizes, or mitigates adverse effects to soil, water quality, and riparian resources.

Explanation:

Instream projects are often conducted for a variety of purposes, including improving fish and wildlife habitat, stabilizing streambanks, reconnecting the stream channel to the historic floodplain, and removing or replacing culverts. Lakeshores may be degraded by storm events; constant wave action from boats; onshore uses, including recreation, mining, vegetation management, and development; water diversions; freezing and thawing; floating ice; drought; or a fluctuating water table. A shoreline problem is often isolated and may require only a simple patch repair. Methods to stabilize or restore lakeshores differ from streambank measures because of wave action and littoral transport. Two basic categories of stabilization and protection measures exist: those that work by reducing the force of water against a streambank or shoreline and those that increase their resistance to erosive forces. Appropriate selection and application of stream channel and shoreline protection measures depend on specific project objectives and site conditions.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using State BMPs, Forest Service regional guidance, land management plan direction, BMP monitoring information, and professional judgment.

All Activities

- Use applicable practices of BMP AqEco-2 (Operations in Aquatic Ecosystems) when working in or near water bodies.

Stream Channels

- Determine stream type and classification using suitable accepted protocols.
- Determine need to control channel grade to avoid or minimize erosion of channel bed and banks before selecting measures for bank stabilization or protection.
 - Incorporate grade control measures into project design as needed.
- Determine design flows based on the value or safety of area to be protected, repair cost, and the sensitivity and value of the ecological system involved.
 - Obtain peak flow, low flow, channel forming flow, and flow duration estimates.

- Use these estimates to determine the best time to implement the project, as well as to select design flows.
- Determine design velocities appropriate to the site.
 - Limit maximum velocity to the velocity that is non-scouring on the least resistant streambed and bank material.
 - Consider needs to transport bedload through the reach when determining minimum velocities.
 - Maintain the depth-area-velocity relationship of the upstream channel through the project reach.
 - Consider the effects of design velocities on desired aquatic organism habitat and passage.
- Avoid changing channel alignment unless the change is to reconstruct the channel to a stable meander geometry consistent with stream type.
- Design instream and streambank stabilization and protection measures suitable to channel alignment (straight reach versus curves).
 - Consider the effects of ice and freeze and thaw cycles on streambank erosion processes.
 - Consider the effects that structures may have on downstream structures and stream morphology, including streambanks, in the maintenance of a natural streambed.
- Design channels with natural stream pattern and geometry and with stable beds and banks; provide habitat complexity where reconstruction of stream channels is necessary.
 - Consider sediment load (bedload and suspended load) and bed material size to determine desired sediment transport rate when designing channels.
 - Avoid relocating natural stream channels.
 - Return flow to natural channels, where practicable.
 - Include suitable measures to protect against erosion around the edges of stabilization structures.
 - Design hardened Crossings to provide appropriate grade control, erosion protection (e.g. fence below and above crossing to discourage bypass route and prevent channel destabilization), and design for fish passage at low and high flows.
 - ✓ Whiteman Creek, Mineral Creek, and Middle Branch LeClerc Creek (Hanlon Meadow pasture) hardened crossing construction activities.

- a. To be completed within the fish work window per MOU with WDFW.
 - b. Old geo-grid material would be removed and disposed of off-site.
 - c. Fish Biologist and/or Hydrologist would review and approve design of new hardened crossing. Designs would include rock weirs for grade and streambed control, 2-3" rounded rock used to armor stream banks and bed, and bank armoring would extend up the banks to an elevation above bankfull width and to the edge of the riparian vegetation.
 - d. Complete fencing on north side of creek to facilitate cattle movement through constructed crossing inside Hanlon Meadow pasture at Middle Branch LeClerc Creek site.
- Design revetments and similar structures to include sufficient freeboard to avoid or minimize overtopping at curves or other points where high-flow velocity can cause waves.
- Use suitable measures to avoid or minimize water forces undermining the toe of the structure.
- Tie structures into stable anchorage points, such as bridge abutments, rock outcrops, or well-vegetated stable sections, to avoid or minimize erosion around the ends.
- Add or remove rocks, wood, or other material in streams only if such action maintains or improves stream condition, provides for safety and stability at bridges and culverts, is needed to avoid or minimize excessive erosion of streambanks, or reduces flooding hazard.
 - Leave rocks and portions of wood that are embedded in beds or banks to avoid or minimize channel scour and maintain natural habitat complexity.
- Choose vegetation appropriate to the site to provide streambank stabilization and protection adequate to achieve project objectives.
 - Use vegetation species and establishment methods suitable to the project site and objectives, consistent with local direction and requirements per FSM 2070 and FSM 2080 for vegetation ecology and prevention and control of invasive species.

Shorelines

- Use mean high- and low-water levels to determine the design water surface.
 - Consider the effects of fluctuating water levels, freeze or thaw cycles, and floating ice on erosion processes at the site.
- Design stabilization and protection measures suitable to the site.
 - Determine the shoreline slope configuration above and below the waterline.

- Consider the effects of offshore depth, dynamic wave height, and wave action on shoreline erosion processes.
 - Determine the nature of the bank soil material to aid in estimating erosion rates.
 - Consider foundation material at the site when selecting structural measures.
 - Use vegetation species and establishment methods suitable to the project site and objectives and consistent with local direction and requirements per FSM 2070 and FSM 2080 for vegetation ecology and prevention and control of invasive species.
- Consider the rate, direction, supply, and seasonal changes in littoral transport when choosing the location and design of structural measures.
- Consider the effect structures may have on adjacent shoreline or other nearby structures.
 - Adequately anchor end sections to existing stabilization measures or terminate in stable areas.

Range-1. Rangeland Management Planning

Manual or Handbook Reference:

Forest Service Manual (FSM) 2200 and Forest Service Handbook (FSH) 2209.13, chapter 90.

Objective:

Use the project-level National Environmental Policy Act (NEPA) planning process to develop measures to include in the Allotment Management Plan (AMP) to avoid, minimize, or mitigate adverse impacts to soil, water quality, and riparian resources from rangeland management activities.

Explanation:

Analysis of existing rangeland conditions and other resource values is conducted for each allotment as part of the project-level NEPA analysis and decision process for authorizing livestock grazing on NFS lands. The AMP is derived from the NEPA document and decision and is the primary document that guides implementation of land management plan direction for rangeland resources at the allotment (project) level. The AMP is included as part of the grazing permit and provides special management provisions, instructions, and terms and conditions for that permit.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using State BMPs, Forest Service regional guidance, land management plan direction, BMP monitoring information, and professional judgment.

- Use applicable practices of BMP Plan-2 (Project Planning and Analysis) and BMP Plan-3

- (Aquatic Management Zone [AMZ] Planning) when completing allotment management planning and analysis.
- Validate land management plan grazing suitability decisions for the allotment.
- Establish desired conditions for the allotment consistent with land management plan goals and objectives for water quality and AMZs.
 - Consider linkages between rangelands and soils, water quality, and riparian and aquatic systems when determining rangeland desired conditions.
 - Consider the ecological potential of riparian and aquatic systems when determining AMZ desired conditions.
- Evaluate current rangeland condition and trends using accepted protocols.
 - Review past management within the allotment.
- Determine management objectives and needs for livestock grazing and water resources affected by livestock grazing from management direction in the land management plan, biological opinions, or other binding direction and comparison of desired conditions with existing conditions.
- Identify potential management strategies and rangeland and riparian improvement needs to maintain or move resources in the allotment toward achieving desired conditions.
 - Establish management requirements such as the season of use, number, kind, class of livestock, and the grazing systems.
- Establish annual endpoint indicators of use (e.g., forage utilization, stubble height, streambank alteration, woody browse use) related to the desired conditions and triggers (thresholds) for management actions, such as modifying intensity, frequency, duration, and timing or excluding livestock use.
 - Set the indicator thresholds at levels suitable to maintain or achieve desired conditions for uplands, riparian areas, and aquatic ecosystems.
- Develop a monitoring strategy and plan for adaptive management of the allotment.
 - Use accepted protocols to evaluate compliance with annual indicators of use and other land management plan standards.
 - Use accepted protocols to evaluate ecological status and trend, including water quality, aquatic habitats, and beneficial uses.
- Document the following items from the project-level NEPA decision and analysis in the AMP, grazing permit, and Annual Operating Instructions (AOI):
 - Management objectives for livestock grazing and all resources affected by livestock grazing.

- Management requirements for livestock grazing in the allotment.
- Monitoring requirements to implement adaptive management in the allotment.
- Schedules for rehabilitating rangelands that do not meet land management plan objectives, initiating range improvements, and maintaining existing improvements (see BMP Range-3 [Rangeland Improvements]).

Range-2. Rangeland Permit Administration

Manual or Handbook Reference:

FSH 2209.13.

Objective:

Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources when managing rangeland vegetation and livestock grazing through administration and monitoring of grazing permits and AOI. Per the 1988 Washington state approved BMPs, Soil and water resources will be protected through management of livestock numbers and season of use (USFS, 1988).

Explanation:

Improper grazing can adversely affect the watershed condition in several ways. Loss of effective ground cover in the uplands leads to increases in overland flow and peak runoff. Soil compaction, loss of ground cover, and reduced plant vigor in riparian areas decreases the ability of the riparian area to filter pollutants and function as a floodplain. Streambank trampling increases stream channel width/depth ratio, resulting in a change in stream type and a lowering of the water table. Wider and shallower streams have higher stream temperatures and lower dissolved oxygen content and are often unable to move the sediment load effectively, resulting in increased flooding and bank stress. Introducing sediment, nutrients, and pathogens into water bodies from grazing can lower water quality. Managing livestock numbers, distribution, timing, and season of use can reduce the potential for these impacts. A grazing permit is used to authorize livestock grazing on NFS lands. The permit delineates the area to be grazed and defines the number, kind, and class of livestock to be grazed and the season of use. The special terms and conditions in the permit contain required management practices from the project-level NEPA decision to avoid, minimize, or mitigate effects to water quality and other resource values. The permit and AMP also include monitoring requirements to evaluate compliance with standards and determine long-term trends in range condition. AOI issued to the grazing permittee specify those annual actions needed to implement the management direction set forth in the project-level NEPA-based decision. The AOI identify the obligations of the permittee and the Forest Service and clearly articulate annual grazing management requirements, standards, and monitoring necessary to document compliance. The permittee carries out the terms and conditions of the permit under the immediate direction and supervision of the district ranger.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using State BMPs, Forest Service regional guidance, land management plan direction, BMP monitoring information, and professional judgment.

- Conduct implementation and effectiveness monitoring as specified in the AMP.
- Monitor water quality, habitat, or other designated beneficial uses of water as necessary (e.g. 303(d) listed streams, required terms of Biological Opinions).
- Use monitoring results as an adaptive management feedback loop to revise, if necessary, annual grazing requirements in the AOI to account for current allotment conditions and trends.
- Use results of annual compliance monitoring and periodic trend monitoring, as well as forage utilization by wildlife and recreational livestock, to determine allowable annual amount of livestock use to meet rangeland and AMZ desired conditions.
- Adjust livestock numbers, season of use, and distribution when monitoring and periodic assessments indicate consistent noncompliance with permit provisions.
 - Use suitable range management tools to alter livestock distribution.
 - Consider resting (placing an area in nonuse status for a period of time) a pasture or an allotment to allow for natural recovery of resource conditions.
- Document adaptive management actions such as allowable use, the planned sequence of grazing on the allotment, and any other operational changes in the AOI.
 - Modify the AMP and terms and conditions in the grazing permit for adaptive management actions that become consistent over a period of years or grazing rotations.
 - Permission to turn out must be obtained from the Forest Officer at least five (5) days in advance. Livestock entry onto the allotment or into a specific pasture will not be permitted until:
 - a. Soils are dry enough to prevent damage.
 - b. Key plant species are ready to withstand grazing.
 - The off-date for a pasture is when stock are to be fully out of the pasture, or in the case of the last pasture in the rotation, fully off the Forest. It may be necessary to begin gathering early or hire additional riders to achieve this.
 - If implementation standards are reached on key areas prior to the scheduled move/turn off date, livestock will be required to move to the next pasture or off the Forest earlier than scheduled.
 - Livestock numbers, season of use, and movement may be adjusted each year through the Annual Operating Instructions to allow for resource management needs.
 - Adjustments to livestock numbers, season of use, and movement may also be made during implementation to respond to resource conditions that develop as the season progresses. These conditions may include: drought, wildfire,

achievement of key plant species utilization levels, stubble height, etc. The type of mitigation used will be determined by the Forest Officer in charge, based on the degree of the problem and its cause. If mitigation activities do not achieve desired results, additional action will be taken (for example, reductions in stocking or season of use in subsequent years).

- Modify, cancel, or suspend the permit in whole or in part, as needed, to ensure proper use of the rangeland resource and protection of water quality.
 - Use permit authorities to change operations to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources when special circumstances (e.g., drought) occur.
 - Preclude concentration of stock in areas that are sensitive to concentrated use and/or preclude prolonged use of an area, which will result in loss of vegetative cover and soil compaction.
 - ✓ In no case will salt be placed closer than ¼-mile to streams or other wetlands without prior approval. Salting and bedding areas will not be located within 300 feet of any known heritage resource site.
 - ✓ Project maps in Annual Operating Instructions will show current, inventoried, high priority, noxious weed infestations to be avoided and/or monitored.
 - ✓ Noxious weed prevention measures (as listed in the Noxious Weed Report located in the analysis file) will be incorporated in management plans where ground disturbance is likely. Information on noxious weed identification, methods of spread, and prevention measures will be provided to permittees in Annual Operating Instructions.
 - ✓ Retain appropriate age class and diversity of species composition of riparian vegetation to maintain stream shading and bank stabilization.

Range-3. Rangeland Improvements

Manual or Handbook Reference:

FSM 2240.

Objective:

Implement range improvements to maintain or improve soil, water quality, and riparian resources.

Explanation:

Rangeland improvements targeted at soil, water quality, and riparian resources are designed to protect or improve conditions of sensitive areas, streams, riparian areas, and wetlands and move these resources toward desired conditions. Improvements should emphasize protecting the beneficial uses in these areas. Improvements may supplement changes in annual use levels, seasonal use, distribution, and number, or other administrative actions. Development and maintenance of rangeland improvements can be the responsibility of either the permittee or the

Forest Service. The district ranger will ensure that the permittee is involved as a cooperator in rangeland improvements. The permittee may construct or maintain improvements under Forest Service direction, or Forest Service crews or contractors may construct or maintain improvements.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using State BMPs, Forest Service regional guidance, land management plan direction, BMP monitoring information, and professional judgment.

- Identify and evaluate range improvement needs for soil, water quality, and riparian resources during watershed analysis, watershed condition assessment, project-level rangeland NEPA, or other assessment efforts.
- Include and schedule improvement actions and maintenance in the AMP and grazing permit.
- Design, implement, and maintain structural and nonstructural range improvements to achieve or sustain desired conditions for the rangeland, soils, water quality, and riparian resources in the allotment as determined in the project-level NEPA decision.
 - Use rangeland vegetation species and establishment techniques suitable to the project site and objectives and consistent with local direction and requirements per FSM 2070 and FSM 2080 for vegetation ecology and prevention and control of invasive species.
 - Use applicable Chemical Use Activities BMPs when using chemicals to treat rangeland vegetation and control invasive species.
 - Use applicable practices of BMP Veg-8 (Mechanical Site Treatment) when implementing mechanical treatments of rangeland vegetation.
 - Use applicable practices of BMP Fire-2 (Use of Prescribed Fire) when using prescribed fire to improve rangeland vegetation and conditions.
 - Use applicable practices of BMP AqEco-3 (Ponds and Wetlands) and BMP AqEco-4 (Stream Channels and Shorelines) for improvement activities that involve waterbodies.
 - Use applicable practices of BMP WatUses-3 (Administrative Water Developments) when developing water sources for livestock watering.
 - Implement Barriers and riparian exclosures per Hanlon EA and as otherwise identified:
 - ✓ Riparian exclosures will be constructed to protect stream segments throughout the project area that exhibit over-utilization by livestock. Riparian vegetation would be supplemented with plantings grown from local seed sources or with cuttings from local stock.

- Implement West Branch LeClerc Creek barrier placement along stream reach located in T36R44sections 4, 5, 7, 8 to improve pasture rotation efforts. Initial vegetative barrier is recommended with annual monitoring to determine effectiveness. If additional measures are necessary, fencing will be implemented along these reaches.
- Monitor stream reaches in T36R44sections 18, 19 annually for stream bank alteration and channel degradation. Monitoring will determine if additional fencing and/or brush barriers are to be added. West Branch LeClerc Creek is not properly functioning and may be the focus area for aquatic restoration over a minimum of the next 10 years.
- Monitor upper Middle Branch LeClerc Creek stream reaches located in T36R44S10 annually for stream bank alteration and channel degradation. Hydrologist will locate up to 5 photo point sites and collect photos for this monitoring annually. Monitoring will determine if additional fencing and/or brush barriers are to be added to protect aquatic resources.
- Relocate PIBO monitoring site to reach with PIBO team agreement.
- Per proposed action, reroute cattle out/in of Hanlon Meadow pasture through northern entry to reduce riparian and wetland damage at current crossing sites and encourage cattle movement away from proposed allotment boundary. Cattle Guard will be placed on the 1935000 road north of the tributary crossing with fencing along the eastern edge of the riparian area to extend to the Hanlon Meadow pasture fence and access gate for the Hanlon Meadow pasture.
- Hydrologist will annually monitor road/stream crossing sites for channel degradation due to cattle use. Identify additional fencing, barrier needs per annual monitoring. Monitoring is expected to occur approximately at the end of the grazing season for each pasture.
- Determine acceptable number of occurrences strays are found out of allotment and/or pasture and action if number is exceeded (see Adaptive management appendice).
- ✓ Add fencing, barriers when monitoring results indicate management goals are not being met. Place stock barriers to prevent drift onto stream reaches out of the allotment or off pasture.
- BMP implementation and effectiveness monitoring of water related range improvements (e.g. stock tanks, hardened crossings) is to occur during and post implementation concurrently by Fish Biologist, Hydrologist, Range Specialist, and other IDT members with resource concerns. Monitoring results will determine if additional adaptive management actions are to be developed and/or implemented.

Road-7. Stream Crossings

Manual or Handbook Reference:

Manual or Handbook Reference: FSM 7722 and FSH 7709.56b.

Objective:

Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources when constructing, reconstructing, or maintaining temporary and permanent waterbody crossings.

Explanation:

Forest and grassland management activities often occur in areas that require surface waters to be crossed. Depending on the activity type and duration, crossings may be needed permanently or temporarily. Permanent crossings, in general, are more durable and are designed by an engineer to meet applicable standards while also protecting water quality and riparian resources. Examples of crossings include culverts, bridges, arched pipes, low-water crossings, vented fords, and permeable fills. Crossing materials and construction will vary based on the type of access required, duration of need, and volume of use expected. Crossings should be designed and installed to provide for flow of water, bedload, and large woody debris, desired aquatic organism passage, and to minimize disturbance to the surface and shallow groundwater resources.

Construction, reconstruction, and maintenance of a crossing usually requires heavy equipment to be in and near streams, lakes, and other aquatic habitats to install or remove culverts, fords, and bridges, and their associated fills, abutments, piles, and cribbing. Such disturbance near the waterbody can increase the potential for accelerated erosion and sedimentation by altering flow paths and destabilizing streambanks or shorelines, removing vegetation and ground cover, and exposing or compacting the soil. Use of heavy equipment has a potential for contaminating the surface water from vehicle fluids or introducing aquatic nuisance species. Some crossings may require adherence to special conditions associated with CWA 401 certification or CWA 404 permits. State and local entities may also provide guidance and regulations such as a Forest Practices Act or a Stream Alteration Act.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using State BMPs, Forest Service regional guidance, land management plan direction, BMP monitoring information, and professional judgment.

All Crossings

- Plan and locate surface water crossings to limit the number and extent to those that are necessary to provide the level of access needed to meet resource management objectives as described in the RMOs.
- Use applicable practices of BMP AqEco-2 (Operations in Aquatic Ecosystems) when working in or near waterbodies.
- Use crossing structures suitable for the site conditions and the RMOs.
- Design and locate crossings to minimize disturbance to the waterbody.

- Use suitable measures to locate, construct, and decommission or stabilize bypass roads to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources.
- Use suitable surface drainage and roadway stabilization measures to disconnect the road from the waterbody to avoid or minimize water and sediment from being channeled into surface waters and to dissipate concentrated flows.
- Use suitable measures to avoid, minimize, or mitigate damage to the waterbody and banks when transporting materials across the waterbody or AMZ during construction activities.

Stream Crossings

- Locate stream crossings where the channel is narrow, straight, and uniform, and has stable soils and relatively flat terrain to the extent practicable.
 - Select a site where erosion potential is low.
 - Orient the stream crossing perpendicular to the channel to the extent practicable.
 - Keep approaches to stream crossings to as gentle a slope as practicable.
 - Consider natural channel adjustments and possible channel location changes over the design life of the structure.
- Design the crossing to pass a normal range of flows for the site.
 - Design the crossing structure to have sufficient capacity to convey the design flow without appreciably altering streamflow characteristics.
 - Install stream crossings to sustain bankfull dimensions of width, depth, and slope and maintain streambed and bank resiliency and continuity through the structure.
- Bridge, culvert, or otherwise design road fill to prevent restriction of flood flows.
 - Use site conditions and local requirements to determine design flood flows.
 - Use suitable measures to protect fill from erosion and to avoid or minimize failure of the crossing at flood flows.
 - Use suitable measures to provide floodplain connectivity to the extent practicable.
- Use suitable measures to avoid or minimize scour and erosion of the channel, crossing structure, and foundation to maintain the stability of the channel and banks.
- Design and construct the stream crossing to maintain the desired migration or other movement of fish and other aquatic life inhabiting the waterbody.
 - Consider the use of bottomless arch culverts where appropriate to allow for natural channel migration and desired aquatic organism passage.

- Install or maintain fish migration barriers only where needed to protect endangered, threatened, sensitive, or unique native aquatic populations, and only where natural barriers do not exist.
- Use stream simulation techniques where practicable to aid in crossing design.

- **Bridges**

- Use an adequately long bridge span to avoid constricting the natural active flow channel and minimize constriction of any overflow channel.
- Place foundations onto non-scour-susceptible material (e.g., bedrock or coarse rock material) or below the expected maximum depth of scour.
- Set bridge abutments or footings into firm natural ground (e.g., not fill material or loose soil) when placed on natural slopes.
- Use suitable measures as needed in steep, deep drainages to retain approach fills or use a relatively long bridge span.
- Avoid placing abutments in the active stream channel to the extent practicable.
- Place in-channel abutments in a direction parallel to the streamflow where necessary.
- Use suitable measures to avoid or minimize, to the extent practicable, damage to the bridge and associated road from expected flood flows, floating debris, and bedload.
- Inspect the bridge at regular intervals and perform maintenance as needed to maintain the function of the structure.

- **Culverts**

- Align the culvert with the natural stream channel.
- Cover culvert with sufficient fill to avoid or minimize damage by traffic.
- Construct at or near natural elevation of the streambed to avoid or minimize potential flooding upstream of the crossing and erosion below the outlet.
- Install culverts long enough to extend beyond the toe of the fill slopes to minimize erosion.
- Use suitable measures to avoid or minimize water from seeping around the culvert.
- Use suitable measures to avoid or minimize culvert plugging from transported bedload and debris.
- Regularly inspect culverts and clean as necessary.

• **Low-Water Crossings**

- Consider low-water crossings on roads with low traffic volume and slow speeds, and where water depth is safe for vehicle travel.
- Consider low-water crossings to cross ephemeral streams, streams with relatively low base flow and shallow water depth or streams with highly variable flows or in areas prone to landslides or debris flows.
- Locate low-water crossings where streambanks are low with gentle slopes and channels are not deeply incised.
- Select and design low-water crossing structures to maintain the function and bedload movement of the natural stream channel.
- Locate unimproved fords in stable reaches with a firm rock or gravel base that has sufficient load-bearing strength for the expected vehicle traffic.
- Construct the low-water crossing to conform to the site, channel shape, and original streambed elevation and to minimize flow restriction, site disturbance, and channel blockage to the extent practicable.
- Use suitable measures to stabilize or harden the streambed and approaches, including the entire
- Bankfull width and sufficient freeboard, where necessary to support the design vehicle traffic.
- Use vented fords with high vent area ratio to maintain stream function and aquatic organism passage.
- Construct the roadway-driving surface with material suitable to resist expected shear stress or lateral forces of water flow at the site.
- Consider using temporary crossings on roads that provide short-term or intermittent access to avoid, minimize, or mitigate erosion, damage to streambed or channel, and flooding.
- Design and install temporary crossings suitable for the expected users, loads, and timing of use.
- Design and install temporary crossing structures to pass a design storm determined based on local site conditions and requirements.
- Install and remove temporary crossing structures in a timely manner as needed to provide access during use periods and minimize risk of washout.
- Use suitable measures to stabilize temporary crossings that must remain in place during high runoff seasons.
- Monitor temporary crossings regularly while installed to evaluate condition.

- Remove temporary crossings and restore the waterbody profile and substrate when the need for the crossing no longer exists.

Standing Water and Wetland Crossings

- Disturb the least amount of area as practicable when crossing a standing waterbody.
- Provide for sufficient cross drainage to minimize changes to, and avoid restricting, natural surface and subsurface water flow of the wetland under the road to the extent practicable.
 - Locate and design roads or road drainage to avoid dewatering or polluting wetlands.
 - Avoid or minimize actions that would significantly alter the natural drainage for flow patterns on lands immediately adjacent to wetlands.
- Use suitable measures to increase soil-bearing capacity and reduce rutting from expected vehicle traffic.
- Construct fill roads only when necessary.
- Construct fill roads parallel to water flow and to be as low to natural ground level as practicable.
- Construct roads with sufficient surface drainage for surface water flows.

WatUses-1. Water Uses Planning

Manual or Handbook Reference:

FSM 2540.

Objective:

Use the applicable authorization and administrative planning processes to develop measures to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during construction, operation, maintenance, and restoration of water use infrastructure.

Explanation:

Development and operation of infrastructure for water uses involve ground disturbance for construction of the facility and changes to water levels and flow regimes in source and receiving waterbodies and aquifers during operations. During planning, site conditions are evaluated and water levels and flow needs of the aquatic ecosystem are assessed to determine site-specific measures to avoid, minimize, or mitigate adverse effects to soil, water quality, groundwater, and riparian resources.

Infrastructure for water uses may be developed on NFS lands by the Forest Service for a variety of administrative and resource management purposes. As new sites are created and existing sites are expanded or rehabilitated, potential effects of the proposed development and operation on soil, water quality, groundwater, and riparian resources are considered in the project National Environmental Policy Act (NEPA) analysis and decision. Site-specific BMP prescriptions are included in the project plan, contract, or other authorizing document as appropriate.

Infrastructure developed by others on NFS lands are administered through authorizations issued by the Forest Service to a public or private agency, group, or individual. Authorization documents include terms and conditions to protect the environment and comply with the requirements of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1752) and other laws. Control of nonpoint sources of water pollution using appropriate BMPs is included in these environmental protection requirements.

Facilities on lands withdrawn under authority of the Federal Energy Regulatory Commission (FERC) are exempt from Forest Service administrative control through the NFS permit system. When a FERC permit is issued or renewed, however, the Forest Service may provide FERC with recommended requirements and mitigation measures under which the permittee should operate to protect NFS resources. Such recommendations may include any BMPs necessary to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources.

Practices:

- Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using State BMPs, Forest Service regional guidance, land management plan direction, BMP monitoring information, and professional judgment.
- Use applicable practices of BMP Plan-2 (Project Planning and Analysis) and BMP Plan-3 (Aquatic Management Zone (AMZ) Planning) when planning water use projects.
 - Safeguard water quality under sustained forage production and manage forage harvest by livestock and wildlife.
 - ✱ Forage resources will be allocated on a pasture-specific basis to meet basic plant and soil needs as a first priority. Forage production above basic resource needs will be available to wildlife and permitted livestock.
 - ✱ Management activities will be designed and implemented to retain sufficient ground vegetation and organic matter to maintain long-term soil and site productivity.
- Encourage reuse of water, to the extent practicable, to minimize withdrawals from surface water or groundwater sources.
- Determine the water quality, water quantity, flow regimes, and water levels necessary to maintain land management plan desired conditions, goals, and objectives, including applicable water quality standards for waterbodies and aquatic and groundwater-dependent ecosystems that are affected by the proposed project.
 - Specify a range of flows and levels to support desired uses and values.
- Obtain surface water (e.g., instream flow rights) and groundwater under appropriate Federal and State legal and regulatory authorities to avoid, minimize, or mitigate adverse effects to stream processes, aquatic and riparian habitats and communities, groundwater-dependent ecosystems, and recreation and aesthetic values.
 - Prioritize protection of imperiled native species.

- Evaluate water levels, flows, and water quality of the affected waterbody or aquifer to ensure that the source can provide an adequate supply and quality of water for the intended purpose(s) and avoid or minimize damage to NFS resources.
 - Consider how the collection, diversion, storage, transmission, and use of the water would directly, indirectly, and cumulatively affect streamflow, water level, channel morphology and stability, groundwater, and aquatic and riparian habitats in source and receiving water- bodies at a watershed scale(s) suitable for the project area and impacts.
 - Consider the potential impacts of current and expected environmental conditions such as climate change on precipitation type, magnitude, frequency, and duration and related effects on runoff patterns and water yield.
- Develop a strategic plan for the development of a suitable number of durable long-term water sources for Forest Service administrative and resource management uses to achieve land management plan desired conditions, goals, and objectives.
 - Obtain necessary water rights, allocations, or permits and water quality permits and certifications from applicable Federal, State, and local agencies for Forest Service administrative or resource management water uses.
 - Include permit conditions at the point of diversion, withdrawal, or storage to minimize damage to water-dependent resources and values consistent with land management plan desired conditions, goals, and objectives in authorizations for new or existing water use facilities.
 - Consider the water needs for physical stream processes, water quality, aquatic biota and their habitat, riparian habitat and communities, aesthetic and recreational values, and special designations such as Federal and State wild or scenic rivers.

WatUses-3. Administrative Water Developments

Manual or Handbook Reference:

FSM 2540.

Objective:

Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources when developing and operating water sources for Forest Service administrative and resource management purposes.

Explanation:

Water source developments are needed to supply water for a variety of Forest Service administrative and resource management purposes, including road construction and maintenance, dust control, fire control, recreation facilities, and livestock and wildlife watering. Water sources may be developed and used permanently or temporarily based on the needs of the management activity. Permanent water source development should be aimed toward the construction of a

limited number of durable, long-term water sources. Piped and impounded diversions such as wells, spring developments, hydrants, supply lines, drains, ponds, cisterns, tanks, and dams are examples of permanent structures. Temporary water sources may be needed to support one-time or emergency projects such as watershed restoration and fire suppression. Water source developments include the access road, turnaround, and drafting area. Soil, water quality, and riparian resources may be impacted by permanent or temporary water source construction and use. Potential impacts include erosion and sediment delivery to waterbodies; streambank and streambed alterations; contamination from equipment leaks or spills; changes in water temperatures; reduction in streamflows; loss of riparian vegetation; direct injury to aquatic species from pumping equipment; and transportation of eggs, larvae, and adults out of the aquatic system. Proper location and design of water sources or upgrading existing water source facilities can avoid, minimize, or mitigate adverse these impacts.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using State BMPs, Forest Service regional guidance, land management plan direction, BMP monitoring information, and professional judgment.

- Design, construct, maintain, and monitor permanent water sources in compliance with Federal, State, and local requirements.

Drafting From Streams or Standing Waterbodies

- Locate water source developments, including access roads, in such a manner as to avoid or minimize disturbance to the riparian area and streambanks and erosion and sedimentation to the extent practicable.
 - Draft from existing roads and bridges to the extent practicable to avoid creating new access roads.
 - Use existing hardened facilities, such as boat launches and campground access roads, for emergency or other short-term uses rather than native surface areas prone to erosion.
 - Locate facilities to minimize potential damage from streamflows.
 - Locate permanent storage tanks, dry hydrants, and standpipes outside of the AMZ to the extent practicable.
 - Locate off-channel ponds in areas where they will not be inundated with sediment at high flows.
 - Locate ponds or storage tanks as close to the major water use as practicable when water must be conveyed for use at a distance from the source.
- Design source developments, including access roads, in such a manner as to avoid or minimize disturbance to the riparian area and streambanks and to avoid or minimize erosion, sediment, and other pollutants to the extent practicable.
 - Design permanent facilities to maintain long-term stream function and processes.

- Limit the size of the facility development footprint (area of bare soil with reduced infiltration capacity) to the minimum necessary for efficient operations to the extent practicable.
 - Design facility to minimize hydrologic connectivity with the waterbody to the extent practicable by providing a suitable vegetated filter strip, and designing access road slope and length, or using other suitable measures, to direct flow away from the waterbody (see BMP Road-2 [Road Location and Design]).
 - Modify vehicle access and turnaround areas to reduce the size of the facility within the most sensitive areas of the AMZ.
 - Install hardened facilities where an adequate streamflow exists throughout the drafting season.
- Construct water source developments, including access roads, in such a manner as to avoid or minimize disturbance to the riparian area and streambanks and erosion, sediment, and other pollutants to the extent practicable.
 - Use applicable practices of BMP Road-3 (Road Construction and Maintenance) when constructing access roads to control storm water runoff and erosion.
 - Use applicable practices of BMP AqEco-2 (Operations in Aquatic Ecosystems) when working in or near waterbodies.
 - Use applicable practices of BMP AqEco-3 (Ponds and Wetlands) when constructing off-channel ponds.
 - Use suitable measures to minimize streambank alteration and excavation activity within the streambed to the extent practicable while providing an adequate area for water drafting.
- Conduct operations at water source developments in such a manner as to avoid, minimize, or mitigate adverse effects to aquatic species and habitats from water drafting.
 - Obtain and maintain water rights for administrative use and resource needs.
 - Avoid or minimize effects to the waterbody or aquifer by withdrawing only the minimum amount of water sufficient to achieve administrative or resource management needs.
 - Establish limits or guidelines for water withdrawals from a lake, pond, or reservoir source based on evaluation of storage capacity and recharge and potential impacts to habitat from drafting and drawdown.
 - Establish limits or guidelines for absolute pumping rates and pumping rate in relation to streamflow.
 - Limit drafting operations to daylight hours to avoid attracting fish to the drafting pool.

- Use suitable screening devices to avoid or minimize transport of aquatic organisms out of the source waterbody.
 - Use suitable measures to avoid or minimize contamination from spills or leaks.
 - Use applicable practices of BMP Fac-6 (Hazardous Materials) to manage contamination from spills or leaks.
- Maintain sources and facilities such that diversion, drainage, and erosion control features are functional.
- Use applicable practices of BMP Fac-10 (Facility Site Reclamation) to reclaim water use sites when no longer needed.
 - Repair or restore temporary sources to their pre-use condition to the extent practicable before project completion.
 - Apply suitable seasonal protection measures to temporary sources if use extends past a single season.

Spring Developments

- Locate the water trough, tank, or pond at a suitable distance from the spring to avoid or minimize adverse effects to the spring and wetland vegetation from livestock trampling or vehicle access.
- Locate the spring box to allow water to flow by gravity from the spring to the spring box to eliminate disturbance from pumps and auxiliary equipment.
- Design the collection system to avoid, minimize, or mitigate adverse effects to the spring development and downstream waters from excessive water withdrawal, freezing, flooding, sedimentation, contamination, vehicular traffic, and livestock as needed.
 - Collect no more water than is sufficient to meet the intended purpose of the spring development.
 - Ensure that enough water remains in the spring to support the source ground-water-dependent ecosystem and downstream aquatic ecosystems.
 - Avoid or minimize sediment or bacteria from entering the water supply system.
 - Trap and remove sediment that does enter the system.
 - Intercept the spring flow below the ground surface upslope of where the water surfaces.
 - Size the spring box sufficient to store expected volume of sediment generated between maintenance intervals and enough water for efficient operation of the system, and to provide access for maintenance and cleaning.

- Avoid or minimize backing up of spring flow by providing overflow relief sized to carry the maximum flow expected from the spring during periods of wet weather.
 - Use suitable measures to avoid or minimize erosion at the overflow outlet.
 - Maintain fish and wildlife access to water released below the spring development to the extent practicable.
- Construct the spring development in such a manner to avoid or minimize erosion, damage to vegetation, and contamination.
 - Use applicable practices from BMP AqEco-2 (Operations in Aquatic Ecosystems) when working in springs.
 - Divert all surface water away from the spring to the extent practicable to avoid or minimize flooding near the spring development.
 - Use suitable species and establishment techniques for wet conditions to cover or re-vegetate disturbed areas near springs in compliance with local direction and requirements per FSM 2070 and FSM 2080 for vegetation ecology and prevention and control of invasive species.
- Operate and maintain the spring development and associated water storage in such a manner as to provide water of sufficient quantity and quality for the intended uses and avoid or minimize failure of infrastructure causing concentrated runoff and erosion.
 - Disinfect the spring water as needed to maintain water quality sufficient for intended uses in such a manner as to avoid or minimize adverse effects to the spring source.
 - Use suitable measures to manage uses such as livestock grazing and vehicle traffic around the spring development to avoid or minimize erosion and sedimentation affecting the spring.
 - Avoid heavy vehicle traffic over the uphill water-bearing layer to avoid or minimize compaction that may reduce water flow.
 - Use suitable measures to avoid or minimize overflow of water trough, tank, or pond.
 - Periodically monitor the spring development and promptly take corrective action for sediment buildup in the spring box, clogging of outlet and overflow pipes, diversion of surface water from the collection area, and spring box, erosion from overflow pipes, and damage from animals.
- Use applicable practices of BMP Fac-10 (Facility Site Reclamation) to reclaim spring development sites when no longer needed.

WatUses-4. Water Diversions and Conveyances

Manual or Handbook Reference:

FSM 2729 and FSM 7510

Objective:

Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources from construction, operation, and maintenance of water diversion and conveyance structures.

Explanation:

Water may be diverted from waterbodies on NFS lands by third parties and delivered to sites on or off of NFS lands for a variety of purposes, including agriculture, mining, domestic water supply, hydroelectric power generation, or other uses. Water delivery systems consist of a diversion structure and some type of conduit. Conduits can be ditches, open canals, flumes, tunnels, pipelines, or even natural channels. Structures to regulate flow, dispose of excess water, or trap sediment and debris may also be part of the water delivery system.

The construction, operation, and maintenance of water diversions and conveyances can have adverse direct and indirect effects on soil, water quality, and riparian resources. The construction or presence of access routes, head gates, storage tanks, reservoirs, and other facilities can alter water quality, water yield, runoff regimes, natural channel geomorphic processes, and fish and wildlife habitats. Altered flow regimes can result in elevated water temperatures, proliferating algal blooms, and invasive aquatic flora and fauna. Water yield and runoff changes can change sediment dynamics and affect channel shape and substrate composition. Regular maintenance of diversions and conveyances can result in contamination from pesticide applications, vegetation damage, and continued soil disturbance leading to increased erosion; however, lack of regular maintenance can increase the potential for even greater effects from failures of ditches and diversions.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using State BMPs, Forest Service regional guidance, land management plan direction, BMP monitoring information, and professional judgment.

- Locate water conveyance structures in stable areas where they are not susceptible to damage from side drainage flooding.
- Design diversion and conveyance structures to efficiently capture and carry design flows in such a manner as to avoid or minimize erosion of streambanks, ditches, and adjacent areas.
 - Design intake and outflow structures to minimize streambank and streambed damage and minimize disruption of desired aquatic organism movement.
 - Design water conveyance structure to have sufficient capacity to carry the design volume of water with appropriate freeboard to avoid or minimize damage or overtopping.
 - Consider velocity of the water, horizontal and vertical alignment of the ditch or canal, amount of storm water that may be intercepted, and change in water

- surface elevation at any control structures when determining appropriate freeboard needed.
 - Use suitable measures in the design to control velocity and slope to avoid or minimize erosion of the ditch.
 - Use suitable measures in the design to minimize water loss to evaporation and leakage.
 - Mitigate water imports and water disposal (including reservoir releases) so that the extent of stable banks, channel pattern, profile and dimensions are maintained in each receiving stream reach to meet applicable instream water quality standards.
- Construct diversion and conveyance structures to perform as intended in the most efficient manner and in such a way as to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources.
 - Use applicable practices of BMP AqEco-2 (Operations in Aquatic Ecosystems) when constructing diversion structures in waterbodies.
 - Use applicable practices of BMP Fac-2 (Facility Construction and Stormwater Control) to control storm water and erosion when constructing diversion or conveyance structures.
 - Use suitable measures to stabilize the banks of the diversion channel or conveyance structure to avoid or minimize resulting erosion and instream sedimentation
 - Construct or install structures such as inlets, outlets, turnouts, checks, and crossings in such a manner as to maintain the capacity or freeboard of the ditch and the effectiveness of any lining or other channel stabilization measure.
 - Use suitable measures at outlets to avoid or minimize erosion downstream of the structure when design flows are released.
 - Use suitable measures on inlet structures to avoid or minimize debris entering the water conveyance structure.
- Operate diversion structures in such a manner as to leave desired or required flows and water levels in the source waterbody as determined in project planning (see BMP WatUses-1 [Water Uses Planning]).
- Operate and maintain diversion and conveyance structures in such a manner as to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources from failures.
 - Limit operation of the diversion and conveyances to the established period of use.

- Regularly inspect diversion and conveyance structures at suitable intervals to identify maintenance needs and situations that could lead to future overtopping or failures.
- Do not flush or otherwise move sediment from behind diversion structures downstream.
- Deposit and stabilize sediment removed from behind a diversion structure in a suitable designated upland site.
- Maintain suitable vegetative cover near canal and ditch banks to stabilize bare soils and minimize erosion.
- Harden or reroute breach-prone segments of ditches to minimize potential for failure and erosion of fill slopes.
- Maintain and operate water conveyance structures to carry their design volumes of water with appropriate freeboard.
- Keep water conveyance structures clear of vegetation, debris and other obstructions to minimize potential for failures.
- Use applicable Chemical Use Activities BMPs when using chemicals to treat vegetation as a part of water conveyance structure maintenance.
- Use applicable measures of BMP AqEco-4 (Stream Channels and Shorelines) and BMP Fac-10 (Facility Site Reclamation) to restore the stream channel and surrounding areas after the diversion or conveyance structure is no longer needed.

Washington State's water quality standards regulate non-point source pollution through the application of Best Management Practices (BMPs). The BMPs were developed under authority of the Clean Water Act to ensure that the States' waters do not contain pollutants in concentrations that adversely affect water quality or impair a designated use. The use of Best Management Practices (BMPs) is also required in the Memorandum of Understanding between the Forest Service and the States as part of our responsibility as the Designated Water Quality Management Agency on National Forest System lands.

Appendix C: Past, Ongoing and Reasonably Foreseeable Activities

The following lists past, ongoing, and reasonably foreseeable activities within or adjacent to the LeClerc Creek Allotment. The full disclosure of potential impacts from these activities is found in the effects analysis for each resource area, as appropriate. The potential impacts listed for each type of treatment are not fully inclusive.

Legal Description	General Location	Acres/feet/miles ¹	Activity	Years	Ownership ²
SE ¼ Sec. 33, T. 36 N., R. 44 E.	East Branch LeClerc	235 ac	<i>The Growling TS</i> - Uneven-aged harvest with a skidder	2012-2015 completed	Stimson
Sec. 17, T. 36 N., R. 44 E.	Hanlon Mtn	249 ac	<i>Diggings TS</i> - Uneven-aged harvest with a skidder	2013 completed	Stimson
Sections 15 & 26, T. 36 N., R. 44 E.	Middle & East Branch LeClerc	n/a	<i>LeClerc Cr. RMAP</i> – removal of 2 culverts	2013-2016	Stimson
Sec. 11, T. 36 N., R. 44 E.	Middle Branch LeClerc	4.4 ac	<i>Box Canyon AP</i> - Uneven-aged harvest with animal (stream enhancement project)	2013-2016	Stimson
Sec. 21, T. 36 N., R. 44 E.	Middle Branch LeClerc	3,035 ft.	Road construction - Relocation of the Middle Branch LeClerc road (1935)	2011-2013 completed	FS/Stimson
Sec. 21, T. 36 N., R. 44 E.	Middle Branch LeClerc	n/a	Culvert installation as part of Middle Branch LeClerc road relocation (1935)	2011-2013 completed	FS/Stimson
Sec. 21, T. 36 N., R. 44 E.	Middle Branch LeClerc	3,940 ft.	Road abandonment of Middle Branch LeClerc (1935)	2012-2014 completed	FS/Stimson

¹ Acres, feet, miles are approximate.

² FS = Forest Service

Legal Description	General Location	Acres/ feet/miles¹	Activity	Years	Ownership²
Sec. 21, T. 36 N., R. 44 E.	Middle Branch LeClerc	n/a	Culvert removal as part of road abandonment of Middle Branch LeClerc (1935)	2012-2014 completed	FS/Stimson
Sec. 14, T. 36 N., R. 44 E.	East Branch LeClerc	n/a	2 culverts replaced on the East Branch LeClerc road (1934) for fish passage	2013-2014	FS/Stimson
SW ¼, SE ¼ Sec. 28, T. 37 N., R. 44 E.	West Branch LeClerc	n/a	Culvert replacement on the West Branch LeClerc (1935) for fish passage	2013-2014	FS/Stimson
SW corner Sec. 19, T. 36 N., R. 44 E.	West Branch LeClerc	69 ac	<i>Short Sighted #1 TS</i> - Uneven-aged harvest with a skidder	2011-2013 completed	Stimson
East ½ Sec. 31, T. 36 N., R. 44 E.	West Branch LeClerc	318 ac	<i>Short Sighted #1 TS</i> - Uneven-aged harvest with a skidder	2011-2013 completed	Stimson
NE corner Sec. 3, T. 36 N., R. 43 E.	West of Caldwell Lake	32 ac	Uneven-aged harvest with a dozer	2012-2014	Private landowner
NE corner Sec. 3, T. 36 N., R. 43 E.	West of Caldwell Lake	n/a	Culvert removal	2012-2014	Private landowner
NE corner Sec. 3, T. 36 N., R. 43 E.	West of Caldwell Lake	20 ac	Uneven-aged harvest with a dozer	2012-2014	Private landowner
SW corner Sec. 1, T. 36 N., R. 43 E.	West Branch LeClerc	48 ac	<i>Short Sighted #2 TS</i> - Uneven-aged harvest with a skidder	2012-2015 completed	Stimson
NE corner Sec. 13, T. 36 N., R. 43E.	West Branch LeClerc	50 ac	<i>Short Sighted #2 TS</i> - Uneven-aged harvest with a skidder	2012-2015 completed	Stimson
T. 35 & 36 N., R. 44 E.; T. 36 N., R. 43 E.	West Branch LeClerc/ Yocum Lake	1,677 ac	Scotchman Stewardship Contract	Ongoing	FS

Legal Description	General Location	Acres/ feet/miles¹	Activity	Years	Ownership²
T. 35 & 36 N., R. 44 E.	East and Middle Branch LeClerc Creek	2,102 ac	Hanlon Stewardship Contract	Ongoing	FS
T. 36 & 37 N., R. 44 E.	Whiteman Creek	n/a	Instream structure placement (hydropower license project)	2013	PUD
T. 36 & 37 N., R. 44 E.	Upper Middle Branch LeClerc Creek	n/a	Instream structure placement (hydropower license project)	2013	PUD
T. 36 N., R. 43 E., section 14	Yocum Lake	0.5 mi	Decommission portion of FS road 1900096 (access to lake)	2012-2016	FS
Sec. 21, T. 36 N., R. 44 E.	Middle Branch LeClerc	5 miles	Riparian fencing to protect restored road	2013	FS
Sections 2, 4, 10, T. 35 N., R. 44 E.	Fourth of July Creek	217 ac	July Mill prescribed burn (RMEF)	2013-2014	FS, RMEF ³
Sec. 5, T. 35 N., R. 44 E.	East Branch LeClerc Creek, junction of new and old roads	70 ac	Past harvest	2005-2006	FS (East LeClerc TS)
Sections 7-9, 14-23, 28, 29, 33, 34, T. 36 N., R. 44 E.	LeClerc Allotment analysis area	4545 ac	Past harvest	1961-1996	FS
Sections 12, 15, 22, T. 36 N., R. 43 E.	Yocum and Scotchman Lake areas	118 ac	Past harvest	1980-1982	FS
Sections 7, 16, 18, 20, T. 36 N., R. 44 E.	LeClerc Allotment analysis area	236 ac	Reforestation	1995-1999	FS (Whiteman TS)
T. 36 N., R. 44 E.	LeClerc Allotment analysis area	70 ac	Precommercial thinning	2008-2015	FS (Whiteman TS)
T. 36 N., R. 43 E., T. 36 N., R. 44 E.,	LeClerc Creek and West Branch LeClerc Cr.	n/a	Maintenance of County Roads 9325 (LeClerc Rd.), 3503	Ongoing	FS

³ Rocky Mountain Elk Foundation

Legal Description	General Location	Acres/ feet/miles¹	Activity	Years	Ownership²
T. 35 N., R. 44 E.			(West Branch LeClerc Cr.), and 3521 (LeClerc Cr.)		
T. 36 N., R. 43 E., T. 36 N., R. 44 E., T. 35 N., R. 44 E.	LeClerc Allotment analysis area	n/a	Access to, and use of, dispersed recreation sites	Ongoing	FS
T. 36 N., R. 43 E., T. 36 N., R. 44 E., T. 35 N., R. 44 E.	LeClerc Allotment analysis area	23,413 ac	LeClerc Cr. Grazing allotment (Fountain Ranch)	Ongoing	FS
T. 36 N., R. 43 E., T. 36 N., R. 44 E., T. 35 N., R. 44 E.	LeClerc Allotment analysis area	n/a	Cost-share Easements to Stimson Lumber Co. for access to 1935110 (north LeClerc Allotment), 1935011 (railroad bridge), 1935112 (LeClerc Allotment Mtn.), 1934200 (cement bridge), and 1933106 (Ridge Lake).	Ongoing	FS
T. 36 N., R. 43 E., T. 36 N., R. 44 E., T. 35 N., R. 44 E.	LeClerc Allotment analysis area	n/a	New Stimson cost-share easements added for Hanlon/Scotchman. No road numbers available at this time	Ongoing	FS
SE ¼, SW ¼ Sec. 14, T. 36 N., R. 44 E.	East Branch LeClerc Creek Road No. 308	n/a	FRTA ⁴ Easement to WA State Department of Natural Resources for use of these Forest roads	Ongoing	FS
SE ¼, SW ¼ Sec. 14, T. 36 N., R. 44 E.	Seco Creek Road No. 919				
	Forest Road 1934000				

⁴ Forest Road and Trail Act.

Legal Description	General Location	Acres/ feet/miles¹	Activity	Years	Ownership²
Sec. 23, T. 36 N., R. 44 E.					
NW ¼, NW ¼, Sec. 34 & SE ¼, SE ¼ Sec 28, T. 36 N., R. 44 E. & Sec. 14, T. 36 N., R. 44 E.	Forest Road 1934200	n/a	FRTA Easement to Burlington Northern Railroad for use of FR 1934200	Ongoing	FS
SW ¼, SE ¼, N ½, SE ¼, & E ½, NE ¼ Sec. 16, T. 36 N., R. 44 E.	Forest Road 1935000	n/a	FRTA Easement to Plum Creek Timber Co. for use of FR 1935000	Ongoing	FS
NW ¼, NW ¼, Sec. 12, T. 36 N., R. 43 E. SW ¼, SW ¼, Sec 12, T. 36 N., R. 43 E.	PCTC Spur Yocum Spur	n/a	FRTA Easement to Plum Creek Timber Co. (PCTC) for use of these Forest roads	Ongoing	FS
Sec. 15, T. 36 N., R. 43 E.	LeClerc Allotment analysis area	n/a	FRTA Easement to Arden Tree Farms	Ongoing	FS
W ½, W ½, Sec. 33, T. 36 N., R. 44 E.	Forest Roads 1934200; 1934202; & 1934204	n/a	FLPMA Easement to Kris & Dena Olson for use of these Forest roads	Ongoing	FS
SW ¼, NE ¼, & E ½, NE ¼, all in Sec. 29, T. 36 N., R. 44 E.	Forest Roads 1935000 & 1935115	n/a	FLPMA Easement to Scott Owbridge for use of these Forest roads	Ongoing	FS
NE ¼, NE ¼, Sec. 22 & NW ¼, NW	Forest Road 1900740	n/a	FLPMA ⁵ Permit to Stephen & Julie	Ongoing	FS

⁵ Forest Land Policy and Management Act.

Legal Description	General Location	Acres/ feet/miles¹	Activity	Years	Ownership²
¼, Sec. 23, T. 36 N., R. 43 E.			Knecht for use of FR 1900740		
NW ¼, NW ¼, Sec. 23, T. 36 N., R. 43 E.	LeClerc Allotment analysis area	n/a	Special Use Permit for Stephen & Julie Knecht Water Transmission Pipeline	Ongoing	FS
NE ¼, Sec. 28, & E ½, Sec. 32, T. 36 N., R. 44 E.	East Branch LeClerc Creek Line	n/a	Special Use Permit for PUD #1 overhead power transmission lines	Ongoing	FS
NW ¼, NW ¼, Sec. 18, Sec. 19, & Sec. 30, T. 36 N., R. 44 E.	Ione Maitlen Creek Line				
S ½, SE ¼, SE ¼, Sec. 15, T. 36 N., R. 43 E.	S.J. Charbonneau Tap				
SE ¼, Sec. 15 & NE ¼, Sec. 22, T. 36 N., R. 43 E.	LeClerc Road North line	n/a	Special Use Permit for Pend Oreille Telephone Co. telephone lines and fiber optic cable	Ongoing	FS
SW ¼, NW ¼, Sec. 32, T. 36 N., R. 44 E.	County Road 3521	n/a	Private road permit to Papst for use of existing nonsystem road	Ongoing	FS
Sections 7, 8, 9, 16, 17, 18, 20, T. 35 N., R. 44 E.	Fourth of July Creek area	180 ac	Even-aged harvest, ground based	2008- 2010	WA State DNR LeClerc II timber sale
Sections 7, 8, 9, 16, 17, 18, 20, T. 35 N., R. 44 E.	Fourth of July Creek area	169 ac	Even-aged harvest, ground based/leading end suspension cable	2008- 2010	WA State DNR LeClerc II timber sale

Legal Description	General Location	Acres/ feet/miles¹	Activity	Years	Ownership²
Sections 7, 8, 9, 16, 17, 18, 20, T. 35 N., R. 44 E.	Fourth of July Creek area	68 ac	Even-aged harvest, leading end suspension cable	2008-2010	WA State DNR LeClerc II timber sale
Sections 7, 8, 9, 16, 17, 18, 20, T. 35 N., R. 44 E.	Fourth of July Creek area	1,908 ft.	New road construction	2008-2010	WA State DNR LeClerc II timber sale
Sections 7, 8, 9, 16, 17, 18, 20, T. 35 N., R. 44 E.	Fourth of July Creek area	3,063 ft.	Road reconstruction	2008-2010	WA State DNR LeClerc II timber sale
Sections 7, 8, 9, 16, 17, 18, 20, T. 35 N., R. 44 E.	Fourth of July Creek area	152 ft.	Road abandonment	2008-2010	WA State DNR LeClerc II timber sale
Sec. 11, T. 36 N., R. 44 E.	Middle Branch LeClerc Creek (NE corner of analysis area)	223.5 ac	Uneven-aged harvest, ground based	2009-2011	Stimson Crazy Train timber sale
Sec. 11, T. 36 N., R. 44 E.	Middle Branch LeClerc Creek (NE corner of analysis area)	193 ac	Even-aged harvest, ground based	2009-2011	Stimson Crazy Train timber sale
Sec. 23, T. 36 N., R. 43 E.	South end of Yocum Lake	23 ac	Uneven-aged harvest, tractor	2008-2013	PO County Public Works
	See Stimson planned harvest maps	159 ac	<i>Spike Camp TS</i> - harvest activity	2013	Stimson
	See Stimson planned harvest maps	200 ac	<i>6-Pack TS</i> - harvest activity	2013	Stimson
Sec. 25, T. 36 N., R. 44 E.	See Stimson planned harvest maps	unknown	<i>Debris Flow TS</i> - harvest activity	2013	Stimson
Sections 3&9, T. 36 N., R. 45 E.	See Stimson planned harvest maps	unknown	<i>Lost River TS</i> - harvest activity	2013	Stimson
Sections 15&21, T. 36 N., R. 44 E.	See Stimson planned harvest maps	unknown	<i>Prom ROW</i> - new road construction	2013	Stimson
Sec. 23, T. 36 N., R. 44 E.	See Stimson planned harvest maps	78 ac	precommercial thinning	2013	Stimson

Legal Description	General Location	Acres/ feet/miles¹	Activity	Years	Ownership²
Sec. 27, T. 37 N., R. 44 E.	West Branch LeClerc Creek	0.5 miles	Road construction - West Branch LeClerc Road Re-location Project to restore fish passage	2015-2016	FS, Stimson
Sec. 27, T. 37 N., R. 44 E.	West Branch LeClerc Creek	1.2 miles	Road obliteration - West Branch LeClerc Road Re-location Project to restore fish passage	2015-2016	FS, Stimson
Sec. 8, T. 36 N., R. 44 E.	West Branch LeClerc Creek	n/a	Removal of log crib dam to remove sediment buildup and restore fish passage	2014-2016	FS
Sec. 19, T. 36 N., R. 43 E.	West Branch LeClerc Creek	700 ft.	Ballpark Meadow riparian fencing	2013 completed	FS
Sec. 19, T. 36 N., R. 43 E.	West Branch LeClerc Creek	n/a	Food storage locker installation	2013-2014	FS
Sec. 3, 4, 5, 8, T. 35 N., R. 44 E.	Fourth of July Creek	3 mi	In-stream large wood placement for fish habitat improvement	2014-2016	FS, PUD
Sec. 29, 32, T. 36 N., R. 44 E., Sec. 5, T. 35 N., R. 44 E.	East Branch LeClerc Creek	2 mi	Road construction - Relocation of portion of the East Branch LeClerc road (1934/ C3521)	2007-2011	FS/Stimson
Sec. 32, T. 36 N., R. 44 E., Sec. 5, T. 35 N., R. 44 E.	East Branch LeClerc Creek	2 mi	Road obliteration – abandonment of portion of East Branch LeClerc road(1934/ C3521)	2007-2011	FS/Stimson
	LeClerc Allotment analysis area	n/a	Forest Damage Response Team	ongoing	FS
	LeClerc Allotment analysis area	n/a	Pend Oreille County PUD #1 restoration activities	ongoing	PUD

Appendix D: Public Comment and Response

Time Period for Submission of Comments

On October 2, 2015, the Environmental Protection Agency (EPA) published a Notice of Availability for the LeClerc Creek Grazing Allotment Management Plan Draft Environmental Impact Statement (DEIS) in the Federal Register (Federal Register, 2015). The comment period for the DEIS was open until November 16, 2015, granting interested parties the allowable 45 days to comment and have standing to object, according to 36 CFR 218.

In early November, after a request from an interested and affected party, the District Ranger decided to extend the comment period to ensure that all interested parties were allowed adequate time to comment. On December 11, 2015, the EPA published a second announcement in the Federal Register publishing the extension of the comment period to December 16, 2015, resulting in a 75-day comment period.

Consultation and Coordination

Prior to the Federal Register posting, interested parties and other agencies were notified of the DEIS availability and comment period via official correspondence letters and email messages. The document was made available in printed copy, in digital format on compact disc (CD), and also posted on the Colville National Forest website. A hard copy DEIS was provided to the EPA as required and options for requesting CDs or printed copies of the DEIS were provided for all other agencies and interested parties.

The following identifies the local, state, and federal agencies, legislative representatives, and organizations who participated in the planning process and/or received copies of the LeClerc Creek Allotment DEIS. In addition, an estimated 111 individuals were contacted and offered copies of the document. The list of these individual names is included in the project record.

Federal Elected Officials and Agencies

Federal elected officials representing the state of Washington are Senator Maria Cantwell, Senator Patty Murray and Representative Cathy McMorris-Rodgers.

In addition to the Forest Service, several federal agencies have resource management responsibilities and participated in the LeClerc Creek Allotment planning process. The United States Fish and Wildlife Service (USFWS) has oversight responsibilities for compliance with the Endangered Species Act; the USFWS and Forest Service have joint responsibilities for implementation of the Migratory Bird Treaty Act.

As described in Chapter 2, LeClerc Creek is a tributary of the Box Canyon Reservoir on the Pend Oreille River; Box Canyon Hydroelectric Project forms the Box Canyon Reservoir and is operated by the Pend Oreille Public Utility District. The Federal Energy Regulatory Commission (FERC) issued a new license for the project in 2005, which was amended in 2010. The amendment order included a requirement for a Trout Habitat restoration Program, which was instituted by the U.S. Department of the Interior on behalf of the Kalispel Tribe as a result of ongoing impacts caused by the Box Canyon project on Kalispel Tribe lands.

The Environmental Protection Agency is required to review and evaluate all environmental impact statements, and did so for the LeClerc Creek Allotment project.

Tribal Governments

The Forest Service is guided by national policy and law and is committed to continuing consultation and cooperative management whenever possible. The Forest Service recognizes its responsibility to provide to federally-recognized tribal governments and individuals sufficient opportunity to contribute to land use decisions and that those concerns or issues are given proper consideration related to cultural, religious, and natural resource values.

Letters inviting consultation and collaboration for the LeClerc Creek Allotment project were sent to the Kalispel Tribe of Indians, Confederated Tribes of the Colville Reservation, and Spokane Tribe in April 2013 and April 2014. No response was received from the Colville Tribes. The Spokane Tribe provided comments during the 2014 scoping period, but deferred to the Kalispel Tribe during review of the DEIS. The Kalispel Tribe was deeply involved throughout the planning process.

Washington State Elected Officials and Agencies

Washington State Senator Shelly Short represents the 7th District. Senator Short was consistently engaged in this project.

Several state agencies have jurisdiction over certain activities within the LeClerc Creek watershed; as a result, it was important that these agencies be represented in the planning process. Washington State agencies include the Department of Ecology, Department of Fish and Wildlife, Department of Natural Resources, and the State Historic Preservation Office.

Local Elected Officials and Public Utility District

County government represents local constituencies and has a vested interest in land use planning involving federal lands. Lands managed by the Forest Service can provide areas for recreation as well as a source of income for residents. Officials of Pend Oreille County Board of Commissioners (especially Commissioner Karen Skoog) participated and provided valuable perspectives throughout the planning process.

As stated earlier and described in Chapter 2, LeClerc Creek is a tributary of the Box Canyon Reservoir on the Pend Oreille River. Box Canyon Hydroelectric Project forms the Box Canyon Reservoir and is operated by the Pend Oreille Public Utility District.

Cattle Permittee, Interest Groups, Businesses, Organizations

The current cattle permittee is the Fountain Ranch Partnership. The permittee was actively engaged in every phase of the project, from assisting in developing the proposed action to aiding the Forest Service in defining where the allotment boundaries were not effective, to field trips exploring range management improvements and impediments. The Forest Service has a good working relationship with the permittee and strives to keep an open line of communication.

A variety of groups and businesses have an interest in lands managed by the Forest Service in the LeClerc Creek Allotment. Those invited to participate in the planning process and/or commenting include, Kettle Range Conservation Group, Priest River Land Company, Northeast Washington Forestry Coalition (NEWFC), Pend Oreille County Cattleman's Association, Stimson Lumber Company, The Lands Council, and Vaagen Brothers Lumber, and Washington Cattleman's Association.

Individuals/Organizations Commenting on the DEIS

Twenty letters were received either online, by email, postal mail, or delivered by hand. All letters are filed in the official project file as required by 36 CFR 218.25(b)(2). The following table identifies those individuals or organizations who commented on the DEIS (with affiliation or interest if indicated in the comments). The Spokane Tribe (Letter 03) deferred to the Kalispel Tribe, and therefore has no comments in the Summary of Comments.

Table 51. Individuals/organizations responding during the DEIS Comment Period.

Letter #	Name	Affiliation/Interest
01, 11	Propp, John	Adjacent landowner
02	Propp IV, John and Cindy	Adjacent landowners
03	Abrahamson, Randy	Spokane Tribe
04	Clinton, Michael	Adjacent landowner
05	Schult, Dennis	Pend Oreille Public Utility District
06	Fredrickson, David	Individual
07	Cordes, Larry	Pend Oreille County Cattlemens Association
08	Simpson, Mark	Individual
09	Vincent, Thomas and Lynn	Adjacent landowner
10, 22	O'Brien, Allison	US Department of Interior
12	Fountain, Steve	Fountain Ranch
13	Baldwin, Karin	Washington Department of Ecology
14	Field, Jack	Washington Cattlemen's Association
15		Kalispel Tribe
16	Livingston, Philip	Individual
17	Littleton, Christine	US EPA, Region 10
18	Pozzanghera, Steve	Washington Department of Fish & Wildlife
20	Kiss, Stephen	Pend Oreille County Board of Commissioners

Comments and Responses

All written comments were considered in compliance with 36 CFR 218.25. In accordance with 40 CFR 1503.4 comments were assessed and considered both individually and collectively, and responded to by one or more of the means listed below:

- 1) modify an existing alternative (including the proposed action)
- 2) develop and evaluate a new alternative not previously given serious consideration by the agency
- 3) supplement, improve or modify the analyses
- 4) make factual corrections
- 5) respond to the comment explaining why no further response is warranted

The following provides an overview of each comment letter received, and identifies key concerns regarding the LeClerc Creek Allotment Project. In an effort to eliminate repetitive discussion of the same issues/concerns raised by various interested parties, comments received on the DEIS are summarized below. Combined responses were provided when possible for those issues/concerns that were similar (or identical in some instances) in nature and context.

A detailed listing of comments and responses is provided in the project record and is also available for viewing on the Colville National Forest's website for the LeClerc Creek Allotment project (<https://www.fs.usda.gov/project/?project=41517>).

Concerns Raised by the Permittee

The permittee, Steve Fountain (Letter 12), provided very specific comments regarding information provided in the DEIS, primarily related to analysis methods, alternative descriptions, and allotment management methods.

He requested clarification in relation to a number of analysis measures (for example, stubble height, and the relevance of canopy cover versus width to depth ratio), the rationale for conducting a suitability analysis within a boundary in an open range area, and adequacy of the discussions on off-site watering.

He noted several concerns with how Alternatives C and D were described, the adaptive management strategies in particular. Fountain stated he supports changing the timing, intensity and duration of grazing use, but does not believe that reducing livestock numbers should be included as a potential strategy. He further stated that the range of alternatives is inadequate to address all of his concerns, and that he'd like to see an alternative that allows him to be successful in complying with the allotment management plan while protecting the resources on the Leclerc allotment.

Response: The permittee has an interest in continuing use of this allotment as an important component of his family business and because of family ties and tradition. The current permittee and his family have a long history of grazing these (and other CNF) lands. As a family of homesteaders to Pend Oreille County, they have been integral to its growth and development over time.

The Hydrology Report, Chapter 2, and Chapter 3 (Hydrology, Fisheries-Aquatic Habitat, and Soil sections, as well as others) have been modified to provide a better description of the alternatives, the adaptive management strategy associated with Alternatives C and D, and the effects of grazing on resources in the area.

The monitoring thresholds described in the EIS for Alternatives C and D are intended to leave adequate residual vegetation behind after livestock have grazed to allow the vegetation to recover from grazing pressure, provide protection to streambanks, avoid undesired impacts to streams and aquatic habitat, and maintain biodiversity in riparian areas which makes them more resilient and better able to withstand disturbance.

As described in Chapter 3 (Fish and Aquatic Habitat), maintaining four to six inches stubble height is widely used by land management agencies as an appropriate level of grazing use while still providing for protection of streambanks and soil and allowing the plants to maintain vigor and recover from grazing. Clary and Leininger (2000) suggest that a four inch stubble height is a starting point for improved riparian grazing but raising the stubble height to six to eight inches may be required to protect willows and limit bank trampling. Therefore, depending upon the conditions at a site, a four-inch residual stubble height may not be sufficient for improving riparian vegetation conditions. The goal of the Forest Service is to set standards for use which will both provide an opportunity for livestock to graze and to leave adequate residual vegetation to avoid undesirable impacts to the landscape.

The Hydrology and Fisheries-Aquatic Habitat sections of Chapter 3 were modified to better describe the importance of shade on water temperature. The INFISH riparian management objective is to have a wetted width to depth ratio below 10. The Forest Service stream survey data shows that all of the reaches meet the INFISH riparian management objective for wetted width to depth ratio. As streambanks erode due to various reasons, the width to depth ratio usually increases, which results in increased water temperatures as a result of reduced stream depth and

lack of shade, reduced ability of the stream to store water, and less pool habitat for aquatic species. Since removal of plant cover affects width to depth ratios, temperature is affected by both canopy cover (shade) and width to depth ratios. Changes in one of the variables usually means changes in the other.

The suitability analysis was conducted in order to identify those areas within the project boundary that are suitable for livestock grazing; in other words, those areas with adequate vegetation and topography that are conducive to having livestock graze. It does not infer that there are areas outside the proposed allotment boundary that are (or are not) suitable for livestock, nor does it imply that livestock would always remain within the boundaries shown on the map. The Forest Service understands that livestock are dynamic and recognizes that livestock drift is a constant concern, however the goal is that natural or constructed barriers to livestock drift would allow livestock to remain within the boundaries described in this document if Alternative C or D were chosen. It is also a condition of the current permit that should livestock be identified in areas outside the described boundaries, the permittee would move those livestock to an area within the allotment boundary. Since taking over the allotment from his father-in-law in 2011, this permittee has been responsive in working to meet permit requirements and to address adjacent landowner concerns.

Although the Hydrology report cites literature showing that offsite watering does not entirely eliminate riparian use by cattle and effective off channel watering sites occur with specific criteria, the Hydrology report does recognize off-stream water developments can be beneficial. Clarification has been made in the Hydrology Report that Goebel's (1956) research concluded a shift in concentration of cattle from high use overgrazed areas to areas with minimal to no utilization, reduction in trailing between food source and watering sites, and regrowth of protective vegetation surrounding the water hole (p. 38). These improvements occurred with the appropriate placement of alternative watering sites (e.g. troughs) in close proximity to areas with minimal to no utilization. Off-site watering is also addressed in the Hydrology section of Chapter 3.

Alternative descriptions were modified in Chapter 2 to better describe the operational concerns identified by the current permittee while still addressing resource and management concerns. Alternative D is compared to the existing condition, and in a few instances, comparisons to Alternative C are included as well since Alternative D is a modified variation of Alternative C. The Hydrology report indicates there will be additional acres and stream miles available to be impacted in Alternative D that are not inclusive within the existing allotment boundaries or Alternative C boundaries, and modifications made to provide clarity that the area for potential impacts is increasing and hence the number of areas within the watershed impacted by cattle would be expected to increase.

Reducing livestock is just one of the adaptive management strategies available to be used if undesirable resource effects could not be mitigated by other means such as timing, fencing or other improvements.

The current permittee began operating on this allotment in 2011. From the outset of initiating this project (in 2013) the district range specialist, district ranger, IDT members, and forest range program manager met with, participated in field trips, and discussed options for developing the proposed action (Alternative C) with the permittee and his delegated consultant. After the permittee determined that some components of Alternative C would not be operationally practical, the Forest Service met with him several times to discuss modifications, which resulted in development of Alternative D. Both these alternatives were presented in the DEIS. As the permittee became more familiar with the allotment and permit, he informed the district ranger

that Alternative D would also have operational difficulties. It was determined that many of those difficulties could be addressed operationally and did not need to be analyzed as a separate alternative. Monitoring protocols, range management (including access to different parts of the allotment), range improvement needs, labor and maintenance costs, and feasibility of the proposals were topics discussed over the ensuing five years.

Mr. Fountain also pointed out that the DEIS incorrectly identified the permit holder as a corporation; the FEIS has been corrected to identify Fountain Ranch as a partnership.

Concerns Raised by Cattlemen's Associations

Pend Oreille County Cattlemen's Association (Letter 7) voiced their support for continued grazing in the LeClerc Creek Allotment, encouraging that agreement be reached between the permittee and Forest Service. They stated that cattle have grazed the area for years and, with good management, should have no adverse effects on the habitat (which could improve in some areas).

Washington Cattlemen's Association (WCA, Letter 14) also support maintaining livestock grazing in the allotment, and requested that the Forest Service include a process that would allow the permittee the opportunity to increase AUMs if utilization and management objectives were achieved. They believe that open dialog between the Forest Service and permittee is essential to the successful implementation of an allotment plan. They stated they believe that local site-specific permittee-based monitoring is essential, and recommended that prescriptive standards be determined at the allotment project level, and that the desired condition be clearly laid out in the Forest Plan.

WCA strongly opposes Alternative B, which would remove all cattle from the allotment. They instead support Alternative D, which would continue to authorize grazing within the project area with modification to existing permit conditions to address management and resource concerns.

WCA described concerns with the hydrology analysis and recommended that the Forest Service include science and water quality work associated with Tip Hudson (Washington State University Extension Office) and Dr. John Buckhouse, who have conducted numerous studies highlighting the benefits and value of managed livestock grazing. The WCA specific asked about the stubble height goal of 6 to 8 inches in riparian areas, stating they do not think that goal is attainable.

Response: Alternatives A, C and D would all continue grazing in the allotment: Alternative A would continue the current management, while Alternatives C and D would both implement improvements and include monitoring/adaptive management strategies (Chapter 2). Alternative D, preferred by WCA, would implement additional improvements to address operational concerns identified by the permittee, and designed to better address effects of changes in livestock grazing related to social or cultural concerns.

The Forest Service has the ability to assess a request and make a determination on increasing AUM's. All decisions pertaining to the LeClerc Creek Allotment would begin in the Newport-Sullivan Lake Ranger district based on the field observations, monitoring, and assessment of conditions of the Rangeland Management Specialist for the deciding official.

As described in Chapter 3 (Fish and Aquatic Habitat), maintaining four to six inches stubble height is widely used by land management agencies as an appropriate level of grazing use while still providing for protection of streambanks and soil and allowing the plants to maintain vigor and recover from grazing. Clary and Leininger (2000) suggest that a four inch stubble height is a starting point for improved riparian grazing but raising the stubble height to six to eight inches

may be required to protect willows and limit bank trampling. Therefore, depending upon the conditions at a site, a four-inch residual stubble height may not be sufficient for improving riparian vegetation conditions. The goal of the Forest Service is to set standards for use which will both provide an opportunity for livestock to graze and to leave adequate residual vegetation to avoid undesirable impacts to the landscape.

In an effort to provide clarity in the discussion of monitoring/adaptive management and effects to resources, modifications were made to the description of Alternatives C and D in Chapter 2 as well as the Range, Social-Economic, Hydrology, Fisheries-Aquatic Habitat, Terrestrial Species (Wildlife) and other sections in Chapter 3.

The comments submitted by the cattlemen's associations did not identify new issues for analysis or indicate a need for development of a new alternative.

Concerns Raised by the Kalispel Tribe of Indians

The Kalispel Tribe of Indians provided comments describing why they believe grazing should be discontinued within the LeClerc Creek watershed, and supported finding a more appropriate site for the permittee's cattle operation elsewhere in the Colville National Forest.

The Tribe has stated the project area lies within their traditional use area, and said there is incompatibility between their free exercise of traditional beliefs, curative arts, and rites of passage, and cattle grazing. They informed the Forest Service of their intent to nominate approximately 482 acres located in the northernmost portion of the allotment for listing with the National Register of Historic Places as traditional cultural properties. The Tribe has also been clear that they support shifting current use to other vacant CNF cattle allotments in the area.

The Tribe has stated that, "The LeClerc watershed is the Kalispel Tribe's most cherished cultural landscape within the Colville National Forest", and goes on to state, "Current tribal members provide this cultural bridge by following ancestrally prescribed behaviors within the LeClerc ecosystem. What this means is that no other landscape on the CNF provides a stronger connection between past and future generations" (Osterman 2012).

Response: The effect of alternatives on tribal concerns was analyzed and addressed in Chapter 3 (Social-Economics, Heritage Resources, Other Required Disclosures). Alternative B would resolve the concerns raised by the tribe with regard to grazing permitted within the parcels identified as potentially NRHP eligible traditional cultural properties. By removing cattle from the allotment, the conflict between grazing activities and the tribally identified cultural landscape in the LeClerc Creek Allotment would be resolved.

Alternatives A, C and D would all continue grazing in the allotment. Under Alternative A, the concerns raised by the tribe would continue to be unresolved with regard to traditional cultural properties and the tribally identified cultural landscape. Boundary modifications are proposed under Alternatives C and D to specifically address tribal concerns for traditional cultural properties, but there would still be potential for impact, and the conflict between grazing activities and the cultural landscape would not be resolved.

The comments submitted by the Kalispel Tribe did not identify new issues for analysis or indicate a need for development of a new alternative.

Concerns Raised by Pend Oreille County Board of Commissioners

Comments from the Pend Oreille County Board of Commissioners (Letter 20) focused on inconsistencies between the proposed alternatives and adopted county policy. They cited their Resolution 2015-45 which states that increased availability for grazing of livestock is in the public interest of Pend Oreille County residents and is to be continually sought after. They noted the willingness of the permittee to collaborate and make concessions early on in order to provide a harmonious and cooperative plan that respects both the environmental and cultural concerns by adjusting his operations. Based on adopted policy of Pend Oreille County, and discussions with the permittee, the Board found that the only alternative that would adequately support the feasibility of continued operations is Alternative A.

Response: The effects of Alternative A were analyzed in detail as described in Chapter 3. The Forest Service agrees that the permittee has been responsive in working to meet permit requirements and to address adjacent landowner concerns.

The comments submitted by the Board of Commissioners did not identify new issues for analysis or indicate a need for development of a new alternative.

Concerns Raised by Pend Oreille Public Utility District

Pend Oreille County Public Utility District (Letter 05) commented that they cannot support any alternative that continues to allow grazing in the LeClerc Creek drainage (Alternatives A, C, and D), because those alternatives would result in continued impacts of cattle grazing in areas of current and future stream improvement projects, which are ultimately funded by the public utility district's ratepayers.

The public utility district commented that they have already invested implementation funds of over \$400,000 toward on-the-ground stream enhancement work (such as placement of instream large woody debris for fish habitat, and culvert replacement to provide fish passage) in the LeClerc drainage as part of the Box Canyon FERC License Trout Habitat Restoration Program. They stated there has been more than \$2 million additional funds spent on supporting stream enhancement work (habitat surveys, project site selection, design, planning, permitting, and monitoring) in the LeClerc drainage.

The public utility district stated they are committed to continuing enhancement and restoration efforts in LeClerc Creek drainage, as it is designated as a primary watershed for bull trout recovery. They did not support Alternatives C or D because both would simply shift the grazing impact from one part of the watershed to another, and neither would provide sufficient stream protection to minimize damage to stream habitat and current and future stream enhancement projects. The public utility district indicated they would support moving the grazing allotment to another drainage that is not designated as bull trout critical habitat.

Response: Alternative B would best respond to the concerns identified by Pend Oreille Public Utility District, since cattle grazing would be discontinued on the allotment.

The comments submitted by the public utility district did not identify new issues for analysis or indicate a need for development of a new alternative.

Concerns Raised by Washington Department of Ecology

Washington Department of Ecology (Letter 13) provided an extensive review of the effects analysis, particularly those related to hydrology. They identified a need for clarification regarding beneficial uses and State water quality standards. They asked that a description of how holding

pens and loading chutes are used, including duration of use, and made recommendations regarding holding pen locations. Concerns were expressed regarding the effect of manure and urine on pH and dissolved oxygen. Inaccuracies were identified in the (Figure 7) graph regarding the temperature standard for Middle Branch LeClerc Creek. The Department of Ecology described why they were doubtful that current or future efforts would lead to improvement in allotment conditions, and were concerned that Alternatives C and D did not provide funding to ensure proposed changes would occur.

Response: The Hydrology report (project files) and Hydrology section in Chapter 3 have been modified to reflect the clarification provided regarding beneficial uses and water quality standards, provide additional information regarding holding pen use, address the effect of manure and urine on pH and dissolved oxygen, correct and provide additional information on temperature standards.

As stated earlier, if Alternative C or D were chosen for implementation, the Forest would prioritize funding to complete the proposed improvements; however, due to the manner in which funds are appropriated by Congress, the Forest Service has no way of knowing for certain what levels of funding will be available in the future and therefore cannot guarantee funding at this time.

The comments submitted by the Washington Department of Ecology did not identify new issues for analysis or indicate a need for development of a new alternative.

Concerns Raised by Washington Department of Fish & Wildlife

Washington Department of Fish and Wildlife (WDFW, Letter 18) expressed concern that investments to improve salmonid habitat may be compromised by the current livestock grazing practices occurring in riparian corridors throughout the LeClerc Creek Allotment. Millions of dollars have been spent in the Leclerc Basin on habitat improvements and species protection measures in recent years including through the FERC relicensing of the Box Canyon Hydroelectric Project, by the Pend Oreille Lead Entity - Salmon Recovery Funding Board, and by Stimson Lumber Company working under Washington's Forest and Fish Agreement.

They stated their concern that the health of riparian corridors, wetlands/wet meadows and instream habitat is being compromised within the allotment by livestock access. Of particular concern are the direct impacts to native salmonid habitat, including critical habitat for bull trout, and the competition for forage resources between cattle and other wildlife. They noted that the private ownership within the allotment presents management challenges that are difficult to overcome and potentially harmful to fish and wildlife resources.

Of the alternatives considered, WDFW supports Alternative B as having the greatest potential to improve watershed health, riparian corridors, wetlands/wet meadows and altered stream channels within the allotment. However, they recognized the alternative would displace the existing grazing allotment permittee, and offered to work cooperatively with the Colville National Forest to review options for providing a different allotment to accommodate grazing should Alternative B be selected for implementation.

While WDFW was supportive of some features of Alternatives C and D (for example, constructing fence to prevent cattle from accessing bull trout critical habitat in the Middle Branch of LeClerc Creek), they were concerned that the alternative would result in over-utilization of riparian/wetland habitat by cattle with associated effects to fish and wildlife habitat; and that protection of the riparian/wetland ecological system may not occur with the proposed monitoring

and adaptive management strategies identified. They support adaptive management as a tool to protect fish and wildlife habitat function in the allotment, but stated the DEIS did not provide sufficient detail about proposed monitoring to conclude that it would serve as an adequate basis on which to inform management decisions.

Response: In an effort to provide clarity in the discussion of monitoring/adaptive management and effects to resources, modifications were made to the description of Alternatives C and D in Chapter 2 as well as the Range, Social-Economic, Hydrology, Fisheries, Terrestrial Species (Wildlife) and other sections in Chapter 3. The comments submitted by the WDFW did not identify new issues for analysis or indicate a need for development of a new alternative.

WDFW did not provide comments on Alternative A (current management). If Alternative B were selected for implementation, the permittee would be given two years written advance notice of cancellation of their permit as provided for under 36 CFR 222.4 (a)(1), during which time livestock would continue to be managed under the current management regime for the existing permit. The Forest Service could prioritize (over other interests) offering the permittee a new grazing permit for equivalent stocking on other existing vacant allotments in accordance with Forest Service policy (R6/FSH 2209.13 Ch. 10 Sec. 13.2).

Concerns Raised by U.S. Department of Interior

The U.S. Department of Interior (USDI, Letter 22), commented that it was not clear in the DEIS that any of the action alternatives include the necessary measures to protect restored and/or sensitive riparian habitats from cattle grazing in the LeClerc Creek watershed. They contend that fencing prescriptions are inadequate to protect native fish-bearing streams from grazing impacts, monitoring requirements are insufficient to ensure that riparian resources are protected, and the proposed adaptive management program would allow more than 12 years of impacts before a new National Environmental Policy Act review could reconsider cattle effects to the system. Furthermore, if it became necessary to reevaluate grazing impacts, this delayed response would render any riparian and stream habitat improvements made pursuant to the Trout Habitat Restoration Program moot - at a substantial cost to the program. It is inefficient to spend time and effort on riparian and aquatic restoration if cattle overgraze the riparian vegetation or cause increased sediment or degraded water quality in the creek.

USDI recommended that the Forest Service consider and analyze relocating the allotment another area outside of sensitive watersheds, in addition to providing additional improvements (fencing/exclusion of riparian/wetland areas that support native salmonids, fencing private properties where grazing standards cannot be enforced, installing upland watering facilities more than 300 feet from riparian or connected wetland areas, etc.). They also recommended more frequent monitoring and more stringent adaptive management.

They stated that Alternative B appeared to be the only alternative to adequately protect native fish habitats and support state, federal, and tribal cultural and natural resource interests in the LeClerc Creek watershed. They were optimistic that the Forest Service could either make modifications to the action alternatives to ensure that impacts are substantially reduced, or identify an alternate location for the allotment to a less sensitive area.

Response: Both Alternatives C and D propose additional improvements to better manage cattle movement in and adjacent to the allotment. However, while we understand and can appreciate the hardships of dealing with livestock on private property, the Forest Service has no authority over livestock use on private lands. The lands within the project area are open range areas as defined in the Revised Code of Washington (RCW) 16.24.010. Within open range areas,

landowners are required to fence to their property if they do not wish to have livestock running at large (per RCW 16.60.015).

Cost of additional improvements is also a consideration. Alternatives C and D would require investments in the first 2 to 3 years of at least \$75,000 for initial implementation, and possibly over \$500,000 additional costs over the 10-year life of the permit to implement adaptive management strategies (including costs of monitoring, additional fencing and/or reduction in herd size); and USFWS conservation measures recommended in the 2016 Biological Opinion for this project. These costs are attributed to adaptive management in the range of \$100,000 - \$200,000, and implementation of USFWS conservation measures of about \$440,000 (mostly for additional fencing) (FEIS, pages 73-77).

If Alternative B were selected for implementation, the permittee would be given two years written advance notice of cancellation of their permit as provided for under 36 CFR 222.4 (a)(1). The Forest Service could prioritize (over other interests) offering the permittee a new grazing permit for equivalent stocking on other existing vacant allotments in accordance with Forest Service policy (R6/FSH 2209.13 Ch. 10 Sec. 13.2).

The comments submitted by the USDI did not identify new issues for analysis or indicate a need for development of a new alternative.

Concerns Raised by U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA, Letter 17) reviewed the DEIS and identified concerns related to potential impacts that would result from grazing in riparian areas, including loss of biodiversity, wildlife habitat, decline in water quality, and negative effects to fish populations. They recommended grazing be excluded or minimized in wetland/riparian zones, that additional actions be undertaken to address streams that are functioning at risk, and that aquatic Best Management Practices (BMPs) be consistent with those prescribed in the USDA National BMPs for Water Quality on National Forest System Lands, that there be effective enforcement of grazing permit conditions, and that full support be provided to implement projects that improve stream water quality conditions within the allotment.

They further recommended continued coordination with Washington State Department of Ecology and affected tribes as the proposed project is implemented to ensure compliance with the State water quality standards and as implementation of the Colville National Forest Temperature and Bacteria Total Maximum Daily Load continues. Because there are fish-bearing creeks and other threatened, endangered, and candidate species occur on the allotment, they recommended coordination with the U.S. Fish and Wildlife Service, the National Marine Fisheries Service and, as appropriate, with the Washington State Department of Fish and Wildlife to reduce risks to species and protect biota and habitat during implementation of proposed livestock grazing. EPA recommended that the FEIS include any additional relevant information developed as a result of coordination with these agencies.

Response: Alternative B analyzed the effects of cancelling the permit and removing cattle from the allotment; both Alternatives C and D propose additional improvements to better manage cattle movement in and adjacent to the allotment. Under any alternative, design criteria (Chapter 2) and BMPs (Appendix B) would be applied.

The analysis considered effects of the alternatives on threatened, endangered, candidate and proposed species. Details regarding actual species found within the LeClerc Creek Allotment area

and potential effects of activities on those species and their habitat are discussed in the fish and aquatic habitat, terrestrial wildlife species and habitats, and sensitive plants sections in Chapter 3.

Consultation and coordination has occurred with the appropriate state and federal agencies, including Washington Department of Ecology, Washington Department of Fish and Wildlife, U.S. Fish and Wildlife, and U.S. Department of Interior. The Forest Service has initiated consultation with U.S. Fish and Wildlife Service regarding potential effects to threatened, endangered, and candidate species that occur in the allotment and watershed.

The comments submitted by the EPA did not identify new issues for analysis or indicate a need for development of a new alternative.

Concerns Raised by Adjacent Landowners

Comments were submitted by two adjacent landowners (Letters 01, 02, 04, 09 and 11). Concerns were similar to those raised during the 2013 and 2014 scoping periods, and were related to the nuisance presented by cattle grazing (manure, agitating their dogs); sanitation and safety for their children; damage caused to roads, culverts, and fencing; impacts to a natural spring, wetlands, and vegetation; and disturbance to native species nesting. Both landowners indicated they preferred that no grazing be allowed in the allotment.

Response: While we understand and can appreciate the hardships of dealing with livestock on private property, the Forest Service has no authority over livestock use on private lands. The lands within the project area are open range areas as defined in the Revised Code of Washington (RCW) 16.24.010. Within open range areas, landowners are required to fence to their property if they do not wish to have livestock running at large (per RCW 16.60.015).

Alternative A, existing management, would not respond to the concerns identified by private landowners. Alternative B would be most responsive to the concerns of these adjacent landowners, since cattle grazing would be discontinued and the allotment closed. Alternatives C and D could provide some relief, since additional improvements would occur to better manage cattle movement in and adjacent to the allotment.

The comments submitted by adjacent landowners did not identify new issues for analysis or indicate a need for development of a new alternative.

Concerns Raised by Other Individuals

Three comment letters were submitted by other individuals (Letters 06, 08, and 16), with varying views.

Two of the individuals supported Alternative B. One individual (Letter 06) supported Alternative B due to concerns regarding the detrimental effects of grazing in the LeClerc Creek allotment, including degraded water quality, erosion on roads and streambanks, damage to planted seedlings, spread of invasive weeds, and degradation of recreational experiences. Cost of efforts to mitigate these effects was also a concern.

Another individual (Letter 16) did not oppose cattle grazing, but did have concerns with conditions in LeClerc Creek (such as riparian damage) and therefore indicated support for Alternative B. He was disturbed that Alternatives C and D did not provide funding for proposed changes.

The third individual (Letter 08), while acknowledging there are natural resource concerns which need to be addressed, voiced support for continued grazing in the LeClerc Creek Allotment, in

line with managing national forest system land for multiple uses and in a conservation manner for all. He suggested that more detail and discussion should be provided regarding fence location, type of fence, cattle trails used for moving and collecting livestock, livestock exclusions for private landowners, maintenance, topography, etc. He indicated it didn't seem that Alternatives C and D had been discussed in detail with the allottee (permittee) or private landowners, and recommended that the pros and cons of the alternatives be better identified.

Response: Alternative B would respond to the concerns of the first two individuals (Letters 06 and 16), since cattle grazing would be discontinued and the allotment closed.

Alternatives C and D could respond to some concerns identified by the third individual (Letter 08), since additional improvements would occur to better manage cattle movement in and adjacent to the allotment. If Alternative C or D were chosen for implementation, the Forest would prioritize funding to complete the proposed improvements; however, due to the manner in which funds are appropriated by Congress, the Forest Service has no way of knowing for certain what levels of funding will be available in the future and therefore cannot guarantee funding at this time.

Alternative A, existing management, would not respond to concerns identified by any of the three individuals.

The comments submitted by individuals did not identify new issues for analysis or indicate a need for development of a new alternative. Discussions in Chapters 2 and 3 were modified to more clearly describe alternatives and provide a better comparison of the effects.

Letters from Agencies/Elected Officials

Consistent with NEPA Section 102(c) and Forest Service Handbook 1909.15 (Chapter 20), copies of all comments received on the DEIS from Federal, State, and local agencies and elected officials are provided here. Copies of all DEIS comment letters are available on the Colville National Forest website for the LeClerc Creek Allotment project.

Pend Oreille County – Board of Commissioners



Pend Oreille County *Board of Commissioners*

Karen Skoog
District #1

Mike Manus
District #2

Stephen Kiss
District #3

Rhonda Cary
Clerk of the Board

Phone: 509-447-4119
FAX: 509-447-0595

PO Box 5025
Newport, WA 99156-5025

E-mail: commissioners@pendoreille.org

December 15, 2015

Gayne Sears, District Ranger
Colville National Forest
315 N Warren Avenue
Newport, WA 99156

Ms. Sears:

RE: LeClerc Grazing Allotment

The Pend Oreille County Board of Commissioners has a duty and obligation to the people we serve to protect the local tax base and the value of private property, promote economic stability, advance the customs, culture and heritage of the county and provide for future generations.

To accomplish these goals we believe it is prudent to work with Federal agencies to harmonize Federal land use plans with the plans which have been implemented in the county by utilizing Coordination. The Board has passed Resolution 2015-45 and Resolution 2015-46, to facilitate Coordination with the Federal Agencies.

Pursuant to 43 USC 1701 (FLPMA), which address the development and revision of land use plans, the agency is directed to coordinate with local government to keep it apprised and give consideration to local plans, resolve inconsistencies between Federal and non-Federal plans, provide meaningful involvement, and make sure the revised plan is consistent with State and local plans. 16 USC 1604 (NFMA) provides for coordination with local governments as does 42 USC 4321 (NEPA).

In response to the Draft Environmental Impact Statement regarding the LeClerc Grazing Allotment, we are addressing inconsistencies between the proposed alternatives, and adopted county policy.

Pend Oreille County has land use policies established in the Comprehensive Plan which was completed after much community input in 2005. Below is a summary of the Customs and Culture which are the foundation for our way of life and traditional resource based economy of the county.

Statement of Values: The customs and culture of Pend Oreille County are woven with the threads of an independent people, who have extracted their livelihoods from the natural resources of the area for the past one hundred years or more. Timber, farming, ranching and mining are lifestyles and livelihoods that are connected to the land. The values include problem solving on a local level and recognize the benefits of open spaces maintained by agriculture and the timber industry. *Comprehensive Plan Statement of Values.*

The Purpose: The purpose of this comprehensive plan is to present the goal and policy statements that will guide future growth and development in Pend Oreille County. Although written according to the requirements of the Washington State Growth Management Act, the goals and policies of this comprehensive plan reflect the customs and culture of Pend Oreille County. With an increasing percentage of the County's residents living in the unincorporated areas of the County, land use planning is increasingly necessary to protect water and air quality, wildlife habitat, and the timber and agricultural resource-based occupations dependent on the open spaces in the County. In order to take responsibility

for the future of our County, the comprehensive plan protects our property rights while directing the writing of ordinances that will help to ensure the use of land for timber production, ranching, farming, and mining. In other words, this comprehensive plan applies to everyone who works and resides in the County. *Comprehensive Plan 1.0 Introduction.*

The Pend Oreille County Board of County Commissioners have identified inconsistencies between our locally crafted Comprehensive Plan and the suggested changes to the LeClerc Creek Grazing Allotment Management Planning Draft Environmental Impact Statement.

The narrow Pend Oreille River Valley naturally limits agriculture land to only about 3%. Cattle producers depend upon a summer range to graze cattle on the 59% of Federal lands so that haying can be done on the river valley pastures where the cattle return to in the winter. This information is supported by Land Ownership information in the Comp Plan figure 2.1 and table 2.5.

The summer grazing allotment system of operation must be protected in order to protect the industry. Natural Resource Industries are a key component of economic development in the County. The Washington State Growth Management Act's goal for Natural Resources is: *"Natural resource industries. Maintain and enhance natural resource-based industries, including productive timber, agricultural, and fisheries industries. Encourage the conservation of productive forest lands and productive agricultural lands, and discourage incompatible uses."* Comp Plan 3.2

Livestock may affect rural land owners; however the areas around the allotment are open range. The Code of the New Frontier recognizes this is not easy, but it is a known factor. *5.4 Cattle and other herd type animals can be very noisy at times and can create objectionable odors, especially when large numbers are confined on a small area. Ask yourself if you can handle it.*

The Pend Oreille County Board of County Commissioners recognizes the willingness of the permittee to collaborate and make concessions early on in order to provide a harmonious and cooperative plan that respects both environmental and cultural concerns by adjusting his operations. This is supported by the Comprehensive Plan. *Citizen Participation and Coordination. Encourage the involvement of citizens in the planning process and ensure coordination between communities and jurisdictions to reconcile conflicts.* Comp Plan 1.1

The Board, based on adopted policy of Pend Oreille County and discussions with the permittee, find the only alternative that would adequately support the feasibility of continued operations is Alternative A.

The Pend Oreille County Board of County Commissioners appreciates the regular communication and meetings with our district ranger. We value this relationship and look forward to coordinating with USFS on this and other plans and projects.

Please see the attached Comprehensive Plan, Code of the New Frontier, Herd District map and Resolutions 2015-45 and 2015-46. *Also attached is document titled Allotment Study Requests.*

PEND OREILLE COUNTY
BOARD OF COMMISSIONERS


Stephen Kiss, Chair


Mike Manus, Vice-Chair


Karen Skoog, Member

Attachments

Note: Attachments to the Pend Oreille County Board of Commissioners' letter follow, with the exception of the 150-page Comprehensive Plan. The letter with full attachments can be viewed on the Colville National Forest's project website (<https://www.fs.usda.gov/project/?project=41517>).

The Role of Livestock Grazing on Public Lands Today

Grazing, which was one of the earliest uses of public lands when the West was settled, continues to be an important use of those same lands today. Livestock grazing now competes with more uses than it did in the past, as other industries and the general public look to the public lands as sources of both conventional and renewable energy and as places for outdoor recreational opportunities, including off-highway vehicle use. Among the key issues that face public land managers today are global climate change, severe wildfires, invasive plant species, and dramatic population increases, including the associated rural residential development that is occurring throughout the West.

Livestock grazing can result in impacts on public land resources, but well-managed grazing provides numerous environmental benefits as well. For example, while livestock grazing can lead to increases in some invasive species, well-managed grazing can be used to manage vegetation. Intensively managed "targeted" grazing can control some invasive plant species or reduce the fuels that contribute to severe wildfires. Besides providing such traditional products as meat and fiber, well-managed rangelands and other private ranch lands support healthy watersheds, carbon sequestration, recreational opportunities, and wildlife habitat. Livestock grazing on public lands helps maintain the private ranches that, in turn, preserve the open spaces that have helped write the West's history and will continue to shape this region's character in the years to come. *Information taken from BLM Website:*
(<http://www.blm.gov/wo/st/en/prog/grazing.html>)

When addressing best management practices (BMP's) for agricultural uses; the best available science should always be at the forefront of all decision making processes and; *above all else, will the proposed alternative be functional to the producer/permittee.* If the status-quo BMP's are applied to a particular situation, it may well create a negative domino effect that potentially results in grave consequences to water quality in the future. If a rancher feels like they have no voice or the alternatives being proposed are not feasible to implement, they may be forced to terminate operations on a grazing allotment. If an allotment is not properly managed through best available science and is abandoned, the rancher may put all cow/calve pairs on valley land which would stop hay production and concentrate fecal coliforms to the valley floor or... the rancher may sub-divide selling off the ranch land to developers that may well lead to further development that could potentially create water quality concerns from the associated development (i.e. Housing, golf courses, etc.).

The University of California Davis Rangeland Research Laboratory has recently shown that with adaptive management and coordination/cooperation among cattle producers, stakeholders and agencies; healthy grazing allotment operations, endangered species and public recreation can co-exist.

We strongly encourage you to look at the UC Davis studies on USFS California studies on USFS lands and consider implementing a similar study here in Pend Oreille County to ensure the best available science is being used when these important decisions are being made. Our rural, western heritage values and way of life are potentially at stake if the policy and decision makers do not consider and implement the best available science through adaptive management and BMP's when developing rangeland borders and rangeland operation policy.

Please see the bulleted information below from the University of California Davis Rangeland Research Laboratory (http://rangelandwatersheds.ucdavis.edu/main/projects/public_grazing_water_overview.html): We encourage you to view the website and have provided the contact information for the Professor responsible for the research.

Water Quality on US Forest Service Grazing Allotments

Overview

- Focus of water quality on USFS Grazing Allotments in CA (Sierra Nevada) (same studies could be conducted here in Pend Oreille County).
- Potential for elevation of nutrient concentrations
- Identify sources of pollution (cattle? Wildlife? Other?)
- Guide management to improve water quality where needed

Surface Water Quality Study

- quantify fecal indicator bacteria (fecal coliform and *E. coli*) and nutrient concentrations
- compare results to a) water quality benchmarks, b) maximum nutrient concentrations recommended to avoid eutrophication, and c) estimates of nutrient background concentrations
- examine relationships between water quality, environmental conditions, cattle grazing, and recreation.

Waterborne Pathogen Study

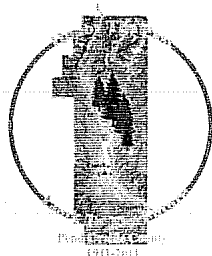
- conducting waterborne pathogen (*C. parvum*, *Giardia*, pathogenic *E. coli*, and *Salmonella*) monitoring at the interface of livestock grazing, recreational activities, and drinking water locations to directly evaluate risks posed to public health by livestock grazing on key allotments. This study is in progress

Outreach *conducting outreach to USFS staff, grazing managers and stakeholders on the topics of:*

- types, sources, transport, and fate of livestock derived pollutants
- assessment of management induced risk to water quality
- grazing management practices to mitigate risk and improve water quality
- development, implementation, and interpretation of monitoring to support adaptive management to improve water quality
- integration of best available science into the management planning process

(UC Davis studies: "Water quality conditions associated with cattle grazing and recreation on national forest lands" conducted by Dr. Kenneth W. Tate: Email: kwate@ucdavis.edu, Voice: 530-754-8988 Fax: 530-752-4361 Mail Address: Kenneth W. Tate Plant Sciences, Mail Stop 1 One Shields Avenue Davis, CA 95616-8780) UC Davis Rangeland Watershed Laboratory: www.rangelandwatersheds.ucdavis.edu

*A Guide to
Modern Frontier Living
in
Pend Oreille County
Washington*



*Presented by
The
Board of County Commissioners
&
Community Development Department*

A Guide to Modern Frontier Living in Pend Oreille County, Washington

Zane Grey, the famous western author first chronicled the Code of the West. The unwritten laws of conduct governed the men and women who came to settle the lands west of the Mississippi in the westward expansion of the 1800's. Values like integrity, self-reliance, honesty and accountability guided their day-to-day decisions and lives. Survival depended upon their ability to cooperate with their neighbors. An attitude that encompassed sharing the good and the bad built the foundations of the society we enjoy today. In keeping with that spirit, we offer the following information with the hope that it will help people understand some of the differences between rural and urban living. We want to alert the reader to these realities and diminish the expectations some bring with them that life here in Northeast Washington is no different than where they came from.

Introduction

“The County doesn’t even plow the snow to our driveway,” she stated incredulously. With that, this couple from the city (actually, southern California in this case) put their brand new home up for sale without ever moving in. Given the actual location, this new home was not that remote. It was only a half mile from the end of the pavement and just over four miles from the nearest town. A family of old-timers lived a quarter mile downstream and within view. Nevertheless, she said “No way, this isn’t what I expected so close to town.” While refusing to move in may be an extreme example, this type of reaction often happens in one form or another throughout the rural west. To help newcomers to Pend Oreille County make wiser real estate decisions and be more realistically prepared for a new situation, the County offers this pamphlet.

ACCESS

- 1.1 Emergency response from law enforcement, fire departments, and ambulances is not as quick here in the County as in the cities. Obviously, distance is a big factor. Responding parties are generally within a mile or less of the need in a city but sometimes miles from the emergency in the County. The fact that you pay taxes to a fire district or the ambulance district will not change this distance factor. Fire departments, for the most part, are volunteer organizations. It is a risk you choose to accept when you live here. Weather conditions can also become a complicating factor with response vehicles.
- 1.2 Public roads within the County are maintained by the Pend Oreille County Public Works Department. Total road inventory amounts to slightly over 754 miles. Many private residences and subdivisions have private roads for which the county has no responsibility. There are approximately 82 miles of non-maintained County roads. Non-maintained means that the county does not plow, grade, gravel or perform any form of maintenance on these road miles. Owners themselves or Home Owners Associations generally maintain them. You will most probably be required to pay dues to the Association to help with the costs in a private situation.
- 1.3 It is important to note that the School Districts in Pend Oreille County generally will not travel on private roads. Parents may need to drive their children to a bus stop on the public road. The School District Offices in Newport, Cusick and at Selkirk can answer questions on this subject.
- 1.4 Dust is frequently a problem to homeowners on unpaved roads. Some roads are treated with a dust guard, but this doesn't solve the problem completely. Know what you are buying into!

- 1.5 Don't expect neighbors to sign a petition asking for improved service from the County. Costs are kept down by the willingness of people to go without many of the things suburban and urban people regard as necessities. People cherish their independence and willingness to take care of their own.
- 1.6 If your road is unpaved, it is highly unlikely that Pend Oreille County will pave it in the foreseeable future. \$250-500,000 per mile of construction money isn't easy for the County to find. A portion of your property taxes goes toward the maintenance of existing county roads. It does not cover new road construction. Road dollars are collected by the State on the sale of fuels and re-distributed to counties and cities. Generally the amount is enough to maintain and improve a road, but not to construct new, paved roads. However, county standards require developers of new residential subdivisions to build access roads that meet current standards. This helps relieve the County of the burden and places the cost on those that choose to buy the lots.

UTILITIES

- 2.1 Electricity and telephone service is generally available in County subdivisions. Pend Oreille PUD, Frontier Telephone and Pend Oreille Telephone Company are the primary providers. Several wireless providers also serve Pend Oreille County residents.
- 2.2 Water and sewer are also municipal services not generally available in Pend Oreille County. You will be required to obtain a septic permit from the Northeast Tri-County Health District Office in Newport. A few subdivisions have central water systems, but most do not. Your water will be obtained from a permitted well which you may even have to drill. Permits from the Washington Department of Ecology are required. The permit will allow the following:
 - Providing water for livestock (no gallon per day limit).

- Watering a non-commercial lawn or garden one-half acre in size or less (no gallon per day limit, however limited to reasonable use).
- Providing water for a single home or groups of homes (limited to 5,000 gallons per day).
- Providing water for industrial purposes, including irrigation (limited to 5,000 gallons per day but no acre limit).

2.3 Solid waste disposal is available at three County Transfer Stations.

- Deer Valley Road - near Gray Rd, 4 miles west of Newport
- Jared Road - near Usk on Calispel Rd and SR 211
- Sullivan Lake Road - east of the bridge just south of Ione.

There are two private trash hauling services that provide pickup service in the county. Check your local phone book or call 509-447-4513, the Solid Waste division of Public Works. Although the county itself has no curbside pickup for recyclables, each transfer station offers recycling and household hazardous waste drop off services. The county urges you to recycle and keep your waste stream at a minimum. Pend Oreille County waste is trucked to Spokane and then hauled by railcar to Roosevelt, Washington (about 330 miles south and west of us along the Columbia River, for final disposal at the Roosevelt Landfill. The monies to support this service are generated at the transfer stations by tonnage charges. No property taxes are collected for this effort. Remember, the more trash you create, the more you pay! It pays to recycle!

THE PROPERTY

- 3.1** Owning a piece of land, especially a rural parcel, demands a certain level of care. Remember, you are only the present steward and eventually it will belong to someone else.

- 3.2 Learn about the easements that affect your property. They usually allow another party a use that you need to be aware of, even though you hold the title.
- 3.3 Fences are often misaligned and do not necessarily depict the property line. Always ask the seller to point out the survey pins and compare them with the plat.
- 3.4 Most subdivisions and planned unit developments are governed internally by a set of covenants (CC&R's) that lay out the restrictions and rules by which the property owners must abide. These are usually written by the developer's attorney and one should never buy a piece of property without thoroughly reading the set that goes with your development. The seller is obligated to provide you with a copy. Don't hesitate to ask or remind the seller or agent. Read and understand them completely. Make certain you can abide with the rules and restrictions before buying. Homeowner's Associations can change the CC&R's after the developer has sold his interest. The County does not enforce these internal rules.
- 3.5 Don't forget that as other development takes place around your home site changes may occur. Views change or can be blocked by new development. Traffic can increase. Peace and quiet can be affected. Be aware and don't take a seller's statement as factual without some proof or documentation on these types of issues.
- 3.6 Noxious weeds are a serious concern in Washington because of the threat they bring to natural and agricultural ecosystems. They have the ability to crowd out native and other desirable plants, taking over valuable agricultural land and natural habitats. They are generally avoided by wildlife and domestic stock, some are poisonous, and they can negatively affect property values. In addition, Washington State's Weed Law, RCW 17.10, dictates that it is a landowner's responsibility to control noxious weeds on their property. The County Weed Coordinator has the authority to enter

properties, take samples and ensure adequate control measures are implemented. Failure on the part of the landowner can result in the Weed Board assuming implementation and billing for the cost. However, the Weed Board is also available to help you design a weed management plan to fit your land management goals, has a cost-share program to help off-set the cost of control and has rental equipment to help you do the job that is necessary. Spotted knapweed, hawkweeds and oxeye daisy are the most common weeds in the county, others include Dalmatian toadflax, various thistles and leafy spurge – the worst weed. Educate yourself and do your part to keep Pend Oreille County as weed free as possible.

MOTHER NATURE

- 4.1 Pend Oreille County experiences the four distinct seasons. They also bring typical mountain weather. Summers can be extremely hot and dry. Late summer is usually the high fire danger season and sometimes thousands of acres of forests and rangeland go up in smoke. These events are dangerous and should be left to the professionals whose job it is to control them. Winter temperatures can fall below zero and heavy snowfalls are not unusual. A few warm spring days can change the snow to rushing torrents of water that damage shorelines, property frontages and sometimes remove small bridges and roads. Each of the seasons should be considered when you are choosing a home site. The County is not able to protect all private property from wild fires and flooding. Most of that protection has to be built into the site from the beginning. Likewise, there are some areas that should not be built on at all. Heavy timber can be a disadvantage during a forest fire. Dry grass and brush can become dangerous fuel if left to grow near your home. Designing your landscape to give your home a protected green envelope will help with wildfires. Advice on this subject is available from local fire departments and the WSU Extension Office.

- 4.2 Country living and getting close to nature is a terrific idea. However, one should be aware that the wildlife you may encounter could wreak havoc on your life style. Deer love to dine on many of the bushes and small trees that decorate one's yard, especially expensive landscaping. Be prepared to see and deal with eagles, ravens, coyotes, foxes, mountain lions, squirrels, bears, and perhaps even a wolf. Small pets and pet food left unattended will attract many of these species. Skunks and raccoons frequently like to dine on whatever scraps are left lying around. Mountain lions, and coyotes like to dine on cats and small dogs whereas the bear likes your kitchen trash but, prefers your refrigerator if he can gain entry to the house.

AGRICULTURE

Agriculture and natural resource uses are still actively pursued in this County. Even though many still think of farming as a romantic life, some facts need to be recognized and understood.

- 5.1 Loggers and farmers often work long hours, especially during planting and harvest seasons. Those hours may not align with yours, especially after mid-night when the logger is sawing and the farmer and his bailer are just getting warmed up for the very early morning operation.
- 5.2 Machinery like chainsaws, trucks, tractors, and bailers are very noisy and invariably cause large amounts of dust. If you locate near this occupation, you have to learn to live with it. State law says a farmer has a right to farm. Period.
- 5.3 When necessary chemicals are sprayed from airplanes. They try to spray when the wind isn't blowing but there isn't any guarantee, especially during a wildfire. These sprays drift with the wind and

sometimes cause breathing difficulties or damage to neighboring crops.

- 5.4 Cattle and other herd type animals can be very noisy at times and can create objectionable odors, especially when large numbers are confined on a small area. Ask yourself if you can handle it.
- 5.5 Wide open spaces are not a license for pets to roam. Dogs can quickly become a nuisance to livestock. Pets caught attacking or harassing livestock may be shot.

PERMITS

- 6.1 Anyone living along a stream, river, lake or wetlands in Pend Oreille County needs to be aware that there are laws in place to protect the riparian nature of these areas and no disturbance is allowed without proper permits. Please call the Community Development Office at 509-447-4821 to inquire before attempting to alter a shoreline or stream bed.
- 6.2 Building permits are required in all jurisdictions in the county, cities & towns
- 6.3 Septic permits are also required and may be obtained from the Northeast Tri-County Health District @ 509-447-3131, located in Newport.
- 6.4 New commercial businesses outside of the City and the Towns are required to obtain a Conditional Use Permit from the County. Please Contact the Community Development Department prior to opening a new commercial business.

CONCLUSION

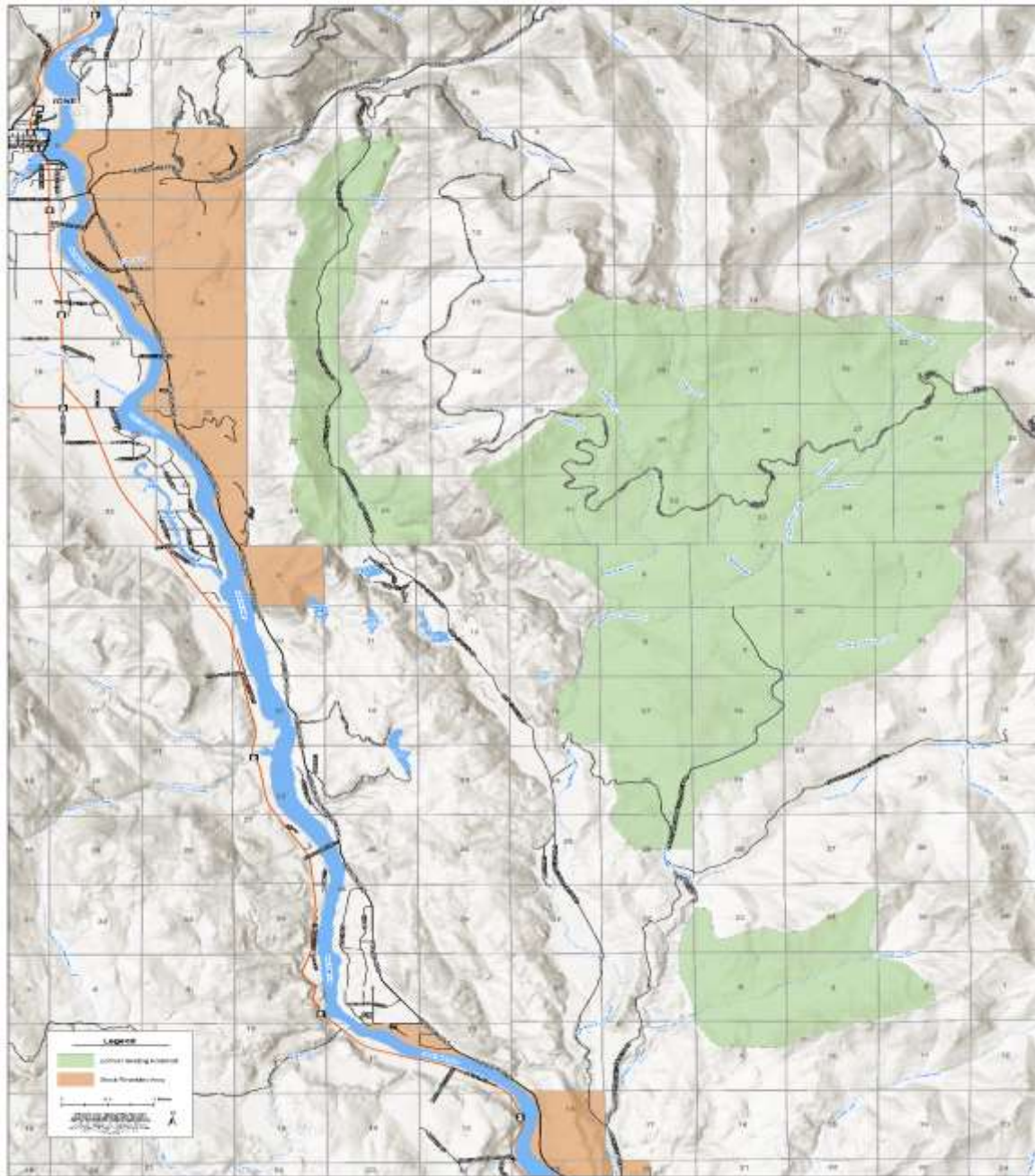
It is our sincere hope that your choice to live in Pend Oreille County will be a positive experience. If the tips offered in this publication prevent someone from making the mistake of a lifetime, they will have been worthwhile. We encourage people to read this, question their expectations, and ask themselves if this is really the life they want to live. Surprises aren't always fun! Prepare yourself with as much knowledge as possible about the area you have chosen to live in.

If you decide to buy and live here, we also invite you to learn some about the folks who came before you; the ranchers and miners who opened up this valley for settlement. To do that, visit our wonderful historical museums in Newport and Tiger.

INFORMATION RESOURCES

www.pendoreilleco.org

Pend Oreille County Community Development Department.....	509.447.4821
Northeast Tri-County Health District.....	509.447.3131
Pend Oreille County Weed Board.....	509.447.2402
WSU Extension.....	509.447.2401
Pend Oreille County Public Works Dept.....	509.447.4513
Pend Oreille County Commissioners.....	509.447.4119
Newport School District.....	509.447.3167
Cusick School District.....	509.445.1125
Selkirk School District.....	509.446.2408



PEND OREILLE COUNTY

RESOLUTION NO. 2015-45

IN THE MATTER OF MAINTAINING & EXPANDING
GRAZING ON PUBLICLY HELD LANDS

WHEREAS, the Board finds that livestock is and historically has been a vital element of Pend Oreille County's culture and economy; and

WHEREAS, the Board finds that utilization of publicly held lands is and has historically been a vital part of livestock production; and

WHEREAS, this resolution supports the goals of the Growth Management Act as referenced in the Pend Oreille County Comprehensive Plan (Natural Resource Industries) of maintaining and enhancing natural resource based industries, encouraging the conservation of productive forest lands and productive agricultural lands, and discouraging incompatible uses.

NOW, THEREFORE, IT IS HEREBY RESOLVED AND ORDERED that increased availability for grazing of livestock is in the public interest of Pend Oreille County residents and is to be continually sought after;

BE IT FURTHER RESOLVED that reductions in grazing on publicly held lands can only damage the culture and economy of Pend Oreille County and must be avoided.

PASSED this 15th day of December, 2015

PEND OREILLE COUNTY COMMISSIONERS


Stephen Kiss, Chair


Michael Manus, Vice-Chair


Karen Skoog, Member

ATTEST:


Rhonda Cary, Clerk of the Board

BEFORE THE BOARD OF PEND OREILLE COUNTY COMMISSIONERS

IN THE MATTER OF PUBLIC LANDS
AND NATURAL RESOURCESRESOLUTION NO. 2015-46INVOKING AUTHORITY TO COORDINATE
WITH FEDERAL AGENCIES

THE GOVERNING BOARD OF PEND OREILLE COUNTY has the duty and responsibility to protect the tax base and economic stability that benefits the citizens within its jurisdiction; it further has the duty and responsibility to protect the social cohesiveness that is critical to providing the services necessary to protect and provide for the public health, safety and welfare of its residents.

WHEREAS, the Board finds the preservation of the customs, culture and the general economic stability of the citizens and the protection and use of their lands are intrinsic to their ability to be involved in the decision making process of any agency and/or regulatory control that may impact their land use rights; and

WHEREAS, the Board finds the Pend Oreille County Commissioners have determined that certain policies need to be established to sufficiently address the influence that actions by Federal agencies and entities may have on land use and natural resources in Pend Oreille County; and

WHEREAS, the Board finds actions taken by Federal and State agencies without consultation and coordination with the County and in conjunction with the Pend Oreille County Comprehensive Plan and Development Regulations may impact the purposes and goals of the Comprehensive Plan resulting in the failure to preserve the customs, culture, economic stability and the environmental quality of life of the citizens and residents of the County.

NOW, THEREFORE, IT IS HEREBY RESOLVED that Pend Oreille County invokes the coordination authority that is provided in the Federal Code 16 USC 1604, 42 USC 4321 and 43 USC 1701.

PASSED this 15th day of December, 2015

PEND OREILLE COUNTY COMMISSIONERS


Stephen Kiss, Chair


Michael Manus, Vice-Chair


Karen Skoug, Member

ATTEST:


Rhonda Cary, Clerk of the Board

Pend Oreille County – Public Utility District



Pend Oreille County Public Utility District

Administrative Offices - P.O. Box 190 • Newport, WA 99156 • (509) 447-3137 • FAX (509) 447-5824
Box Canyon Hydro Project - P.O. Box 547 • Ione, WA 99139 • (509) 446-3137 • FAX (509) 447-6790

November 13, 2015

Gayne Sears, District Ranger
Colville National Forest
315 N. Warren
Newport, WA 99156

RE: LeClerc Creek Grazing Allotment
Draft Environmental Impact Statement (DEIS)

Dear Ms. Sears:

Public Utility District #1 of Pend Oreille County (District) appreciates the opportunity to comment on the LeClerc Creek Grazing Allotment DEIS. The District cannot support any alternative that continues to allow grazing in the LeClerc Creek drainage (i.e., Alternative A, C, or D), because these alternatives will result in continued impacts of cattle grazing in areas of current and future District stream improvement projects, which are ultimately funded by the District's ratepayers.

As part of its Trout Habitat Restoration Program (THRP), the District has already invested implementation funds of over \$400,000 toward on-the-ground stream enhancement work in the LeClerc drainage. This program has conducted projects such as placement of instream large woody debris (LWD) for fish habitat and culvert replacement to provide fish passage. There has been more than \$2 million additional (non-implementation) funds spent on supporting stream enhancement work in the LeClerc drainage, for such tasks as habitat surveys, project site selection, design, planning, permitting, and monitoring.

The District is committed to continue its enhancement and restoration efforts in the LeClerc drainage, as it is designated as a primary watershed for bull trout recovery. Alternative C or Alternative D simply shift the grazing impact from one part of the watershed to another, and neither alternative provides sufficient stream protections to minimize damage to stream habitat and current and future stream enhancement projects. If grazing continues in the LeClerc drainage, then the District cannot be held responsible for any grazing impacts to stream reaches where the District monitors stream habitat or conducts habitat enhancement projects, rather that responsibility must fall to either the Forest Service or the permittee.

Page 2 – Ms. Sears

The District would support an alternative that includes moving the grazing allotment to another drainage that is not designated as Bull Trout Critical Habitat.

Should you have any questions regarding this matter, please do not hesitate to contact me at (509) 447-9331 or at mcauchy@popud.org.

Sincerely,



Mark Cauchy
Director, Regulatory & Environmental Affairs

MC/net

Washington Department of Ecology



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

4601 N Monroe Street • Spokane, Washington 99205-1295 • (509)329-3400

December 15, 2015

Mr. Rodney Smolden
Acting Forest Supervisor
US Department of Agriculture-Forest Service
Colville National Forest-Headquarters
765 South Main Street
Colville, WA 99114

Re: LeClerc Creek Grazing Allotment Management Plan

Dear Mr. Smolden:

Thank you for the opportunity to comment on the Draft Environmental Impact Statement regarding the assessment of approximately 23,412 acres to offer four alternatives for grazing allotment boundaries and adaptive management strategies to respond to cultural and natural resource issues (Proponent- US Department of Agriculture-Forest Service). The Department of Ecology (Ecology) has reviewed the documents and submits the following comments:

Water Quality Program-Karin Baldwin & Jean Parodi

For comments on this project, please see the attachment to this letter. Should you have any questions regarding these comments of directives given within the comments, please contact Ecology's Water Quality Program at the Spokane Office. You may reach either Karin Baldwin at (509) 329-3601 or via email at karin.baldwin@ecy.wa.gov or Jean Parodi at (509) 329-3517 or via email at jean.parodi@ecy.wa.gov.

State Environmental Policy Act (SEPA)-Terri Costello (509) 329-3550

Ecology's comments are based upon information submitted for review. As such, they do not constitute an exhaustive list of the various authorizations that must be obtained or legal requirements that must be fulfilled in order to carry out the proposed action.

If you have any questions or would like to respond to these comments, please contact the appropriate staff listed above.

Department of Ecology
Eastern Regional Office
(Ecology File #: E15-044)

Attachment

cc: Michelle Paduani, US Department of Agriculture-Forest Service, Colville National Forest

Comments on Chapter 3. Affected Environment and Environmental Consequences, Hydrology and Water Quality section pages 88-124

Page 89-90, Beneficial Water Use: *“Designated uses within the project area include, but not limited to: char spawning/rearing, wildlife, livestock, recreation, and aesthetics (DOE: WAC 173-201A-200).”*

- Need to add core summer salmonid habitat, extraordinary primary contact recreation, and water supply while deleting recreation. The reference should be Chapter 173-201A-600 and 602 WAC.

Page 90, Washington Water Quality Rules and Regulations, second paragraph:

- The designated uses are not entirely correct and water quality standards are not provided. Please make the following corrections to this report and ensure the language is consistent in other parts of the EIS:
 - Surface waters within Dry Canyon (Cato and Tioga creeks, as well as Caldwell, Anderson, Little Anderson, and Scotchman lakes) have the following designated uses:
 - Core summer salmonid habitat; extraordinary primary contact recreation; domestic, industrial, and agricultural water supply; stock watering; wildlife habitat; harvesting; commerce and navigation; boating; and aesthetic values (173.201A-600 WAC).
 - The designated uses for all water bodies in LeClerc Creek, East Branch, and West Branch LeClerc Creek including tributaries in or above the Colville National Forest are the same as those in Dry Canyon with one important exception. In the LeClerc basin, char spawning and rearing replaces core summer salmonid habitat (173-201A-602 WAC). The water quality standards assigned to protect these designated uses are in Table 1.

Table 1. Water Quality Criteria for the LeClerc Project Area

Parameter	Designated Use	Criteria
Temperature	Char spawning and rearing	12°C (53.6°F) highest 7-day average daily maximum
	Core summer salmonid habitat	16°C (60.8°F) highest 7-day average daily maximum
Dissolved oxygen	Char spawning and rearing	9.5 mg/L lowest 1 day minimum
	Core summer salmonid habitat	Same as above
Turbidity	Char spawning and rearing	Turbidity shall not exceed: <ul style="list-style-type: none"> • 5 NTU over background when background is 50 NTU or less; or • A 10% increase in turbidity when background is more than 50 NTU
	Core summer salmonid habitat	Same as above
pH	Char spawning and rearing	pH shall be within the range of 6.5 to 8.5, with a human caused variation within the above range of less than 0.2 units
	Core summer salmonid habitat	Same as above
Fecal coliform	Extraordinary Primary Contact Recreation	Fecal coliform levels must not exceed a geometric mean value of 50 colonies/100 mL, with not more than 10% of all samples (or any single sample when less than 10 samples exist) obtained for calculating the geometric mean value exceeding 100 colonies/100mL.

Page 97, last paragraph: *"The holding pen includes a tributary and wetland...cattle are kept here short term and minimal impacts are found inside the holding pen...Loading cattle at end of season...requires the cattle to be moved across Middle Branch LeClerc Creek to the loading chute on the south side..."*

- The document fails to describe the use of the holding pen and loading chute at the beginning of the grazing season. Please add a description of how these facilities are used at the beginning of the grazing season including duration of use.
- The holding pen needs to be relocated to another location outside of the creek and wetland, and outside of the riparian management zone. A holding pen with surface waters running through it is unlikely to comply with Washington State Water Quality Law (Chapter 90.48.080 RCW) and water quality standards. Animals confined within pens that have surface water running through them can trigger a concentrated animal feeding operation (CAFO) permit from the Department of Ecology. While the permit may not be required at this time for short duration confinement, permit requirements could become more protective in the future.
- The holding pen should be located so that cattle do not need to be moved across the creek or wetland to get to the loading chute. This would help protect both the stream channel and water quality.

Page 98, Water Quality, last paragraph: *"Those parameters affected by grazing are typically limited to sediment, nutrients, fecal coliform, and water temperature."*

- Grazing can also impact dissolved oxygen and pH levels because the addition of nutrients from manure and urine can alter the oxygen concentration in the water and increase pH levels. (There is an increase in biochemical oxygen demand required to break down the nutrients).

Page 102, Figure 8:

- The graph incorrectly shows the temperature standard for Middle Branch LeClerc Creek at 16°C instead of 12°C. The analysis needs to be recalculated at 12°C. (Note: Figure 8 only shows data for 2013 and 2014, though the text indicates that data for 2010 should also be displayed.)

Page 103, second paragraph: *"The percent of canopy cover on Middle Branch LeClerc Creek ranges from about 30% - 85%. The stream reach below, and through, the holding pen has the least canopy cover (i.e. about 30%). In 2005, the average canopy cover for Middle Branch LeClerc Creek was 60% with a site potential of 96%. The Colville National Forest Temperature and Bacteria TMDL Water Quality Implementation Plan (2006) indicate the level of canopy cover needed to bring the stream water temperature into compliance is 84%, an increase of 24% [i.e. Canopy cover needed {84%} - existing canopy cover {60%} = increase in canopy cover needed {24%}]."*

- The TMDL was completed prior to the adoption of the 12°C temperature standard for char spawning and rearing, so site potential shade is now likely required to achieve the current temperature standard.
- Please evaluate and discuss whether the concentrated presence of cattle during the wetter times of year (spring and fall) are leading to lower recruitment of riparian vegetation since surrounding reaches achieve significantly greater canopy cover.
- See earlier comment about the need to relocate the holding pen and loading chute outside of the riparian buffer and wetland.

Page 104, second paragraph: *"Approximately 50% of the reaches sampled in the East and West Branch LeClerc Creek subwatersheds are in poor/fair condition and functioning at risk. The fair rating is contributed to several restoration efforts completed over the last two decades...Further improvement in the condition rating of the watersheds are expected under the restoration efforts for these priority watersheds as essential restoration projects are implemented over the next decade."*

- After 20 years of restoration work within the allotment, reaches were only rated as fair. Provide the rationale for the belief that current or future efforts will lead to improvement when previous efforts have not succeeded. For example, despite the 20 years of restoration work in the allotment, the following pages from this report document continuing problems:
 - The top of page 105 describes negative effects of grazed riparian areas compared to protected areas.

- Page 105, Effects Analysis, Hydrologic and Pasture Environment Effects, middle of second paragraph states that "the trend for many of the localized impacted riparian areas within the allotment boundary appears to be static or downward."

Page 109, Alternative C, Direct and Indirect Effects, last paragraph: "Stream reaches in the analysis area where potential impacts could compromise the hydrologic environment and result in adverse effects include the upper Middle Branch reaches that are accessible in the area of NFS road 1935011, the West Branch LeClerc Creek reach (T36R44S3,4) below the 1935000 crossing (T36744S33), West Branch LeClerc Creek reach in T36R44S8 in the vicinity of a legacy crib dam, and the temperature impaired reach of West Branch LeClerc Creek in the diamond City area (T36R44S18,19)."

- These adverse effects could put the Forest Service at risk of violating Washington State Water Quality standards and Washington State Law (Chapter 90.48.080 RCW). Please see Ecology's guidance [Clean Water and Livestock Operations: Assessing Risks to Water Quality](#), publication number 15-10-020.

Page 110, first full paragraph: "Effective pasture boundaries are expected to be implemented and are highly likely to result in increased cattle activity along streams within the Mineral Creek and Upper Bunchgrass pastures because cattle drift will be negligible compared to the existing condition (e.g. West Branch LeClerc, Mineral, and Whiteman Creeks). This could cause increased bank instability, decreased riparian vegetation, and elevated sediment delivery in these streams which appear to receive light use under existing condition. These areas are currently undergoing aquatic restoration efforts including large wood placement and bank stability. Monitoring of the effects of the changes in management of the range allotment will be necessary for at least 3 years to determine whether or not adverse effects are occurring to the restoration projects."

- This paragraph does not provide confidence that the proposed action will protect water quality and meet conditions in the MOA with Ecology.
- West Branch LeClerc Creek is on the proposed 2014 303(d) list for high temperatures and is covered under the Colville National Forest Temperature and Bacteria TMDL. Both West Branch LeClerc Creek and its tributaries, including Mineral and Whiteman Creeks, will need increased shade/riparian vegetation if they are to meet the state temperature standard and satisfy requirements of the TMDL. This paragraph indicates the opposite may occur.

Page 112, last paragraph: "Cattle use predominantly occurs on the upper portion (Mineral Creek vicinity) of the old railroad grades due to ease of travel. There are at least three locations along the old railroad grade/road where the slope has failed. One site is located adjacent to West Branch LeClerc Creek in T. 36N, R. 44E, section 18. Continuing to move cattle on unstable slopes could weaken the slopes and result in additional slope failures."

- Continuing to move cattle across unstable areas near streams could also trigger sediment delivery to the water, which is likely to violate state water quality standards. It is unclear whether cattle will still be moved across unstable areas if the allotment is renewed.

Page 113, second paragraph: "Overall, water developments and stock troughs are likely to reduce adverse impacts on streams and associated riparian areas (George et al., 2011) although they are not expected to remove all cattle use. Per discussion on March 3, 2014 with Richard Bowman, owner-operator of Thousand Hills Ranch near Troy, ID, troughs for the purpose of improving riparian areas without fencing of the RHCA would not be expected to discontinue use of the riparian areas."

- The discussion of proposed alternative (C) doesn't indicate whether fences, brush barricades or other kinds of barriers will always be installed in conjunction with water troughs. Please clarify. Physically blocking direct access does seem necessary in order to protect riparian areas, stream banks and water quality.

Page 113, last paragraph: "With the implementation of all these improvements, it is moderately likely adverse effects would be mitigated over much of the analysis area and the overall adverse effect would be substantially reduced in the East Branch LeClerc Creek subwatershed and moderately increased in the West Branch LeClerc"

Creek subwatershed. If monitoring is not performed or adaptive management is not implemented, adverse effects would be expected to increase within the allotment."

- Please describe the assurances that the Forest Service will secure the funding to complete the monitoring and adaptive management necessary to avoid an increase in adverse effects and protect water quality.

Page 114, first full paragraph: *"Confidence level is moderate to low that effective pasture boundaries can be established and maintained to address the concerns related to drift and season long grazing patterns of the lower bunchgrass pasture due to recent harvest, low relief topography, and lack of essential vegetation to create barriers."*

- This paragraph does not provide confidence that the proposed action will protect water quality and meet conditions in the MOA with Ecology.

Page 115, third paragraph: *"The addition of acres to the Dry Canyon pasture, including TMDL impaired stream reach of West Branch LeClerc Creek, is solely for the purpose of trailing cows between Mineral Creek and current Dry Canyon pastures...Adaptive management actions, such as fencing between the road and West branch LeClerc Creek, may be necessary to avoid new impacts to the TMDL impaired stream reach of West Branch LeClerc Creek..."*

- There appears to be an assumption that water quality standards are only impaired within the identified "TMDL impaired stream reach". Watershed conditions upstream of an identified stream reach more than likely contribute to the impairment identified by a TMDL or the 303(d) list. Therefore, actions should be taken to protect entire lengths of streams listed as impaired or identified by the TMDL.

Page 118, Forest Plan Compliance: Alternative D, first paragraph: *"Alternative D is not compliant with Forest Plan standards and guidelines in that riparian values are deemphasized and compliance with state water quality requirements in accordance with CWA would not be adhered to..."*

- Ecology agrees that Alternative D, as described in the preceding narrative (pages 115-118), would be unlikely to meet water quality standards for temperature, bacteria and sediment delivery.

Page 124, first paragraph: *"The greatest concern in the West Branch LeClerc Creek subwatershed is the state of the TMDL impaired reaches where grazing pressure and impacts are expected to increase."*

- This is counter to the TMDL and the implementation plan established by the Forest Service and Ecology. Fence should be constructed and maintained along the entire length of the West Branch LeClerc Creek to prevent impacts, particularly since the temperature standard is now cooler than what the TMDL was based on. Moreover, there should be some consideration and evaluation of the impacts that will be transferred downstream of this location and the allotment.

Page 53 of the LeClerc Range Allotment Management Plan Hydrology report, last bullet:

"Alternatives C and D: Harden the stream crossing inside the holding pen and add enclosure fencing after obtaining the appropriate ACOE 404/WADOE 401 permit. Harden stream crossings and add enclosure fencing within the allotment as identified (see proposed action map). Design and implementation to be reviewed and approved by the Aquatics staff. Effectiveness monitoring will be completed by the Hydrologist and/or Fish Biologist."

- Please refer to a figure number for the proposed action map.
- The holding pen needs to be relocated to another site outside of the creek, riparian area, and wetland. A holding pen with surface waters running through it is unlikely to comply with Washington State Water Quality Law (Chapter 90.48.080 RCW) and water quality standards. Animals confined within pens that have surface water running through them can trigger a concentrated animal feeding operation (CAFO) permit from the Department of Ecology. While the permit may not be required at this time for short duration confinement, permit requirements could become more protective in the future. Hardened crossings will not go far enough to protect the creek and wetland from concentrated grazing impacts.

Washington Department of Fish and Wildlife



Washington Department of Fish and Wildlife
2315 North Discovery Place, Spokane Valley, Washington 99216-1566
Telephone (509) 892-1001 • Fax (509) 921-2440

December 14, 2015

Gayne Sears, District Ranger
Colville National Forest – Newport and Sullivan Lake Ranger Districts
315 North Warren Avenue
Newport, WA 99156

Re: Leclerc Creek Grazing Allotment Management Planning

Dear Ms. Sears, *Gayne*

Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement (DEIS) and specialists' reports for the Leclerc Creek Grazing Allotment Management Planning project. The Washington Department of Fish and Wildlife (WDFW) appreciates the hard work put forth by the Colville National Forest (CNF) in developing this project plan. We also appreciated the opportunity for CNF and local WDFW district staff to meet in November and discuss the DEIS alternatives. We value the excellent working relationship that exists between WDFW and the CNF and look forward to continuing to work together on resource management plans in the future.

General Comments

The area contained within the Leclerc Allotment boundary (boundary is the same in all DEIS alternatives) is occupied by numerous Washington State Priority Habitats and Species (PHS); many of which have state and/or federal listing status. That list of species and habitats is as follows:

Priority Species and Habitats

Bull trout
Westslope cutthroat trout
Columbia spotted frog
Western toad
Great blue heron

Federal/State Status

Federal Threatened, State Candidate

State Candidate
State Candidate

Gray wolf	State Endangered
Grizzly bear	Federal Threatened, State Endangered
Lynx	Federal Threatened, State Threatened
Marten	----
Moose	----
Northwest white-tailed deer	----
Elk	----
Aspen stands	----
Riparian	----
Freshwater wetlands	----
Instream	----

In addition, the Middle and West Branches of Leclerc Creek flow through the allotment; both are designated by the U.S. Fish and Wildlife Service (USFWS) as bull trout critical habitat. These streams and their tributaries also provide important habitat for westslope cutthroat trout. Millions of dollars have been spent in the Leclerc Basin on habitat improvements and species protection measures in recent years including through the FERC relicensing of the Box Canyon Hydroelectric Project, by the Pend Oreille Lead Entity - Salmon Recovery Funding Board, and by Stimson Lumber Company working under Washington's Forest and Fish Agreement. We are concerned, based on field assessments, that these investments to improve salmonid habitat may be compromised by the current livestock grazing practices occurring in riparian corridors throughout the allotment.

Since 1997, various assessments of stream condition have documented the negative effects of overutilization of riparian corridors by cattle and associated impacts to fish habitat within the Leclerc Allotment (WDNR 1997¹, KNRD and WDFW 1997², Maroney and Anderson 2000a³ and 2000b⁴). More recently, Pend Oreille Public Utility District (PUD) surveys (EES Consulting 2010⁵) that measured indicators of properly functioning fish habitat (i.e., bank stability, surface fines, embeddedness, pools) have shown that, in stream reaches where cattle have access, fish habitat function continues to be impacted. Fine sediment/embeddedness and bank instability were identified as the most significant factors limiting salmonid habitat in Middle Branch Leclerc Creek. EES and the PUD attributed this degradation to cattle accessing the stream and to the close proximity of Forest Service Road 1935. Since these data were collected the 1935 Road

¹ WDNR (Washington Department of Natural Resources). 1997. Leclerc Creek Watershed Analysis. Olympia, WA.

² KNRD (Kalispel Natural Resource Department) and WDFW. 1997. Kalispel Resident Fish Project Annual Report 1995. Document No. DOE/BP-37227-1. Prepared for the Bonneville Power Administration, Portland, OR.

³ Maroney, J. and T. Anderson. 2000a. Habitat inventory and salmonid abundance for Saucon, Seco, and Middle Branch Leclerc creeks. Prepared for Pend Oreille PUD, Newport, WA.

⁴ Maroney, J. and T. Anderson. 2000b. Habitat inventory and salmonid abundance for West Branch Leclerc Creek. Prepared for Pend Oreille PUD, Newport, WA.

⁵ EES Consulting. 2010. Middle Branch Leclerc Creek General Habitat Surveys. Prepared for Box Canyon Hydroelectric Project Technical Committee Fish Sub-Committee. Submitted by Pend Oreille PUD, Newport, WA.

has been, for the most part, moved out of the riparian corridor and other improvements have been made to reduce sediment delivery to the stream, however the impacts from cattle remain unresolved.

Wetlands and wet meadows within the allotment are used by grizzly bear as a source of critical green forage in early spring. There is a potential that cattle are competing with bears for this forage resource, putting bears at increased risk of disturbance or displacement during the critical period following den emergence.

These same habitats also provide spring forage for wild ungulates, such as moose, elk, and white-tailed deer. In addition, riparian corridors provide important browse for wild ungulates during the critical fall and winter months when green forage is not available. There is a potential that cattle could compete for these resources when upland grasses have cured in the hot summer months and cattle switch their diet preference from forage to browse.

The mixed ownership of the Leclerc Allotment presents a unique management challenge. The Colville National Forest has no authority to enforce grazing standards on the privately-owned lands (i.e., Stimson Lumber Co.) within the allotment boundary. There are no fences to prevent cattle from accessing the Stimson Lumber Co. parcels and these areas are currently managed as "open range" with no utilization monitoring. Over one mile of bull trout critical habitat in Middle Branch Leclerc Creek is located on Stimson Land within the allotment. There is currently no exclusion fencing to prevent cattle access to the stream and there are no requirements by Stimson for the permittee to monitor riparian utilization in these locations.

Comments on the DEIS Alternatives

WDFW is concerned that the health of riparian corridors, wetlands/wet meadows and instream habitat is being compromised within the allotment by livestock access. Of particular concern are the direct impacts to native salmonid habitat, including critical habitat for bull trout, and the competition for forage resources between cattle and other wildlife. In addition we believe the private ownership within the allotment presents management challenges that are difficult to overcome and potentially harmful to fish and wildlife resources. We reviewed each of the proposed alternatives within the DEIS with these concerns as our focus and offer the following comments and recommendations:

Alternative A – No Change

Per our meeting with Forest Service staff on November 20, 2015 we understand that this Alternative does not meet current Forest Plan standards; therefore, we have no additional comments on this alternative.

Alternative B – No action

Under this alternative, livestock grazing would be discontinued on the Leclerc Creek Allotment and the allotment would be closed. It is clear from the environmental analysis that this alternative would have the greatest potential to improve watershed health, riparian corridors, wetlands/wet meadows and altered stream channels within the allotment. Benefits to bull trout critical habitat would be significant. Potential conflicts between cattle and wildlife would be eliminated. Also of note; this is the only alternative that completely eliminates the resource concerns caused by mixed ownership. WDFW is however, not insensitive to the fact that this alternative would displace existing grazing allotment permittee(s) and we are willing to work cooperatively with the CNF to review options for providing a different allotment to accommodate grazing (e.g., Lost Creek) should this alternative be selected. Additionally, WDFW would support a transition period that provided temporary use of the present allotment while another allotment was identified. WDFW permits livestock grazing on Department-owned lands, and we believe resource protection can be achieved with the application of appropriate conservation measures and an allotment selection process that accounts for and/or avoids critical fish and wildlife habitats.

Alternative C – Proposed Action

We have two main concerns with this alternative:

- 1) Overutilization of riparian/wetland habitat by cattle and associated affects to fish and wildlife habitat.
- 2) Adequate or appropriate protection of the riparian/wetland ecological system may not occur with the proposed monitoring and adaptive management strategies identified.

Overutilization of Riparian/Wetland Habitat

Alternative C proposes to change the annual grazing season from June 1 to October 1 to June 15 to October 15. We agree that moving the turn-out date to June 15 is a good strategy to help reduce potential competition for spring green forage between grizzly bears and livestock. This change could also reduce potential disturbance to bears during the critical spring period following den emergence. Lastly, this strategy may also help prevent wolf depredation on calves. Calves that are turned out earlier in the season are smaller and potentially more susceptible to being injured or killed by wolves.

However, we are concerned that two additional weeks of grazing in the fall will increase impacts to native salmonid habitat and ungulate forage. The DEIS indicates that cattle tend to concentrate their grazing in meadows and riparian areas (Page 10) and shift their diet to shrubs in the late summer after grasses have cured (Page 6, Biological Assessment). Development of off-stream water sources may help alleviate this dietary shift and keep cattle away from streams, but

this may not significantly reduce the amount of woody browse taken from riparian areas by cattle.

This alternative partially addresses the unrestricted cattle access and lack of monitoring on Stimson Lumber Company caused by mixed ownership within the allotment. Under this alternative a fence would be constructed along the Forest Service boundary in the NW corner of Section 21, Township 36, Range 44. This would prevent cattle from accessing bull trout critical habitat in this reach of Middle Branch of Leclerc Creek. WDFW is very supportive of this proposal and asks that the Forest Service also consider fencing out the other Stimson parcel to protect bull trout critical habitat in Section 11 (same Township and Range).

Within this alternative, WDFW is supportive of the proposal to modify the existing permit conditions and use monitoring and adaptive management to address overutilization of riparian shrubs and degradation to streambanks. However, we are concerned with the lack of specificity in Alternative C and it is difficult to determine if the monitoring and adaptive management will be sufficient to protect the ecological integrity of the riparian and wetland systems.

Monitoring and Adaptive Management

We understand the high cost and management challenges associated with restricting livestock access to streams in a forested environment using fencing alone. For this reason, WDFW is supportive of adaptive management as a tool to protect fish and wildlife habitat function in the Leclerc Allotment, but we stress that adequate and appropriate monitoring is essential to functional adaptive management. The DEIS does not provide sufficient detail about proposed monitoring to conclude that it will serve as an adequate basis on which to inform management decisions.

For example, the DEIS (page 24) states that the CNF “can measure whether or not management actions are meeting or moving towards desired conditions in an appropriate timeframe.” The DEIS further asserts that grazing standards associated with Multiple Indicator Monitoring (MIM) and Pacific Anadromous (also PACFISH) and Inland Fish (also INFISH) Biological Opinion Effectiveness Monitoring Program (PIBO) “have not been exceeded”. While this is consistent with the range specialist report, it is at odds with the fisheries/aquatic report which indicates that some INFISH standards and some PIBO targets have indeed been exceeded. It should also be noted that this appears to differ from the conclusions reached by the habitat assessment work conducted by the PUD (see earlier comments) and the soils report that identified each wetland with cattle access as “functional at risk” with a downward or no apparent trend. The monitoring and adaptive management portion of this alternative should show improvement over the existing plan such that potential contradictory assessments of habitat are addressed. This will result in confidence that adaptive management is being applied in an appropriate and timely manner.

One way to improve the utility of adaptive management is to increase the frequency and intensity of monitoring; and therefore, we recommend at least one MIM DMA per pasture (rather than “as determined necessary” – Page 27). In accordance with the MIM protocol, locations should be identified by an interdisciplinary team, including a fish biologist, and located at sites that are sensitive to changes in grazing management. The three annual use indicators of riparian utilization (i.e., riparian stubble height, bank alteration, woody browse use) should be measured every year for the duration of the permit, as is performed for upland utilization.

It is unclear how monitoring proposed under Alternative C will be used within the grazing season to determine when a given pasture has been grazed “to standard” since it appears that utilization is monitored no more frequently than annually. WDFW recommends that monitoring be conducted during the grazing season in addition to an annual post-grazing assessment. The alternative should state clearly that livestock will be moved either to the next pasture in the rotation or off of the allotment altogether if and when riparian stubble height, bank alteration or woody browse triggers have been met in a given pasture, regardless of date.

We also feel that the timeframe associated with exceeded thresholds in the adaptive management strategy (Pages 26-28) could be narrowed. In particular, it is not necessary to wait for three years to elapse to determine whether streambank and riparian parameters are “trending towards” management goals, nor for an additional three years to go by before deciding whether additional adaptive management is needed. We propose that this evaluation be conducted annually and that failure to achieve annual objectives for bank alteration, woody browse utilization, and stubble height should trigger adjustments for the following grazing season. Those adjustments should include, at a minimum, increased monitoring in order to determine more accurately when standards have been met.

Alternative D

Concerns for this Alternative are the same as for Alternative C.

In closing, I and the WDFW value the close working relationship that we have with the CNF and we look forward to this continued cooperative relationship. We appreciate the opportunity to provide comment on this important grazing allotment management plan and hope that our review and comments will assist the CNF in modifying, selecting and presenting a final preferred alternative within the Final Environmental Impact Statement.

If you have questions please don't hesitate to contact me at (509) 892-7852 or you may contact the Regional Habitat Program Manager, Mark Wachtel at (509) 892-1001.

Sincerely,

A handwritten signature in black ink, appearing to read "Steve Pozzanghera", written over a horizontal line.

Steve Pozzanghera, Regional Director
Washington Department of Fish and Wildlife
Region 1

cc: Erin Kuttel, U.S. Fish and Wildlife Service
Deane Osterman, Kalispel Natural Resources Department
Grant Pfeiffer, Washington Department of Ecology

U.S. Department of the Interior



United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
620 SW Main Street, Suite 201
Portland, Oregon 97205-3026

IN REPLY REFER TO:
9043.1
ER150653

January 11, 2016

Gayne Sears, District Ranger
Newport/Sullivan Lake Ranger District
315 North Warren Avenue
Newport, WA 99156

RE: LeClerc Creek Cattle Grazing Allotment Draft Environmental Impact Statement

Dear Ms. Sears:

On November 16, 2015, the U.S. Department of the Interior (Department) submitted a letter indicating that we had no comments on the U.S. Forest Service's Draft Environmental Impact Statement for the LeClerc Creek Cattle Grazing Allotment. This letter is intended to replace that submission in its entirety and we respectfully request that the U.S. Forest Service (USFS) consider the following comments in the development of the Final Environmental Impact Statement (FEIS).

The LeClerc Creek watershed, which includes both private and public lands, is a critical component of the Trout Habitat Restoration Program (THRP) and is also located within critical habitat designated for bull trout. The THRP was established, with input from the USFS and USFWS (among others), under Federal Power Act section 4(e), to address impacts on the Kalispel Indian Reservation (Reservation) from operation of the Box Canyon Hydroelectric Project (Project). Meeting habitat restoration targets under the THRP is necessary to offset ongoing impacts caused by the Project on Reservation lands. In addition, these restoration actions are identified in the Bull Trout Recovery Plan as necessary to recover bull trout within the LeClerc Creek watershed.

Based on the information provided in this document, it is not clear that the Proposed Alternative, Alternative A -- nor any of the action alternatives -- includes the necessary measures to protect restored and/or sensitive riparian habitats from cattle grazing in the LeClerc Creek watershed. Fencing prescriptions are inadequate to protect native fish-bearing streams from grazing impacts, monitoring requirements are insufficient to ensure that riparian resources are protected, and the proposed adaptive management program would allow more than 12 years of impacts before a new National Environmental Policy Act review could reconsider cattle effects to the system. If it becomes necessary to reevaluate grazing impacts, this delayed response would render any

riparian and stream habitat improvements made pursuant to the THRP moot - at a substantial cost to the program. It is inefficient to spend time and effort on riparian and aquatic restoration if cattle overgraze the riparian vegetation or cause increased sediment or degraded water quality in the creek.

Because of the mixed ownership of the allotment, the USFS does not have the authority to enforce grazing standards on those portions of the allotment which are located within privately owned lands (e.g., Stimson Lumber Co.), and the private owners have not agreed to maintain grazing standards within their lands. In addition there are no proposals to fence or completely exclude portions outside of USFS jurisdiction. In the FEIS, the Department recommends that the USFS consider and analyze relocating the allotment to another area outside of sensitive watersheds.

In addition to considering the relocation of the allotment, the Department recommends that each of the following be added to and analyzed in any alternative under consideration in the FEIS:

- The complete fencing or exclusion of riparian and wetland areas from grazing in areas that support native salmonids, prior to resuming grazing activities.
- The complete fencing-off of private properties where grazing standards cannot be enforced.
- The installation of upland watering facilities more than 300 feet away from riparian or connected wetland areas to eliminate bank, sedimentation, floodplain connectivity, and riparian vegetation impacts, as well as the need for hardened cattle crossings.
- The evaluation of grazing standards to determine if the stubble height criteria, pasture duration/rotation, annual growing season temperatures, late season vegetation growth, and other factors are appropriate for the LeClerc Creek Watershed. For example, use of pastures into November may not provide enough time for regeneration and seed production or the 6 inch stubble height criteria may be insufficient to maintain bank stability.
- The frequent monitoring of grazing pastures during grazing season and the completion of annual post-season assessment prescribing modifications to the range management that will be implemented in the following year, with the requirement that if standards are not met at any time during the grazing season, then cattle should be relocated to the next scheduled pasture or completely removed from the allotment. These monitoring and assessment requirements should be stated clearly in the range management plan.
- The implementation of a stringent adaptive management program with frequent monitoring that includes assurances that adverse impacts from grazing to restored areas and other riparian areas would have effective and timely mitigation.

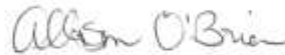
As currently written, the only alternative that appears to adequately protect native fish habitats and support state, federal, and tribal cultural and natural resource interests in the LeClerc Creek

watershed is Alternative B, the no action alternative; however, we are optimistic that the USFS can either make modifications to the action alternatives which will ensure that impacts are substantially reduced or identify an alternate location for the allotment to a less sensitive area. The Department sincerely appreciates USFS support for the THRP and your consideration of these comments and recommendations in the development of the FEIS.

If you have any questions, please contact Bob Dach with the Bureau of Indian Affairs at (503) 310-4492 (Robert.dach@bia.gov) or Erin Kuttel with the U.S. Fish and Wildlife Service at (509) 893-8029 (erin_brittonkuttel@fws.gov). If you have any other questions, then please feel free to contact me at (503) 326-2489.

Thank you for the opportunity to comment.

Sincerely,



Allison O'Brien
Regional Environmental Officer

U.S. Environmental Protection Agency



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10**

1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF
ECOSYSTEMS,
TRIBAL AND PUBLIC
AFFAIRS

December 16, 2015

Gayne Sears, Ranger
Newport/Sullivan Ranger District
315 North Warren Avenue
Newport, Washington 99156

Dear Ms. Sears:

In accordance with our responsibilities under Section 309 of the Clean Air Act, the National Environmental Policy Act (NEPA) and the Council on Environmental Quality regulations for implementing NEPA, the U.S. Environmental Protection Agency has reviewed the Draft Environmental Impact Statement for the proposed LeClerc Creek Grazing Allotment project (EPA Region 10 Project Number: 14-0019-AFS) on Newport-Sullivan Ranger District of the Colville National Forest in Pend Oreille County, Washington.

The DEIS evaluates potential environmental impacts of authorizing continued livestock grazing on LeClerc Creek cattle and horse allotment (23,412 acres) over a 10-year term. The allotment is divided into five pastures, of which two are spatially separated from the rest of the allotment. Within or adjacent to the allotment boundaries, there is private property and the East Branch of the allotment subwatershed maintains a checkerboard ownership between Forest Service, Washington State, and Stimson Lumber Company. Currently, 101 cow/calf pairs are allowed to graze on the allotment from June 1st to September 30th each year in a deferred rotation system, and to water at streams and springs due to a lack of developed water sources. Existing allotment infrastructure includes ten fences (14 miles), two corrals/loading chutes, and two enclosure fences maintained by the Forest Service and/or the Kalispel Tribe. The project area lies within the traditional use area of the Kalispel Tribe and there are Native American cultural resource sites within the allotment. The proposed analysis will assist the Forest Service in deciding whether livestock should continue on all, part, or none of the analysis area and under what terms and conditions.

For analysis of impacts from the proposed action, the Forest Service considered four action alternatives, A-D, including a No Action (p. 21). Under the Proposed Action and Preferred Alternative (Alternative C), the Forest Service would reauthorize grazing on the allotments and redefine grazing management to:

- include boundary alterations
- remove the Fourth of July pasture (2,460 acres) from grazing
- connect the Dry Canyon pasture to the rest of the allotment
- change the season of use from June 15th to October 15th
- block trails or other paths to reduce cattle drift
- include construction of new fences
- improve other facilities (water developments, access routes, stream crossings, corrals, and catch pens).

Overall, Alternative C would reduce the size of the allotment by nearly 2,772 acres, increase monitoring and include adaptive management strategy. Alternative D is the current permittee's proposal and



incorporates all of the elements of Alternative C, but with changes to the allotment boundaries to address logistical challenges for the movement of livestock between pastures. Due to boundary adjustments, Alternative D would increase the allotment size by about 2,453 acres (p. 42). Under Alternative A, the Forest Service would continue current grazing management without change, while no grazing on the allotment would occur under Alternative B.

Based on our review, we have assigned a rating of EC-2 (Environmental Concerns Insufficient Information) to the DEIS due largely to concerns about impacts to water quality. For your reference, a copy of the rating system used in conducting our review is enclosed. Overall, the DEIS includes a good description of resources within the project area and analysis of anticipated environmental impacts. The document includes some measures to offset the impacts, and monitoring to determine if measures are effective. Our concerns relate to potential impacts that would result from grazing in riparian areas, including loss of biodiversity, wildlife habitat, decline in water quality, and negative effects to fish populations.

While we support the proposed deferred rotation grazing strategy, we are concerned about potential impacts that would result from use of corrals and grazing in wetland/riparian areas (p. 116), including loss of biodiversity, wildlife habitat, decline in water quality, and negative effects to fish populations. We believe that concentration of livestock in those areas would generate significant impacts on riparian vegetation and wetlands, soils, streambanks, water quality, and fisheries.

We recommend that grazing be excluded or minimized in wetland/riparian zones and that additional early actions be undertaken to address streams that have already been affected and are currently functioning at risk. Actions to increase shade and improve hydrologic functioning of streams would be beneficial. Similar actions would also benefit many riparian areas where most hydrologic impacts are found. Further protection of riparian areas may be warranted, especially around creeks that are not expected to meet desired conditions for many years, such as the West Branch LeClerc Creek where impacts may affect high quality habitats and other sensitive resources. We recommend that aquatic Best Management Practices (BMPs) be consistent with those prescribed in the USDA National BMPs for Water Quality on National Forest System Lands, that there be effective enforcement of grazing permit conditions, and that full support will be provided to implement projects that improve stream water quality conditions within the allotment.

We further recommend continued coordination with Washington State Department of Ecology and affected tribes as the proposed project is implemented to ensure compliance with the State water quality standards and as implementation of the Colville National Forest Temperature and Bacteria Total Maximum Daily Load continues. The DEIS indicates there are water quality impaired streams within the allotment due primarily to exceedances of water quality standards for temperature. We note a lack of data regarding other water quality parameters including turbidity and fecal coliform concentrations for streams in the allotment where high loadings might be expected, especially in areas where overgrazing may be occurring. Please also note that anti-degradation provisions of the Clean Water Act apply to those water bodies where water quality standards are currently met.

Because there are fish-bearing creeks and other threatened, endangered, and candidate species occur on the allotment (p. 142), we recommend coordination with the U.S. Fish and Wildlife Service, the National Marine Fisheries Service and, as appropriate, with the Washington State Department of Fish and Wildlife

to reduce risks to species and protect biota and habitat during implementation of the proposed livestock grazing. The final EIS should include any additional relevant information developed as a result of coordination with these agencies, particularly outcomes of consultations with the agencies and recommended measures to protect species.

Thank you for the opportunity to offer comments. If you have questions about our comments, please contact me at (206) 553-1601 or by electronic mail at littleton.christine@epa.gov, or you may contact Theo Mbabaliye of my staff at (206) 553-6322 or by electronic mail at mbabaliye.theogene@epa.gov.

Sincerely,



Christine B. Littleton, Manager
Environmental Review and Sediment Management Unit

Enclosure:

1. U.S. Environmental Protection Agency Rating System For Draft Environmental Impact Statements

**EPA Detailed Comments on the Draft EIS for
LeClerc Creek Cattle Grazing Allotment
Newport-Sullivan Ranger District, WA**

Surface Water Quality and Wetlands

Water quality impacts

The DEIS indicates there are water quality impaired streams within the grazing allotments (segments of East Branch, Middle Branch, and West Branch Leclerc Creeks) due primarily to exceedances of temperature water quality standards (p. 90), but also sedimentation and fecal coliform, although no numeric criteria are provided for the latter two parameters in the EIS document. The DEIS states that the Middle Branch LeClerc Creek receives the majority of grazing impacts throughout the grazing season, and that extended periods of grazing, particularly in riparian areas, likely contribute to the existing elevated levels of sedimentation and temperature in the creek (p. 96). Water temperature within Middle Branch Creek, for example, has been consistently exceeding the state standard of 16 degrees C. throughout the summer months (for 2010, 2013 and 2014 by as much as 3 degrees C. (p. 103). In previous years, both East and Middle Branch Leclerc creeks have exceeded the standard by as high as 6 degrees C. As the existing Colville National Forest Temperature and Bacteria TMDL Water Quality Implementation Plan indicates, the level of canopy cover needed to bring the stream water temperature into compliance with the state water quality standard is 84% (p. 103). Thus, it would appear that Alternatives C and D may not be expected to improve temperature conditions within the West Branch LeClerc Creek subwatershed. The greatest concern in that area remains the state of impaired reaches where grazing pressure and impacts may exacerbate water quality impairments. While the increase in use along West Branch LeClerc Creek would be expected to be of low frequency, it is possible that it could result in continued impairment of the stream reach identified in the TMDL over the long term (p.124).

We also note that 55 stream surveys were conducted between 2008 and 2009 to determine the hydrologic function within the allotment. Reported results indicated that about 50 percent of reaches, mainly in East and West Leclerc Creek subwatersheds were in poor/fair conditions and functioning at risk (p. 103). Where vegetation is lacking, the stream reaches have a higher capacity for increased velocity and erosion that can affect fish habitat and health. Additional monitoring data also have shown that in such reaches, bank stability is low, especially where fences and roads are adjacent, and culverts and bridges are at risk of failing, resulting in high sediment delivery to streams (p. 105).

Although some riparian areas in the project area will be restored, we are concerned about sites where continued livestock grazing is likely to further degrade streams through increased entrenchment due to streambank scouring, erosion, poor drainage and loss of soil and riparian vegetation. Such entrenchment, characteristic of Rosgens' F or G channels, have the potential to contribute significant sediment bedloads to the system, thus slowing the rate of water quality and stream health recovery. Because there are such stream channels in the project area (p. 104), we believe that additional protection of certain riparian areas may be warranted, such as on upper Middle Branch, Mineral, upper Whiteman, Dry Canyon, and West Branch LeClerc Creek reaches (p. 109) where potential impacts could compromise the hydrologic environment and result in adverse effects, as well as other areas where F and G channels are near high quality habitat(s), drinking water sources, and other sensitive resources. In such cases, we recommend that grazing exclusions be considered to move existing resource conditions toward desired future conditions

more rapidly in high value riparian areas. In addition, active restoration should target such areas to increase vegetation cover and improve thermal conditions of the stream channels. Please also note that anti-degradation provisions of the Clean Water Act apply to those water bodies where water quality standards are currently met.

Fisheries and related impacts

Information in the DEIS indicates that there are fish-bearing streams on the allotment, and that LeClerc Creek has been designated as critical habitat for bull trout. This area is part of the core area habitat for the fish within the Draft Columbia Headwaters Recovery Unit Implementation Plan for Bull Trout Recovery Plan by the U.S. Fish and Wildlife Service. The Plan also cites livestock grazing as a primary threat to bull trout by causing riparian and instream degradation, loss of large woody debris, and pool reduction in LeClerc Creek (p. 126). Continued cattle grazing in riparian areas and cattle trailing along streams within the allotment may continue to contribute elevated sediment levels to streams in the watershed, resulting in fish mortality or egg loss. This would be of particular concern in the middle and upper reaches of West Branch LeClerc Creek in an area that has been rated as highly unstable and prone to mass wasting (p. 112) where cattle movement on unstable slopes may exacerbate delivery of sediments in streams.

Animal waste deposited near or directly into the water may introduce bacteria and nutrients to waterways potentially impacting aquatic species, including fish. The DEIS notes that there are currently no water developments or troughs in the allotment. Therefore, cattle obtain water from streams and undeveloped springs, resulting in adverse impacts to stream banks, wetlands, and riparian areas, especially later in the grazing season when upland forage is less palatable (p. 9). Also, in the analysis area, there are at least two undersized and improperly placed culverts that prevent upstream fish passage permanently or seasonally (p. 127).

Under both Alternatives C and D, cattle would have access to fish bearing streams. Under Alternative C, nearly 25 miles of fish bearing streams would be accessible to cattle, including over 11 miles of designated bull trout critical habitat. Under Alternative D, about 33 miles of streams within the Middle and East Branches of LeClerc Creek would be located within the Lower Bunchgrass pasture, all of which would be accessible to cattle due to the low relief topography in East Branch LeClerc Creek subwatershed (p. 116). Although the Fourth of July pasture would be removed from grazing under Alternative D, the ground between Middle and East Branches of LeClerc Creek would be added to the allotment, which would concentrate the impacts to the northern portion of the subwatershed on streams that are identified as Bull Trout Critical Habitat (over 12 miles) and tributaries to these streams. As the DEIS indicates, tributaries that would be most impacted would include those with proposed stock troughs in high cattle use areas and on the north side of East Branch LeClerc Creek (p. 116). Survey data for streams within the analysis area show that most streams do not currently meet standards for Inland Native Fish Riparian Management Objectives (p. 128).

Wetlands and related impacts

The discussion of soils in the DEIS indicates that within the allotment, there are about 200 acres of hydric soils and that almost 250 acres are mapped wetlands, including wetlands on private lands (p. 188). There are also small, unmapped wetlands and seeps scattered throughout the analysis area. A survey conducted to determine whether wetlands with cattle presence or use were in proper functioning condition found that of the 160 acres of wetlands surveyed, 91 acres were functioning at risk.

In concentrated use areas, data collected during field surveys have shown that areas do not meet Regional and Forest Soils Quality Standards (p. 189). One such concentrated use area surveyed was the Ballpark Meadow (large dispersed camping and Off Highway Vehicles (OHV) area) which exceeded the Regional Soil Quality Standards being surveyed as having 100 percent detrimental soil conditions due to dispersed camping and OHV uses, cattle and historic use of the area (p. 190). Drift between pastures and off the allotment has also been an ongoing concern that effects canopy cover in riparian areas where cows prefer to forage and water. Alternatives C and D would each impact about 35 acres of wetlands as these would be made accessible to livestock grazing (p. 141).

Recommendations

- *We recommend that the final EIS include available data on bacteria and nutrients for streams in the project area, indicate the extent to which such pollutants would impact water quality, and discuss livestock management measures to reduce impacts to water quality due to bacteria and nutrients.*
- *We recommend that the final EIS include additional restoration actions to increase shade and cover, improve hydrologic functioning of streams, and bring several of the wetlands to properly functioning condition.*
- *We recommend that aquatic BMPs be consistent with those prescribed in the USDA National Best Management Practices for Water Quality on National Forest System Lands¹.*
- *We recommend continued coordination with Ecology and affected tribes to address impaired streams currently listed by the State of Washington as violating water quality standards, primarily for temperature, sediment and fecal coliform.*
- *We recommend continued work with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and Washington State Department of Wildlife to define grazing practices that would be more protective of fishery resources within water quality limited streams on the allotment and to reduce risks to other endangered, threatened, and sensitive species occurring on the allotment.*

Tribal Consultation and Impacts on Cultural and Heritage Resources

The discussion of heritage resources in the DEIS indicates that the project area lies within the traditional use area of the Kalispel Tribe and that up to 46 historic properties have been identified in the analysis area (p. 198). The Kalispel Tribe has identified about 482 acres in northernmost portion of the analysis area as potentially eligible for listing with the National Register for Historic Places (NRHP) and has expressed an intent to nominate those lands for listing. However, it is not yet clear whether nominated lands include all or some of the 46 historic properties sites. At present, two historic properties have been determined ineligible for inclusion in the NRHP and the remaining 44 sites have not yet been evaluated for inclusion in the NRHP.

Because of potential impacts to cultural and heritage resources, please note that consultation for the resources is required under Section 106 of the National Historic Preservation Act (NHPA). Specifically, Section 106 of the NHPA requires federal agencies, upon determining that activities under its control could affect historic properties, consult with the appropriate State Historic Preservation Officer/Tribal Historic Preservation Officer (SHPO/THPO), consider the effects of their actions on cultural resources

¹http://www.fs.fed.us/biology/resources/pubs/watershed/FS_National_Core_BMPs_April2012.pdf

and mitigate adverse impacts. Under NEPA, any impacts to tribal, cultural, or other treaty resources must also be analyzed, discussed and mitigated. Executive Order 13007, *Indian Sacred Sites* also requires federal land managing agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian Religious practitioners, and to avoid adversely affecting the physical integrity of such sacred sites. Consequently, we offer the following recommendations for your consideration.

Recommendations:

- *We recommend that the final EIS identify all historic properties within the analysis area, fully analyze potential impacts to them, and determine measures to protect these resources.*
- *We recommend that the final EIS include outcomes of required SHPO/THPO consultations, and a discussion of how issues raised in the consultations were addressed, especially impacts to heritage and cultural resources, consistent with Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments). The EIS should also document SHPO/THPO concurrence with recommended measures to take to protect heritage and cultural resources.*
- *We recommend that the Forest Service continue to work with affected tribes to assure protection of tribal resources from grazing impacts during implementation of the proposed action.*

Impacts of Climate Change:

The DEIS states that proposed livestock grazing would have a neutral outcome on the resiliency of the analysis area related to climate change and, therefore, such impacts required no detailed analysis in this EIS (p. 20). However, the DEIS does not provide information that supports that statement. Further, the DEIS acknowledges that grazing has the potential to sequester carbon and help to mitigate climate change effects. Because the DEIS lacks a discussion and data on impacts of climate change, it is not possible for us to determine the extent to which changing climate would impact the proposed grazing and whether this grazing would exacerbate or enhance effects of climate change on resources. As an example, the DEIS indicates that green forage utilization in the allotment has already exceeded Forest Plan standards in riparian areas due to poor controls over stock movement in the allotment. If overgrazing is allowed to continue as proposed, it could exacerbate the adverse effects of climate change in those areas. The EPA recommends that the DEIS discuss mitigation measures, such as reduced stocking rate and/or grazing exclusion to allow resource recovery.

Recommendations:

- *We recommend that the final EIS include an estimate of greenhouse gas emissions associated with the proposed grazing and a discussion of practicable mitigation to reduce the emissions. The DEIS does not include data to support the conclusion that the proposed project would have a neutral outcome with regard to climate change effects.*
- *We recommend consideration of the approaches for climate impact assessment outlined in the Council on Environmental Quality's "Revised 2014 Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts" [see https://www.whitehouse.gov/sites/default/files/docs/nepa_revised_draft_ghg_guidance_searchable.pdf] and include relevant information in the final EIS.*
- *We recommend that the final EIS include a discussion of potential mitigation opportunities for reducing impacts due to climate change during the proposed grazing period, consistent with relevant federal, state and local requirements to limit such impacts.*

**U.S. Environmental Protection Agency Rating System for
Draft Environmental Impact Statements
Definitions and Follow-Up Action***

Environmental Impact of the Action

LO – Lack of Objections

The U.S. Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC – Environmental Concerns

EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO – Environmental Objections

EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU – Environmentally Unsatisfactory

EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 – Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 – Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 – Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

Kalispel Tribe

**Comments of the Kalispel Tribe of Indians
on the
LeClerc Creek Grazing Allotment Management Planning
Draft Environmental Impact Statement**



Whiteman Creek



The LeClerc Creek Grazing Allotment Draft Environmental Impact Statement (“DEIS”) does a disservice to our community by failing to present an alternative that would satisfy the interests of both the Kalispel Tribe of Indians (“Tribe”) and the permittee. Without such an alternative, the DEIS pits neighbor against neighbor and beckons the rest of the community to choose sides. That is an unfortunate outcome in a small community such as ours, particularly when a more nuanced solution could have been developed with a modicum of federal will.

As things stand, the U.S. Forest Service (the “Forest Service”) has summarily dismissed the Tribe’s request to develop a real alternative for the good of the community and the public resources involved. Instead we are asked to comment on four alternatives that amount to a choice between grazing and no grazing. Although neither of these options is good for our community, only the no grazing alternative is lawful.

These comments explain why grazing must be discontinued within the LeClerc Creek watershed. The Tribe has no objection to finding a more appropriate site for the permittee’s cattle operation elsewhere in the Colville National Forest (“CNF”). Indeed, that is the alternative we have been championing all along.

I. Background

A. The Kalispel Tribe’s Cultural Interest in the LeClerc Watershed

The LeClerc watershed is the Kalispel Tribe’s most cherished cultural landscape within the CNF. What this means is that no other landscape on the CNF provides a stronger connection between past and future generations. Current tribal members provide this cultural bridge by following ancestrally prescribed behaviors within the LeClerc ecosystem. Traditional religious and medical practitioners serve as stewards of the ecosystem for a larger network of users, including four resident sweat lodge circles on the Kalispel Indian Reservation and numerous family groups who use the watershed’s natural resources for subsistence, curative, and educational purposes.

It is important to understand that this site-specific cultural connection requires more than physical access. The cultural lynchpin is the ability of tribal membership to interact with the ecosystem in the same way and places as their ancestors. If the ecosystem ceases to provide its traditional services, the cultural connection to past and future generations begins to die.

This is the point where the Tribe now finds itself due to the Forest Service’s management of the LeClerc Grazing Allotment (the “Allotment”). The Forest Service has done so little to avert cattle drift over the past thirty years of the allotment and exhibited such disregard for the local ecosystem that most of the watershed has sustained some form of grazing-related damage. Cow excrement has so fouled these sacred lands that some tribal members have stopped coming to the watershed altogether. Others endure the stench and insult but struggle to maintain their cultural lifeways due to the degradation of the ecosystem.

The Tribe’s overriding interest in this allotment is to revive this cultural landscape. This will require a comprehensive ecosystem restoration effort.

B. The Federal Interest in Restoration of the LeClerc Watershed

The DEIS acknowledges the strong federal interest in the LeClerc watershed under the Endangered Species Act (“ESA”) due to its importance to listed species such as mountain caribou, grizzly bear, Canada lynx, and bull trout. However, the DEIS entirely fails to mention the broader federal interest in the watershed under the Federal Power Act (“FPA”). Section 4(e) of the FPA¹ authorizes the Department of the Interior (“Interior”) to protect the utilization and purposes of federal land reservations from the effects of hydropower projects by including mandatory conditions in licenses issued by the Federal Energy Regulatory Commission (“FERC”). The Box Canyon Hydroelectric Project FERC license (the “License”) includes a number of these conditions due to the project’s inundation of nearly 500 acres of the Kalispel Indian Reservation.

One such 4(e) condition is the Trout Habitat Restoration Program (“THRP”). The THRP was incorporated into the License in 2010 pursuant to a Settlement Agreement among a number of parties, including Interior, the Tribe, and the Forest Service. The THRP requires the licensee to restore 164 miles of native fish habitat in tributaries to the Pend Oreille River. The Forest Service is a member of the Technical Committee charged with directing and approving the licensee’s restoration efforts. In this capacity, the Forest Service co-manages a \$9.25 million implementation fund, reviews and approves project proposals, oversees the licensee’s monitoring and maintenance obligations, and determines project success.

The THRP specifies that restoration efforts must be focused in seven priority watersheds. LeClerc is not only the largest of these but also has the most potential to provide the largest amount of quality native habitat when restored. \$3 million in federal, state, tribal, and THRP funding has already been invested to protect and restore the watershed over the past 20 years.

C. The Forest Service’s Unlawful Management of the Allotment

The Forest Service has been unlawfully managing the Allotment since at least 1982. The Forest Service has violated multiple federal laws during this time, including the National Forest Management Act (“NFMA”), the National Environmental Policy Act (“NEPA”), and the ESA. Due to these violations, which are explained below, the impacts of the existing grazing operation have never been effectively assessed, understood, or controlled.

i. Noncompliance with the Allotment Management Plan

The 1982 Allotment Management Plan (“AMP”) provides management objectives to ensure that the grazing operation meets the multiple-use and other needs of the lands involved.² These objectives are implemented by an Annual Grazing Plan (“AGP”), also called Annual Operating Instructions (“AOI”), which specifies what is required of the permittee. The 1983 AGP sets forth specific monitoring criteria to determine compliance with the AMP’s forage composition and riparian objectives.³ The Forest Service has no record that such monitoring efforts were

¹ 16 U.S.C. § 797(e).

² See 36 C.F.R. § 222.1.

³ AGP, pp.2-3.

completed at any point from 1983 -1993 even though AGPs from each of these years contained similar monitoring requirements. This failure to implement or require monitoring amounts to agency action unlawfully withheld or unreasonably delayed and would have been actionable under the Administrative Procedures Act.⁴

ii. Noncompliance with the National Forest Management Act

The National Forest Management Act (“NFMA”) requires the Forest Service to ensure that all permitted uses of National Forest System lands are consistent with current land management plans.⁵ This requirement applies to allotment management plans.⁶ If a permitted use predates such a plan, the Forest Service must revise the authorizing instrument “as soon as practicable” to ensure consistency with the applicable plan. *Id.* The Forest Service has never fulfilled this obligation. The only plan the AMP references is the Sullivan Lake District Multiple Use Plan, which became obsolete over 25 years ago when the 1988 Colville National Forest Plan (“Forest Plan”) was finalized.

By failing to revise the AMP, the Forest Service also violated its NFMA obligation to ensure that AMP implementing documents are consistent with the Forest Plan.⁷ The Forest Service made no effort to incorporate Forest Plan requirements into its AOIs prior to 2000. AOIs from 2000-2004 include compliance criteria from a single section of the Forest Plan,⁸ but that Forest Plan reference disappeared from AOIs thereafter.

iii. Noncompliance with the National Environmental Policy Act

The Forest Service violated the National Environmental Policy Act (“NEPA”) in 1991 by renewing the grazing permit without any environmental analysis.⁹ The permit attempts to justify this action by tiering the permit approval to the Environmental Impact Statement for the 1988 Forest Plan, stating that the 1982 AMP is scheduled for an update, and conditioning permit approval on incorporation of the revised AMP. Even if this method of tiering is assumed to be lawful, the AMP update never occurred.

iv. Noncompliance with the Endangered Species Act

Following the 1998 listing of bull trout as a threatened species under the ESA, the U.S. Fish and Wildlife Service (“FWS”) issued a Biological Opinion (“1999 BiOp”) regarding future grazing activities on the Allotment. The 1999 BiOp concludes that grazing on the Allotment is likely to adversely affect bull trout and supports that determination with an Incidental Take Statement (“ITS”). The ITS specifies that in order for its take exemption to apply under section 9 of the ESA, “the Forest Service, to the full extent of its legal authority, and the applicant shall comply”

⁴ 5 U.S.C. § 706(1).

⁵ 16 U.S.C. § 1604(i).

⁶ *Oregon Nat. Desert Ass’n v. U.S. Forest Serv.*, 465 F.3d 977, 980 (9th Cir. 2006) (“The AMP must be consistent with the applicable forest plan.”).

⁷ *Oregon Nat. Desert Ass’n v. Sabo*, 854 F. Supp. 2d 889, 915 (D. Or. 2012) (AOIs must be consistent with the applicable forest plan).

⁸ *E.g.*, 2000 AOI, p.5 (section III.D.2).

⁹ *See, e.g. W. Watersheds Project v. Abbey*, 719 F.3d 1035, 1040 (9th Cir. 2013) (grazing permit renewals must comply with NEPA).

with its terms and conditions. These include specific requirements for monitoring and infrastructure improvements in 1999 and 2000, as well as a number of more general monitoring requirements with unspecified timelines.

Although Forest Service records indicate that the time-sensitive terms and conditions were followed, more general terms and conditions were not. The Forest Service's extensive monitoring effort in 1999 was rapidly phased out by 2004.¹⁰ There is no record of the Forest Service ever having adopted a "Grazing Monitoring Plan . . . in accordance with the terms and conditions of the Biological Opinion" into an annual plan as promised by the 2000 AOI. There is also no record that the Forest Service has complied with the 1999 BiOp's riparian forage monitoring requirements, including the obligation to report those monitoring results to the FWS. The Forest Service did not provide the Tribe with a legible copy of the final 1999 BiOp, so we are unable to include the numbers of these terms and conditions.

The Forest Service has also violated the ESA by failing to timely reinitiate section 7 consultation following the 2010 critical habitat designation for bull trout. The ESA requires formal consultation to be reinitiated "at the earliest possible time" where newly designated critical habitat may be affected by agency action.¹¹ Renewal of the allotment grazing permit in 2012 without engaging in section 7 consultation was unlawful, as was the issuance of every AOP issued since the 2010.¹²

II. The Proposed Action (Alternative C)

Instead of providing a management directive to redress the effects of the Forest Service's longstanding neglect of its environmental stewardship obligations, the Proposed Action ("PA") provides a template for continuing to avoid them. The PA does this by funneling known management challenges to an unfunded and intentionally vague adaptive management program, and it justifies this action on the basis of data gaps that the Forest Service created by failing to fulfill monitoring requirements required by the Forest Plan. Whatever conservation benefits the PA does provide are inflated by side-by-side comparisons with the current, unlawful management plan. When these illusory benefits are stripped away, the PA clearly does not meet Forest Plan standards.

The intent of the comments below is not to fix the PA but to fix the flawed framework from which it is derived. Our suggestions below draw from the DEIS, as well as voluminous Forest Service records provided to the Tribe through a Freedom of Information Act ("FOIA") request.¹³

¹⁰ Compare 1999-2003 AOIs (requiring at least weekly field observations by the Forest Service) with 2004 AOI (no such requirement).

¹¹ 50 C.F.R. § 402.14, .16.

¹² *Oregon Nat. Desert Ass'n*, 465 F.3d at 983 ("issuance of an AOI is an agency action under § 551(13) of the APA").

¹³ The Forest Service did not give the Tribe adequate time to review all of these records prior to the public comment deadline; therefore, we incorporate the entire FOIA response into the record and reserve the right to submit additional comments.

A. Neutralize Range Bias

Although it is reasonable to expect a range management specialist to have an interest in making grazing opportunities available to qualified applicants, it is improper for an environmental analysis to conform to that interest as neatly as this DEIS. Reduce the range bias in the DEIS to appropriate levels by:

i. Refining the purpose and need statement.

The DEIS is doomed from the outset by establishing a range-over-resource hierarchy in the purpose and need statement. The primary need presented is that a qualified applicant would like to continue grazing. The secondary need is everything else. The Forest Plan does not support that absolute hierarchy, so it makes no sense to develop alternatives from that foundation. Also broaden the applicant's need so the grazing operation can be relocated if countervailing interests don't support it in the LeClerc watershed.

ii. Counterbalance the range specialist's economic analysis.

If the Forest Service does not have access to a professional economist, it should at least round out the generic commentary of the range management specialist with that of another resource specialist. The existing analysis's failure to even mention the \$3 million dollar investment of federal, state, tribal, and county stakeholders in the restoration of the watershed is a glaring omission. So too is the failure to consider the economic consequences that renewing the allotment may have on millions of dollars available for future conservation investments.

iii. Eliminate "rangewashing" of specialist reports.

Interdisciplinary team meeting notes indicate that resource specialists were cautioned on multiple occasions to avoid using terminology that may lead a reader to believe overgrazing had occurred.¹⁴ Although range management specialists have every right to disagree with another resource specialist's determination of what constitutes overgrazing, it is not appropriate to preempt that conversation altogether.

iv. Avoid visual observations and professional judgments.

The rangeland management section makes repeated use of visual observations and professional judgments to discount grazing impacts.¹⁵ This calls into question the validity of the science in

¹⁴ IDT Notes 1/16/13 ("Chase – please don't use the terms 'over-utilization' or 'over-grazing' in your reports because his data reports do not reveal that. . . . Brian – concerned of the apparent disconnect between the PIBO monitoring data, which is specific to range, and according to Chase, indicates that conditions aren't degraded, because have heard outside partners say the lower Middle Branch is 'hammered.'").

¹⁵ DEIS, p.55 ("As determined by [ocular assessment] the Rangeland Management Specialist, rangeland vegetation appears to be in fair to good condition, with no apparent trend."); p.61 ("Alternative C would result in a loss of 887 acres of suitable grazing land. While the effects of this reduction in suitable grazing land remain to be determined, monitoring and adaptive management will help to determine if the current permitted stocking rate of 101 cow/calf pair (535 AUM's) will be sustainable. Based on professional judgment, the Rangeland Management Specialist does not feel that the reduction in suitable grazing acres will necessitate an immediate change . . ."); p. 68 ("Impacts to tree regeneration have been observed to be insignificant in dry, upland areas and therefore, the impact is likely minimal.").

that section, particularly when the professional judgments are contradictory¹⁶ and the ocular assessments are hypocritical.¹⁷

B. Do Not Exploit Data Gaps

Another form of range bias that merits special attention is the use of data gaps as a sword for grazing and a shield against environmental mitigation. This is a particularly egregious form of range bias because it capitalizes on data gaps that would not exist but for the Forest Service's chronic failure to update the AMP as required by the Forest Plan. If the AMP had been updated, the Forest Service would have implemented a monitoring plan to track compliance with desired riparian conditions. Forest Plan, § 4-53. The absence of this data creates poor description, which leads to poor management decisions.¹⁸

C. Avoid Comparisons to a False Baseline

The DEIS concludes that the current management alternative does not comply with Forest Plan standards.¹⁹ However, it never clearly acknowledges the effect of this determination. This determination amounts to an admission that the Forest Service has been unlawfully managing the Allotment since 1988. A corollary to this admission is that the PA's relative conservation benefits over current management are meaningless. The question is not whether the PA is better than unlawful management but whether the PA meets Forest Plan standards. The DEIS repeatedly masks the significance of large environmental impacts by framing them as improvements in comparison to the unlawful, current condition.²⁰

D. Don't Use the Adaptive Management Strategy to Avoid the Hard Work

Forest Service records indicate that the PA's adaptive management strategy ("AMS") is a clearinghouse for known problems,²¹ plagued by funding²² and monitoring²³ challenges, and

¹⁶ Compare DEIS, p.55 (impossible to determine trend by professional judgment) with DEIS, p.57 (determining trend by professional judgment).

¹⁷ Compare DEIS, p.55 (using ocular assessment to assess vegetation condition) with 11/18/13 Bolyard email (rejecting hydrologist's ocular assessment of riparian cattle damage).

¹⁸ E.g. IDT Notes 1/16/13 ("Amy – the purple line is also to protect water quality. If we put fence where cattle are moving now, does anyone have data to prove that there would be water quality issues. At this point no new proposal, just keep as adaptive mgmt. Gayne – agree with Amy – if we don't have any data, then we are taking the best action we can right now and will monitor future activities."); 11/18/13 Bolyard email ("I am not aware of any scenario anywhere in Region 6 where we require specific management actions to be taken based on an ocular analysis of something. Without some sort of quantifiable data (soil compaction, % increase in bare ground, increased sedimentation into the stream, loss of biodiversity, etc) we have nothing to base our actions on.").

¹⁹ DEIS, pp. 107 (Hydrology and Water Quality), 140 (Fish and Aquatic Habitat).

²⁰ E.g. DEIS, p.111 (increase in stream accessibility in one portion of allotment counterbalanced by decrease in total stream accessibility under current management); p.135 (11 miles of bull trout critical habitat accessible to livestock presented as a significant reduction relative to current condition rather than significant habitat impact).

²¹ E.g. IDT Notes 7/22/13.

("Chase – proposal to place a CG at Coyote Pass since there is a cattle trail there. The difficulty will be the wing fencing required because it is so rocky. Mike – Maybe some additional fencing would be necessary. Has seen the permittee put cows in Lower Bunchgrass (LB) pasture then when they move to the northern pastures, invariably some cows go right back to LB, which means some areas are grazed season-long.). Travis – that is part of grazing mgmt and compliance, so if cows end up back there then the range specialist should follow up on to get compliance. It's about complying with direction given.

Jean – to make as part of adaptive mgmt, describe how there have been a lot of changes on the allotment and if problem areas are found then they would address with adaptive mgmt.”).

²² DEIS, p.85. (“It is anticipated that adequate funding would be available in the future for range improvement project construction, allotment administration and monitoring identified in the proposed action, though it is *impossible* to predict future funding levels.”). IDT Notes 1/16/13 (“Know that fencing is expensive, but currently have a timber sale opening up ground, have flat open ground and pvt land is being cutover, so there may not be other options.

Travis – don’t want to cripple the project because we can’t afford \$150,000 worth of fencing.

Brian – to put into context there has been over a million dollars spent recently on stream restoration work in the Middle and East Branches of LeClerc Creek.

Amy – Given the inability to utilize any natural barriers on this piece of ground this is what the team came up with. Cattle drift on this piece of the allotment has been an issue for a long time. Maybe we’ll come up with another option in the future but this is the proposal for now.)

Mike – could get RMEF or other volunteers to help dismantle some of the older fence. Wildlife could assist with new fence construction.”).

²³IDT Notes 6/16/14 (“Michelle – need to determine if our AM strategy is truly adaptive management, or just monitoring. If we can’t commit to the monitoring part, how can we call this AM? Spoke with Jason Jimenez and he said to remove the soil component from the plan because he can’t commit to that. Also spoke with Travis about what we are committing to in the plan. If we say we are committed to something in the AM plan and range will have to fund the monitoring, we can only include in the plan what we can realistically do.

...

Travis – ... For the timing parameter, suggest we continue to stay in alignment with PIBO, which is every 5 years. Would be at the end of the grazing season or growing season, whichever is later. This eliminates year-to-year variability.

Brian likes the structure set up by the Kalispel tribe.

Travis – agree, but don’t think we have the capacity to do more.”).

IDT Notes 12/16/14 (“MP/TWF12 comment – change back to MIM protocol – is this range only?

Jason – would have crew next year and could take on if have budget code. Think every 5 years is laughable, what meaningful data would we get from that?

Chase – past conversation, how often and who should do – tried to make the point at the time that his time is limited, but range spec would have to do, no one else has capacity to do. what he remembers for how we got here.

Michelle – other nepa docs have time periods so think it is appropriate.

Rob – what about how many sites monitored?

Chase – had a list of 10 sites we could monitor, but would establish a multiple indicator plot and have other sites monitored as necessary.

Rob – what about walk thru observation, didn’t go anywhere, what about that?

Michelle – point is range can’t do it all, who will do?

Chase – don’t want to over-commit with monitoring, need to wordsmith.

Jason – change to forest staff or resource specs.

Rob – think robust monitoring is necessary due to sensitivity of project.

Chase – not arguing that, just don’t make it too intensive, don’t set up for failure by over-committing.

Jason – say annually, is that one day a year?

Rob – propose one day a year.

Jason – not a 20 day thing, is something seasonals can do. One day a year for adapt mgmt does not seem unreasonable, doesn’t seem like that much.

Michelle – heartburn is mostly over expecting range staff to do it all.

Chase – would have at least one monitor site per pasture, for entire allotment, monitoring would be done end of grazing or growing season, a PIBO-like MIM monitoring effort. He is lucky to get 2 sites a day now, if talking all pastures then talking 2-3 days, in grand scheme can be hard to accomplish that.

Jason – say annually and have monitoring plan determine how much.

Michelle – agree, get rid of 5 years and change responsibility to FS resource specialists.

Mike – wildlife could help but to take over all monitoring we don’t have capacity.”).

intentionally designed to include ambiguous thresholds.²⁴ The AMS also excludes stream temperature monitoring in the hopes that the Department of Ecology won't care.²⁵ In addition, the AMS only calls for adaptive management to occur on the basis of 3-year trends with no provision for reacting to immediate threats and only decadal opportunities to reinstate NEPA. Monitoring criteria are also deficient for the reasons provided below. The Tribe's only suggestion regarding the AMS is to scrap it and start over.

E. Use PIBO Data Appropriately

The DEIS relies heavily on PIBO data because the Forest Service never developed appropriate monitoring requirements. That PIBO data is often the best data available to the Service due to its prior transgressions does not mean that it is the right data to be using for habitat evaluations and future monitoring efforts. We suggest that the Forest Service revisit all uses of PIBO data within the DEIS consistent with the following suggestions:

- i. Do not rely on PIBO data at all until completing section 7 consultation with the U.S. Fish and Wildlife Service to ensure that PIBO is still valid following the 2010 bull trout critical habitat designation.
- ii. Ensure that resource specialists understand each other's PIBO-based analyses.

The DEIS inaccurately states that Alternative C meets the Grazing Management Objectives of PIBO.²⁶ "Monitoring has shown that standards for livestock use as described in PIBO have not been exceeded."²⁷ The data presented in Table 2 of the Biological Evaluation, however, shows that 2 out of 3 variables measured in 2013 at both PIBO DMAs failed to meet INFISH RMO standards.²⁸

²⁴ IDT Notes 6/16/14 ("Gayne – in the Boulder document you did some AM but never came up with thresholds, right?

Travis – well, we didn't have the objectives nailed down as well as we could have.

Gayne – think this project is complex enough without us killing ourselves over the AM plan. . . .

Chase – good point and ties in with our lack of detailed description of the grazing season. We are leaving some things open-ended and not locking ourselves into it. It's good to leave it a little bit vague to allow for some flexibility.

Gayne – it doesn't mean we won't do monitoring, just don't spend too much time detailing the thresholds.

Rob – that is not my understanding of how AM works.").

²⁵ IDT Notes 3/17/15

("Michelle – also **using stream temp in adapt mgmt** – no comment from RO.

Travis – think we should not use it, is not appropriate indicator. No other forest has monitored stream temp. Tom's comment was the shape of the stream has a greater effect than the temp. If wide and shallow absorbs more heat, if narrow then cooler.

*Gayne – leave it out for now and see what ecology says.

*Michelle – ok no shade or temp will be monitored in adapt mgmt.").

Also *compare* DEIS, pp.26-27 (AMS has no water quality monitoring component) *with* IDT Notes 1/16/14 (AMS with water quality component).

²⁶ DEIS, p. 73.

²⁷ *Id.*

²⁸ Rief, A. 2015. LeClerc Creek Cattle Grazing Allotment EIS Biological Evaluation/Management Indicator Species Report.

The DEIS also seems to ignore its specialist's report regarding existing habitat conditions in the Biological Evaluation. It is unreasonable to conclude that standards for livestock use are being met when nearly every fish and habitat metric analyzed suggests the watershed is not properly functioning or functioning at risk.²⁹

iii. Cross check PIBO data with other available data.

Evaluate, for instance, how PIBO data compares to Pend Oreille PUD ("PUD") stream survey data from Middle Branch LeClerc Creek, an existing high-use area,³⁰ and Upper Middle Branch LeClerc Creek,³¹ a future high use area.

iv. Use the right PIBO data for the right purpose.

The attributes proposed to be monitored during PIBO IM (greenline stubble height, streambank alteration, and woody species browse) fail to address the impacts of grazing on stream and riparian habitats and are only meant to determine whether the current year's livestock grazing is meeting planned stocking levels, grazing intensity and duration, and criteria for livestock use of riparian areas: in other words allotment compliance monitoring. The effects of cattle grazing are well documented to include increased W/D ratios, higher levels of fine sediment resulting from collapsed banks, fewer undercut banks, increased bank angles reductions in pool habitat, and degradation of the riparian zone (Al-Chokhachy et al 2010). Of the indicators available in the MIM protocol, the DEIS proposes the three least likely to describe current conditions, detect trends, and inform adaptive management of the allotment with regard to stream and riparian condition.

Even if the appropriate MIM indicators were selected, we believe the level of effort would need to be increased substantially in order to adaptively manage at the allotment scale. Three DMAs measuring ~110 m each divided among 4 pastures is inadequate to describe impacts to over 100 miles of stream and riparian habitat (<0.2% of linear riparian corridors). Further, with less than 1 DMA per pasture, variability cannot be accounted for in trend monitoring to inform adaptive management (e.g. drift between pastures). Heitke et al. (2008) suggested observer variability associated with the protocol be incorporated into management decisions especially when high economic or ecological costs may result from decisions. The authors also note that significant error can arise from within and among individual observers and caution that managers should be careful when taking action based on a single evaluation—especially when the result is near a management standard or threshold (Heitke et al. 2008).

²⁹ *Id.*

³⁰ EESC 2010. Middle Branch LeClerc Creek general and target surveys habitat surveys. Prepared for Box Canyon Hydroelectric Project Fish Sub-Committee. Submitted by the Public Utility District No. 1 of Pend Oreille County as part of the Trout Habitat Restoration Program. (showing that 10 out of 15 reaches surveyed fall below criteria for stable banks, 11 out of 15 fall below criteria for pools/1000 feet, and 13 out of 15 reaches surveyed fall below criteria for surface fines; also showing that bank stability average s 65.26% for the 15 reaches within the allotment, and 99.89% for the reach just outside it).

³¹ EESC 2012. Upper Middle Branch LeClerc Creek general and target surveys habitat surveys. Prepared for Box Canyon Hydroelectric Project Fish Sub-Committee. Submitted by the Public Utility District No. 1 of Pend Oreille County as part of the Trout Habitat Restoration Program. (showing that 10 out of 14 reaches surveyed fall below criteria for stable banks, 10 out of 14 fall below criteria for pools/1000 feet, and 12 out of 14 reaches surveyed fall below criteria for surface fines).

Many of the PIBO IM shortcomings with regard to which attributes are monitored are periodically addressed with PIBO Effectiveness Monitoring (PIBO EM). However, PIBO EM is a large scale monitoring program (i.e. Federal grazing lands of the West) and cannot detect change at the allotment or even the scale of an individual District. At even the individual Forest level PIBO EM should only be able to detect 20% change of about 50% of the habitat attributes measured in 35-90 sites (Henderson et al 2005). Therefore, PIBO EM is completely useless in assessing how well modifications proposed in Alternatives C and D improve instream and riparian habitats and cannot inform adaptive management of the allotment.

III. Conclusion

Due to the numerous defects identified above, the PA will result in an allotment with:

- an uncommonly difficult cattle drift problem;³²
- a pasture rotation prescription that is not operationally practical;³³
- 43 miles of unfenced boundaries;³⁴
- 25 miles of livestock-accessible habitat along fish-bearing streams, including a 12% increase in West Branch LeClerc;³⁵
- 11 miles of livestock-accessible bull trout critical habitat;³⁶
- an additional mile of TMDL temperature impaired stream;³⁷ and
- a fatally defective adaptive management strategy.

That Allotment clearly violates the Forest Plan for all of the reasons previously explained in the Tribe's May 28, 2013 EA comments to the Forest Service, which are hereby incorporated by reference. The Tribe need only offer a few clarifications at this point:

³² IDT Notes 8/22/13 (The Forest Service's Rangeland Management Specialist is "*not aware of other allotments that have such a chronic problem with drift*. Usually can find the spot and plug the hole, but this is a constant problem."); IDT Notes 1/16/13 ("Between our veg mgmt and veg mgmt on private land, it makes it tough to rely on natural barriers to prevent cattle movement."); IDT Meeting Notes 7/22/13 ("Big problem with this allotment is the boundaries are very porous and cattle are adventurous, so it is difficult to nail down the mgmt.").

³³ DEIS, p.14; *see also* 8/26/13 Meeting Notes ("[The permittee] said he felt that a pasture rotation just isn't effective in this allotment, and explained that how the *allotment has been managed for many years now isn't as the management is described in the AOI's*. He explained that cattle are pushed to the higher elevations (Mineral Creek and Upper Bunchgrass) in mid-summer, and that they slowly work their way back toward the Hanlon holding pen and Lower Bunchgrass pasture in small groups.").

³⁴ DEIS, p.43.

³⁵ DEIS, pp.43, 112.

³⁶ DEIS, p.43.

³⁷ DEIS, p.121.

- Although the Tribe appreciates the exclusion of one of its important traditional cultural properties from the allotment, that does nothing to resolve larger cultural concerns.
- The DEIS continues to use the wrong temperature standard for the LeClerc watershed. The correct temperature criterion is 12°C under Washington State water quality standards and less than 9°C under InFish.³⁸ Compliance with these standards requires retention of all available shade.
- At a THRP fish subcommittee meeting earlier this week, the Pend Oreille PUD announced that it will not be performing any more conservation work in active grazing areas. The Tribe supports this position, at least with respect to discretionary grazing activities on public lands. The DEIS's economic and cumulative effects analyses should be updated to account for this information.
- The Tribe will support using THRP dollars to fund the swift removal of Allotment infrastructure if the Allotment is cancelled.
- Forest Service records indicate that the northwestern portion of the allotment is being expanded in response to a legal decision concerning trailing outside of allotment boundaries.³⁹ The DEIS should identify this legal decision and explain its relevance to past and future allotment management.

Thank you for considering these comments. We hope they inspire the Forest Service to take a new and honest look at this management decision, and to find a much better solution for the good of our community. If the Forest Service conducts a credible environmental analysis, it will find that one necessary component of this solution will be to cancel the allotment. The cost of the fencing required to protect the ecological values embodied in the Forest Plan defies reason.

Bear in mind that the Forest Service need not redo the DEIS to make this decision. Grazing permits may be cancelled to devote grazing lands to another public purpose.⁴⁰ Other public purposes are compelling here given the LeClerc watershed's importance as a cultural landscape for tribal members, a priority tributary under the THRP, and habitat for multiple ESA-listed species. This importance is underscored by the \$3 million conservation investment already made in the watershed, and the availability of millions more for future conservation investments. If the allotment is cancelled, the Tribe will not object to phasing out the allotment over a reasonable period of time to ease the transition of the permittee's grazing operation to a more appropriate site.

³⁸ See Appendix A to these comments (water temperature information); see also 11/27/13 Hickenbottom email ("With regards to grazing, it is hard to "improve" the temperature condition without just fencing it out.").

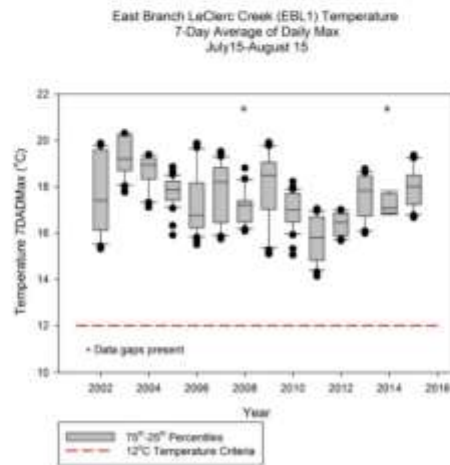
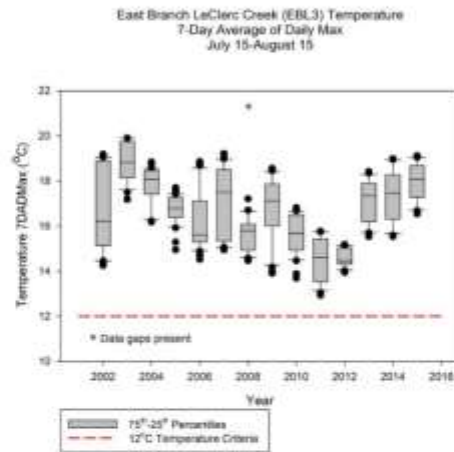
³⁹ IDT Notes 1/16/13, 3/12/14.

⁴⁰ 36 C.F.R. § 222.4(a)(1) (The Chief, Forest Service, is authorized to cancel . . . permits where lands grazed under the permit are to be devoted to another public purpose . . .").

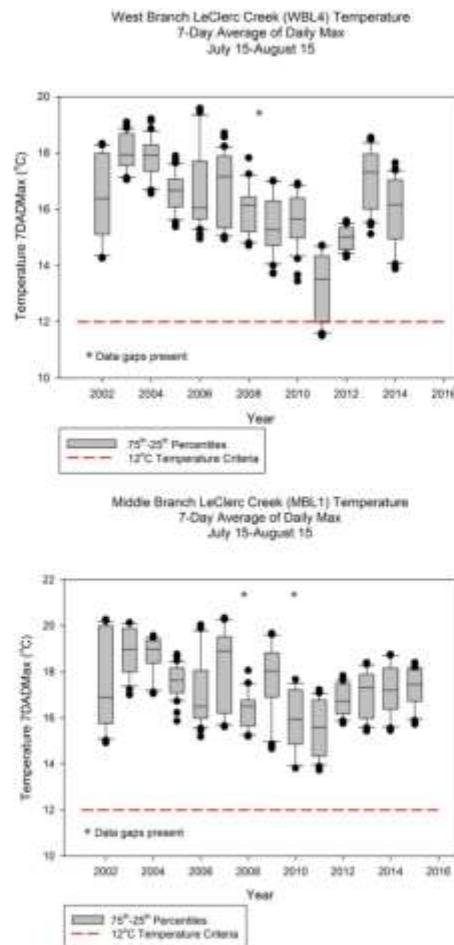
Appendix A

1. Kalispel Natural Resources Department ("KNRD") monitoring of LeClerc Creek Basin tributaries shows consistent summer exceedance of the WA Char spawning and rearing numeric criterion of 12°C (see below). This results in the default narrative criterion of no significant human-caused change from natural conditions being in effect.

7-day average of the daily maximum temperatures recorded during July 15th – August 15th within the upper (EBL3) and lower (EBL1) East Branch LeClerc Creek



7-day average of the daily maximum temperatures recorded during July 15th – August 15th within Middle Branch and West Branch LeClerc Creek

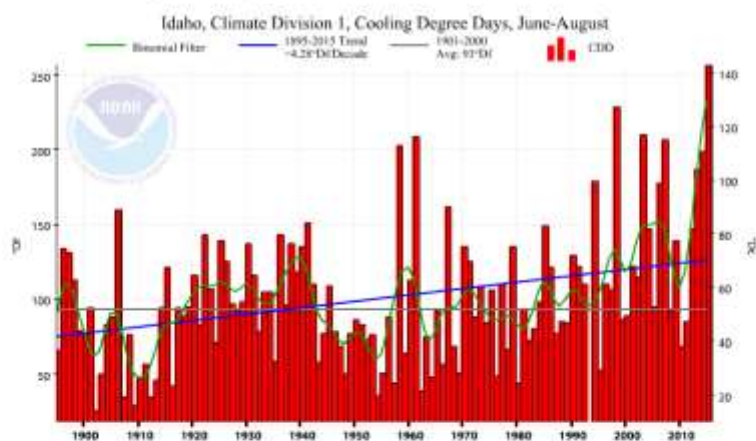


2. The Colville National Forest ("CNF") and WA Ecology assumption that implementation of INFISH with continued riparian grazing in the LeClerc Basin will achieve compliance with the Char temp criteria over the next 30-40 years is wrong. It will be necessary to achieve the maximum riparian shade potential throughout the Basin to restore the water temperature to natural conditions under existing climatic conditions. Continued climate warming will also require implementation of other actions to further cool streams such as restoring and enhancing cold hyporheic flow.

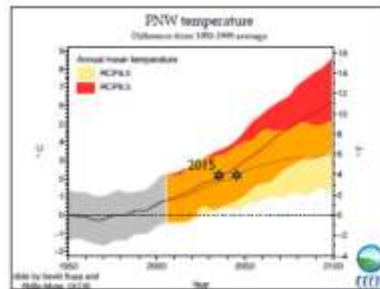
All riparian corridor management actions available to maximize riparian shade recovery will need to be implemented considering the well-understood impacts on the riparian zone by cattle grazing which contribute to changes in hydrology, destabilizing of stream banks, sedimentation, and changing or eliminating of riparian vegetation (Kauffman and Krueger, 1984). The loss of riparian shade and changes in stream morphology commonly contribute to increased water temperature along with other ecological effects (Platts, 1979) and is also well-explained in the DEIS.

3. CNF is required to address climatic change and management adaptations (not just monitoring) during the development of plans by Executive Order 13514 (Federal Leadership in Environmental, Energy, and Economic Performance), Executive Order 13653 (Preparing the United States for the Impacts of Climate Change), and “The President’s Climate Action Plan.” Adaptation plans are required to evaluate climate change vulnerabilities and to minimize the short- and long-term effects of climate change on agency mission and operations.

- a. The importance of addressing climate warming in the LeClerc watershed is illustrated by the significant increasing trend in summer cooling-degree days for N Idaho (see below).



- b. Predictions for atmospheric warming in the PNW suggest that average temperature experienced in 2015 will be the normal condition around the years 2035-40 with the anticipated rate of continued increase in global CO₂ emissions (see below). Atmospheric warming has reportedly contributed to waterbodies warming in North America at an average rate of around 0.2°C/decade over the last 30-40 years (Rice and Jastram, 2014; Isaak *et al.*, 2011).



The background plot shows simulated Northwest temperature (see More et al. 2013) from 20 global climate models for two different scenarios of future emissions, which have been smoothed to emphasize slow variations. Darker lines show the multi-model mean for each RCP.

According to NOAA's Climate at a Glance utility, the Water Year 2015 (i.e., Oct 2014 through Sept 2015) temperature in the Northwest was +3.9°F above the 1950-2000 average. This is indicated by the stars, where they intersect the future curves for RCP8.5 (in about 2032) and RCP4.5 (in about 2045).

2015 anomaly and GCM anomalies are relative to 1950-1999.

Source: More, P., J. Abatzoglou, and K. Kunkel, 2013. Climate change in the Northwest. Chapter 2 in Dutton, M., P.W. More, and A.K. Snowder, eds., 2013. Climate Change in the Northwest: Implications for Our Landscapes, Waters, and Communities. 224 pp, Island Press.

- c. Grazing exclusions must be implemented beginning now throughout all of the riparian corridors of the LeClerc Basin along with shade tree restoration to the assure full recovery of the maximum shade potential necessary to eliminate existing and future contribution of man-caused stream warming. This is especially critical in the face of projected climate change discussed above.
4. The Colville Forest Temperature TMDL uses the incorrect temperature criterion (16°C) for LeClerc Creek tributaries to assess shade targets (Table 15, Pg 62, Ecology TMDL Submittal report, <https://fortress.wa.gov/ecy/publications/documents/0510047.pdf>). Based on this erroneous criterion, the TMDL justifies shade targets less stringent than the maximum natural shade potential needed to meet the correct criterion of 12°C (Ecology's originally proposed Char criterion of 13°C was disapproved by EPA).

- a. The correct Temp criterion for the designated use of Char spawning and rearing is 12°C as described from WA WQ stds below.

(1) Aquatic life temperature criteria. Except where noted, water temperature is measured by the 1-day average of the daily maximum temperatures (7-DADMax). Table 200 (1)(c) lists the temperature criteria for each of the aquatic life use categories.

Table 200 (1)(c)
Aquatic Life Temperature Criteria in Fresh Water

Category	Highest 7-DADMax
Char Spawning and Rearing*	12°C (53.6°F)
Cold Water Salmon Trout*	16°C (60.8°F)
Salmonid Spawning, Rearing, and Migration*	17.5°C (63.5°F)
Salmonid Rearing and Migration Only	17.5°C (63.5°F)
Piscivorous and Non-piscivorous Fishes	18°C (64.4°F)
Indigenous Warm Water Species	20°C (68°F)

*Note: Some streams have a more stringent temperature criterion that is applied seasonally to further protect salmonid spawning and egg incubation. See (1)(2)(b) of this subsection.

<https://fortress.wa.gov/ecy/publications/documents/0610091.pdf>

- b. The EPA 2005 findings map reiterates the designated use for LeClerc Creek tributaries (Fig 2, [http://yosemite.epa.gov/R10/water.nsf/34090d07b77d50bd88256b79006529e8/5a8440cd8b259abd882571390071ef4d/\\$FILE/UsesWRIA62.pdf](http://yosemite.epa.gov/R10/water.nsf/34090d07b77d50bd88256b79006529e8/5a8440cd8b259abd882571390071ef4d/$FILE/UsesWRIA62.pdf))
- c. If the correct criterion of 12°C had been used then, the maximum natural shade potential would be the correct shade target and activities that prevent attainment, such as grazing within the riparian corridor should not be allowed.
- d. Ecology's TMDL submittal report did recommend that the LeClerc Creek tributaries be given a higher priority for **"active implementation of best management practices such as riparian exclusion from grazing and the re-establishment of riparian vegetation"** (pg 62, Ecology TMDL submittal report).
- e. The Colville Forest TMDL is invalid for Char designated water as it exists and should not be used as a justification to allow any man-caused activities contributing to non-attainment of the temperature criteria. The TMDL and implementation plan need to be amended using the appropriate temperature criterion and the implementation strategies for all tributaries with Char spawning and rearing use designations.
- f. Ecology has set a precedent in 2013 for amending the TMDL implementation plan for Bacteria to allow additional time to implement necessary actions to "help meet the CNF's ongoing commitment to meet or exceed the state's water quality laws, as described in the Memorandum of Agreement (MOA) between Ecology and Region 6 of the U.S. Forest Service (November 2000)."
<https://fortress.wa.gov/ecy/publications/documents/1310040.pdf>

Additional Literature Cited

- 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).
- Platts, W.S. 1979. Livestock grazing and riparian / stream ecosystems – an overview. In: *Proc., Forum-Grazing and Riparian/Stream Ecosystems*. Trout Unlimited, Inc (pp. 39-45).
- Rice, K.C. and J.D. Jastram. 2015. Rising air and stream-water temperatures in Chesapeake Bay region, USA. *Climatic Change*. Volume 128, Issue 1, pp 127-138.
- Isaak, D.J., S. Wollrab, D. Horan, and G. Chandler. 2011. Climate change effects on stream and river temperatures across the northwest U.S. from 1980–2009 and implications for salmonid fishes. *Climatic Change*. Volume 113, Issue 2, pp 499-524

Appendix E: Changes between Draft and Final Environmental Impact Statements

Changes between draft and final EIS are summarized below. This is not an all-inclusive list. Minor editorial changes, such as corrections to spelling and grammatical errors, corrections, and clarifications to the use of acronyms, and visual formatting have been made throughout this document. This FEIS also contains new information and/or analysis developed since the time of the DEIS. In some cases, unnecessary or repetitive paragraphs have been dropped. None of the revisions change the scope or findings of the analyses.

Changes to Abstract

- Correction to the URL for public comment.
- Responsible Official changed from Gayne Sears, District Ranger to Rodney Smoldon, Forest Supervisor.

Changes to Chapter 1

- Description of NEPA History added to Background section.
- Excerpt describing Biological Opinion from U.S. Fish and Wildlife Service (USFWS).
- Additional details were added to public involvement section to reflect ongoing public involvement since time of draft EIS.

Changes to Chapter 2

- Preferred Alternative B.
- Clarity to objectively describe the operational concerns identified by the permittee as rationale for development of Alternative D has been added
- More detailed description of the Federal Power Act, the hydropower licenses, the Trout Habitat Restoration Program projects, and how they relate to this project.
- The DEIS identified several mitigation measures; however, upon review, the measures were more appropriately identified as design criteria.

Changes to Chapter 3

- Addition of current monitoring information to Rangeland Management section. Inconsistencies between the Rangeland report and the other reports have been corrected
- Social-Economic Analysis section has been updated with information about environmental justice, hydropower license projects, and costs associated with conservation measures recommended by the USFWS.
- Hydrology and Water Quality section contains updated Washington Department of Ecology Water Quality standards and updated water quality monitoring data.

- Added scientific references to the aquatic sections in Chapter 3
- The effect of manure and urine on pH and dissolved oxygen has been included in Chapter 3 (Hydrology) and the Hydrology report. The Hydrology report has been corrected with the Washington State standards for water temperature, and the temperature standard for native char.
- Clarification has been made in the Hydrology report that the Goebel's (1956) research concluded a shift in concentration of cattle from high use overgrazed areas to areas with minimal to no utilization, reduction in trailing between food source and watering sites, and regrowth of protective vegetation surrounding the water hole
- The riparian management objective for temperature have been corrected in the Fisheries report section of the FEIS in chapter 3. The effect of cattle on temperature are included in the Fisheries report; Climate change data is now included in Chapter 3 of the FEIS
- Stubble height information and clarity in the Fisheries-Aquatic Habitat section in Chapter 3
- Fish and Aquatic Habitat section has updated WA Department of Ecology Water Quality standards, corrected RMOs for temperature, addition of monitoring data, and a more detailed recognition of past efforts by the Trout Habitat Restoration Program.
- Terrestrial Wildlife Species and Habitats section contains updated information for all species found in the project area. Information about the submittal of the BE and BA to USFWS added to the Fish and Aquatic Habitat, Terrestrial Wildlife Species and Habitats, and Sensitive Plants sections.
- Sensitive Plants section has updated review of the Natural Resources Management Database for sensitive plant sightings and surveys database, the Region 6 Regional Forester Special Status Species List, and Washington Natural Heritage Program.
- Addition of climate change information: Rationale for Project-Scale Effects Conclusion on Climate Change
- The Social-Economics section of Chapter 3 and the Social-Economics report has been updated to talk about the funding spent in the LeClerc Watershed
- Clarity has been provided in Chapter 3 on how the Hanlon Meadow pasture facilities are used at turnout

Changes to References

- Updates to references

Changes to Appendices

- Addition of Appendices D and E