United States Department of Agriculture

LeClerc Creek Grazing Allotment Management Planning

Draft Environmental Impact Statement

Figure 1. West of Middle Branch LeClerc Creek, 2011 (left); Middle Branch LeClerc Creek, 2015 (right)

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

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This document is available on the internet:
http://www.fs.usda.gov/projects/colville/landmanagement/projects

Abstract: The approved alternative of the Final Environmental Impact Statement, Land and Resource Management Plan, Colville National Forest (December 29, 1988), including Regional Forester's Forest Plan Amendment No. 2, and the Inland Native Fish Strategy (INFISH) Environmental Assessment (EA), establishes management direction for the Colville National Forest in the form of Goals and Objectives. The focus of the project is reauthorization of an existing permit for grazing cattle on National Forest System Land.

This Draft Environmental Impact Statement (DEIS) documents the analysis of four alternatives for the management of the LeClerc Creek Allotment. The LeClerc Creek Allotment analysis area is located approximately six miles southeast of Ione, Washington. Alternatives include Alternative A –No Change (current management), Alternative B – No Action (no grazing), Alternative C - Proposed Action (preferred alternative), and Alternative D – Modification of Proposed Action.

It is important that reviewers provide their comments to the Forest Service at such times and in such a way that they are useful to the Agency's preparation of the EIS. Therefore, comments should be provided prior to the close of the comment period and should clearly articulate the reviewer's concerns and contentions. The submission of timely and specific comments can affect a reviewer's ability to participate in subsequent administrative review or judicial review. Comments received in response to this solicitation, including names and addresses of those who comment, will become part of the public record for this proposed action. Comments submitted anonymously will be accepted and considered; however, anonymous comments will not provide the respondent with standing to participate in subsequent administrative or judicial reviews. The Colville National Forest must receive comments on the Draft EIS within 45 days after publication of the notice of availability in the Federal Register.

Send Comments to:	**GAYNE SEARS, District Ranger** **315 North Warren** **Newport, WA 99156** **Or** ***Via the web at:*** **https://cara.ecosystem-management.org/Public/CommentInput?project=41517**
Date Comments Must Be Received:	**November 16, 2015**

Summary

The Colville National Forest is analyzing management of the LeClerc Creek Cattle and Horse Grazing Allotment (hereafter referred to as the LeClerc Creek allotment) and a qualified applicant would like to continue grazing this allotment. 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 sub-watershed. Primary access is via Fourth of July (Forest Road [FR] 1932), East Branch LeClerc Creek (FR 1934), Middle Branch LeClerc Creek (FR 1935), and West Branch LeClerc Creek (FR 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 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 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 current and historic livestock grazing, the Forest Service has developed four alternatives, which are described and analyzed in this Environmental Impact Statement. The alternatives analyzed include the No Change (Alternative A: Current Management), No Action (Alternative B: no grazing), Proposed Action (Alternative C) and the modification to the proposed action (Alternative D). Based upon the effects of the alternatives, the responsible official will decide whether to authorize domestic livestock grazing on the project area's suitable rangelands, how grazing may be managed within the project area and address any changes that need to be made to the Allotment Management Plan (AMP.)

Issues

Issue 1 - Effects of Current and Historic 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 Livestock Grazing on Social or Cultural Issues

Alternatives

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

Alternative A - No Change (Current Management)

This alternative would authorize grazing under the existing management plan. There would be no change to 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.

Alternative B - No Action (No Grazing)

Alternative B is the “No Grazing” alternative. 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 FS 2005A).

Under this alternative, livestock grazing would be discontinued on the LeClerc Creek Allotment and the allotment would be closed. Additionally, 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 (C&H) allotment, but current management would change as described in chapters 2 and 3.

Alternative D - Modification of Proposed Action

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 (C&H) allotment, but current management would change as described in chapters 2 and 3.

Adaptive Management

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 Deciding 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 1.

Monitoring

Monitoring and evaluation are key elements of adaptive management. Adaptive management is proposed under alternatives C and D.

Document Structure

The Forest Service has prepared this Environmental Impact Statement in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Impact Statement discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into four chapters:

Chapter 1. Purpose and Need for Action: The chapter includes information on the history of the project proposal, the purpose of and need for the project, and the agency’s proposal for achieving that purpose and need. This section also details how the Forest Service informed the

public of the proposal and how the public responded.

Chapter 2. Alternatives, including the Proposed Action: This chapter provides a more detailed description of the agency's proposed action as well as alternative methods 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: This chapter describes the environmental effects of implementing the proposed action and other alternatives. Recent, current, and foreseeable activities are included in the content of this chapter (appendix C). This analysis is organized by resource area.

Chapter 4. Consultation and Coordination: This chapter provides a list of preparers and agencies consulted during the development of the environmental impact statement.

Appendices: The appendices include detailed maps of the proposals (appendix A), Best Management Practices (appendix B) identified for the project area, and Recent or Reasonably Foreseeable Activities Within and Adjacent to the LeClerc Creek Grazing Allotment Area (appendix C).

Index: The index provides page numbers by document topic.

Additional documentation may be found in the project planning record located at the Sullivan Lake Ranger District Office.

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Chapter 1. Purpose of and Need for Action

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. In this way, the purpose and need reflects the difference between the existing condition and the desired condition. The focus of this project is to analyze current grazing allotment management. The purpose of this Environmental Impact Statement would analyze the effects of livestock grazing on other resources within the LeClerc Creek allotment throughout a range of alternatives.

The need for the proposed action is that a qualified applicant would like to continue livestock grazing on this allotment and is based on requirements of the 1995 Rescissions Act (Public Law 104-19, Section 504) and Forest Service policy. Specifically, direction found in Forest Service Manual 2203.1.6 states that National Forests are to make forage available to qualified livestock operators from lands suitable for grazing, consistent with Land and Resource Management Plans. This policy is based upon language found in 36 Code of Federal Regulations (CFR) 222 (c). The Act requires that grazing permits, which expire prior to completion of National Environmental Policy Act (NEPA) analyses, be reissued based on existing terms and conditions. It also requires new permits be issued unless there are significant environmental concerns.

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).

Background

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 LeClerc Creek Allotment.

The National Forest System lands that make up the LeClerc Creek Allotment were purchased through the Resettlement Act during the Great Depression and given National Forest status in 1938. The area was extensively logged in the early 1920's and experienced extensive fires in 1929. The LeClerc Creek Allotment has documented grazing use back to 1940, but grazing use

likely occurred in the area long before that since homesteading occurred from approximately the 1890s to the 1930s. Prior to 1940 sheep grazed the allotment, at which point 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 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.

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.

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.

Logging and land clearing has been occurring in the West Branch and East Branch LeClerc Creek subwatersheds since the early 1900s. Early reports document that much of the two subwatersheds were heavily harvested by large timber companies such as Diamond Match Company. The East Branch LeClerc Creek subwatershed maintains a checkerboard ownership between Forest Service, Washington State DNR, and Stimson Lumber Company. Stimson Lumber Company lands were predominantly owned previously by Plum Creek Lumber Company. Beginning in the 1950s, the Forest Service Record keeping improved significantly and data was recorded as timber was harvested. Timber harvest results in transitory rangelands, which may provide an upland grazing resource in some instances.

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. 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.

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 state that forage producing lands will be managed for livestock grazing where consistent with land management plans (36 CFR 222.2(c)).

NEPA History

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 with a new proposed action and was scoped with the public in 2013. During this analysis, other forest projects became higher priority and the team leader position was vacant, which led to significant delays in the project. It also became apparent through the analysis that some possible significant impacts needed to be addressed through an Environmental Impact Statement (EIS) instead of an EA. This decision is documented in the project record. The third scoping period started with a Notice of Intent in 2014 to inform the public of the Forest Service’s intent to further analyze the allotment with an EIS. An interdisciplinary team (IDT) proposed opportunities for improvement to management of the LeClerc Creek allotment and presented them to the public in a letter. The public comments on the proposed opportunities 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. 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, are within the control of the Forest Service and within the scope of the project. These issues were reviewed by the responsible official and are tracked throughout this document. The result is the alternatives described in chapter 2.

Project Location

The analysis area encompasses about 23,412 acres of land within the LeClerc Creek watershed. 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 analysis area. A vicinity map is located below and in appendix A.

Table 1. Legal Description of the Project 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

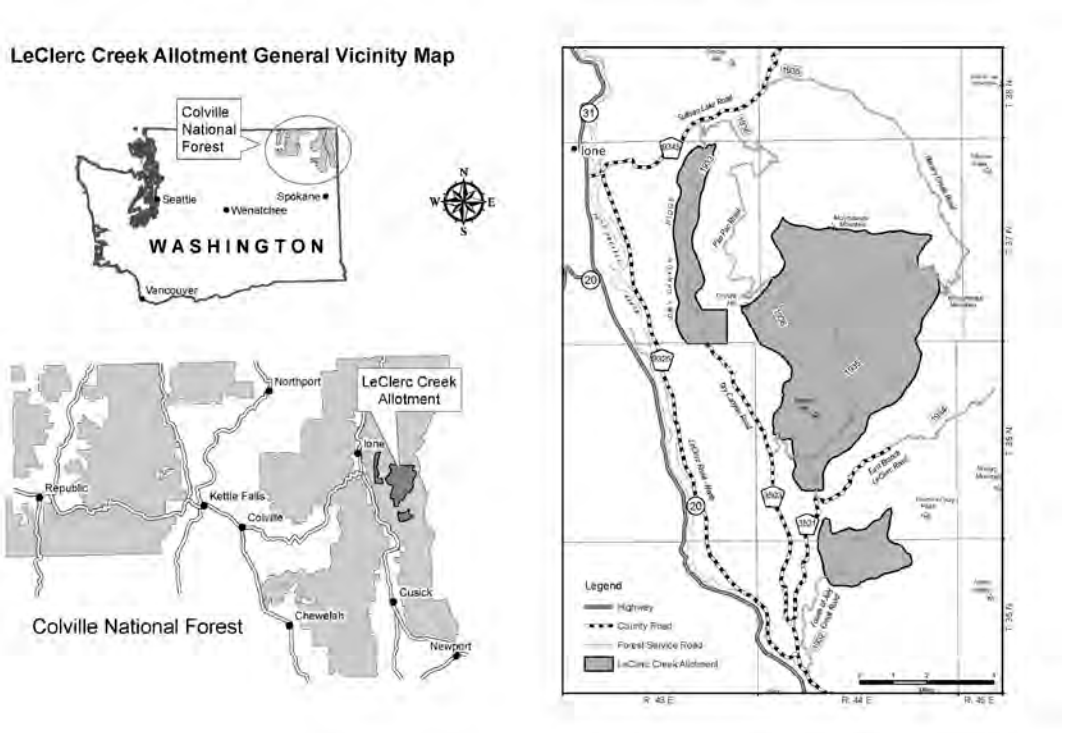


Figure 2. Vicinity Map

Land and Resource Management Plan and Amendments

The Forest Plan represents the preferred alternative of the Final Environmental Impact Statement (FEIS, approved December, 1988) and, together with the Record of Decision, as amended by the Regional Forester's Forest Plan Amendment #2 and the Inland Native Fish Strategy (INFISH), provides direction for management of the Forest and general discussions of associated environmental impacts. This analysis is tiered to the Forest Plan FEIS.

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, (U.S. Forest Service 2005): 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."

Management Direction

This Environmental Impact Statement is guided by federal and state law, including the Forest and Rangeland Renewable Resources Planning Act, National Forest Management Act, the National Environmental Policy Act (NEPA), and the Clean Water Act. Other management directions, policies, laws, and regulations are discussed in chapter 3 under "Other Required Disclosures."

Rescissions Act

Section 504 of the 1995 Rescissions Bill (P.L. 104-19); Public Law 104-19, the Rescission Act, was signed into law in July 1995. The Act requires that NEPA analysis be conducted on all range allotments by 2025. Section 504 (a) Schedule for NEPA Compliance requires that each National Forest System unit establish and adhere to a schedule for the completion of National Environmental Policy Act (42 U.S.C. 4321 et seq.) analysis and decisions on all allotments within the National Forest System unit for which NEPA analysis is needed.

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.

National Historic Preservation Act and Treaty Resources

This act requires federal agencies to consult with the State Historical Preservation Office and American Indian Tribes before cultural resources, such as archaeological sites and historic structures are damaged or destroyed. Section 106 of this act requires federal agencies to review the effects project proposals may have on cultural resources in the project area.

Clean Water Act

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.

Aquatic Restoration Biological Opinion (ARBO)

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.

Lynx Conservation Assessment and Strategy

The Lynx Conservation Assessment and Strategy (LCAS) provides conservation recommendations for activities in lynx habitat (Ruediger et al. 2000).

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).

Adaptive Management Strategy

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 will 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).

Management Area Guidelines

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). About 18,911 acres of National Forest System land, 4,300 acres of private land, and 202 acres of Washington State land lie within the analysis area. The goal of each MA is briefly described below.

Table 2. Forest Plan Management Areas

Management Area	Acres	Percent
1	345	2
2	13	<1
4	22	<1
5	2,101	11
6	26	<1
7	7,767	41

Management Area	Acres	Percent
8	4,710	25
11	3,926	21

There are eight MAs in the analysis area. This table shows the percent of NFS land allocated to each management prescription, and maps in appendix A show the locations of these management prescription areas.

Desired Conditions

Other management direction as well as Forest Plan desired future conditions (DFCs) divide the Forest into management emphasis areas and provide respective themes, management emphases, prescriptions, and standards and guidelines. 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.

The management recommendations included in the eight management areas within the project boundary are:

- 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 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.

The desired future conditions for other resources on this grazing allotment are (all other desired conditions are discussed in detail in each resource section):

- The maintenance of stable soils to provide for stable or upward trends in soil condition and to protect archaeological resources;
- The maintenance of quality habitat for a diversity of plant and animal species;
- Stream and riparian conditions fully supporting fish populations;
- Resilience of stream and riparian habitats, water quality improvement, as well as other wildlife habitat improvements.

For a detailed list of Forest Plan Desired Future Conditions for riparian/ fish/ wildlife see Forest Plan page 4-65.

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.

Affected Environment

The existing conditions described below are further explained in the Rangeland Management section in chapter 3 of this document. The existing conditions for each resource are listed within chapter 3 under the title of each resource. The LeClerc Creek Allotment is categorized as a Cattle and Horse (C&H) allotment with 101 cow/calf pairs authorized to graze from June 1 to September 30 each year. The allotment is managed using a deferred rotation grazing strategy with five pastures and current management conditions are found in chapter 3 under Range Management.

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.

Historic permitted stocking levels for the lands that make up the current day LeClerc Creek Allotment are summarized in Table 9 in the Range Management section of this statement (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 how many 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.

Range Improvements

Existing range improvements for the LeClerc Creek Allotment consist of ten livestock management fences totaling approximately 14 miles and two corral/loading chute facilities. The fencing was put in place in order to create allotment and pasture boundaries. The first range improvements on this allotment were constructed in 1975, and construction / 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.

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, which is exacerbated later in the grazing season as upland forage cures and becomes less palatable. This has led to areas with higher than desired impacts to stream banks and riparian/wetland soils.

There are also two exclosure fences that are maintained by District wildlife staff and/or the Kalispel Tribe of Indians, as well as 2 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, there are areas on the allotment where cattle drift is a recurring problem. Lack of natural barriers as well as 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.

Vegetation

The LeClerc Creek Allotment is 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 2,600 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, redtop, 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.

Meadows and riparian areas are important foraging sites for big game on the allotment. Cattle also tend to concentrate their grazing in these areas. While the diets of big game animals overlap with domestic stock to varying extents, it is difficult (and potentially misleading) to calculate a "forage reservation" for big game to be provided from areas grazed by livestock. A better way to ensure that the forage base is adequate for both livestock and big game is to allocate use of the allotment in time and space (pers. comm. with J. Lyon, R. Schott, and T. Kombreck 1999). At the same time, utilization should be monitored to ensure that productivity and vigor of forage plants is being maintained.

Within the LeClerc Creek Range Allotment, green forage in upland areas tends to be under-utilized by cattle, while utilization has exceeded Forest Plan standards in certain riparian sites at times. In large part this is due to poor controls over stock movement in the allotment. The permittee moves his cows to different pastures in the allotment according to an approximate schedule. However, rather than stay in a given pasture long enough to fully utilize the available forage, some cows oftentimes move back to favored meadows in neighboring pastures, resulting in re-grazing those sites.

Proposed Action (Alternative C)

The Forest Service proposes to continue authorizing grazing within the project area with modifications to the existing permit conditions to address management and resource concerns that currently exist within the allotment, and to meet the purpose and need and comply with Forest Plan standards and guidelines.

The proposed action would include adaptive management, a process of making use of monitoring information to determine if management course changes are needed, and if so, what changes and to what degree. The proposed action would occur after the Record of Decision is signed in 2015. The proposed action is analyzed in chapter 3 as alternative C. A detailed description of alternative C is in chapter 2.

- Maintaining the current authorization of 535 Animal Unit Months (AUM). 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, etc.;
- Changing the turn-on date for the allotment from June 1 to June 15. The end of the normal use period would be extended from October 1 to October 15;
- Allotment boundary adjustments - the current proposal would reduce the overall size of the allotment and change the permit boundary to create a contiguous boundary, including removal of the Fourth of July pasture and associated improvements from the allotment;

- Installation of a new cattle guard and drift fence on NFS road 1935011 to prevent livestock drift off the allotment;
- Moving the existing cattle guard on the Middle Branch LeClerc Creek Road (NFS road 1935) north to the new allotment boundary, tying the structure in to the new allotment boundary fencing north to the new drift fence to be located along NFS road 1935115 and tying into the northeast corner of the holding pen.

Improvements

- Installation of two new cattle guards and other improvements including upland water developments, etc.;
- Expanding/improving the Diamond City corrals to aid in loading and unloading cattle, and provide a catch pen.

Road Reroute and Obliteration

- Rerouting public access to the holding pen at Hanlon Meadow including obliteration of approximately 800 feet of the old Middle Branch LeClerc Creek Road. New access to the meadow and holding pen would be via NFS road 1935116 and would include reconstruction of approximately 600 feet of an old, existing road template.

Monitoring

The proposed action would establish three riparian Designated Monitoring Areas (DMAs) to implement Multiple Indicator Monitoring (MIM[1]) protocols at existing monitoring sites that are not currently DMAs. An additional riparian DMA in the Dry Canyon pasture may be established as monitoring of resource conditions necessitates.

Monitoring helps determine how well Forest Plan and NEPA decisions are being implemented, whether 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 towards 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 or not 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. With alternative C or alternative D, if a management action is determined not to be effective, the monitoring will trigger implementation of an adaptive management action. Monitoring on the allotment would be accomplished by the Forest Service, or if approved by permittees, or others (such as partners), while implementing approved methods and providing appropriate documentation that meets specified standards.

[1] This monitoring standard is from the PacFish/INFISH Biological Opinion (PIBO) and is used for monitoring grazing impacts on streams with listed endangered fish species and/or critical habitat for listed species.

When standards are exceeded or operating instructions not followed, such as excessive streambank alteration or herbaceous and shrub utilization, Forest Service range and aquatic staff along with the District Ranger would work together with the permittees to further reduce impacts via management changes.

Trigger Points or Thresholds
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 towards desired conditions?” The point at which monitoring indicates a possible need for change is called a trigger point. Once a trigger point is reached, the district ranger will convene a team, composed of Forest Service specialists in consultation with the affected permittee. The team will 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 will 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. The potential adaptive management actions based on monitoring results are also discussed in detail within these tables (DEIS pages 26-30).

Decision Framework

This DEIS discloses the environmental consequences of implementing the proposed action and alternatives to that action. The scope of this analysis is limited to evaluating the appropriate level of permitted livestock grazing and how the allotment is managed, given considerations of rangeland condition and other Forest Plan goals and objectives. The proposed action and other alternatives do not address recreational livestock, animals authorized under livestock use permits (i.e., where the primary purpose is not livestock production), or outfitter and guide livestock.

The responsible official for this analysis is the Forest Supervisor of the Colville National Forest. At the conclusion of the public review and comment period, the Forest Supervisor will decide whether domestic livestock grazing should be authorized on all, part, or none of the analysis area. The decision would also include the number and kind of livestock, season of use, terms and conditions, design criteria, and monitoring, as needed. New allotment management plans would be prepared and implemented within 2 years.

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, response to the significant and analysis issues, consideration of the environmental consequences, compliance with the Forest Plan, and response to public comments.

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. These items are defined below.

Term Grazing Permits – authorize a permit holder to graze livestock on specific National Forest System lands. The permit holder is required by the permit to graze under specific terms and conditions designed for resource protection and enhancement. Term livestock grazing permits are typically issued for a 10-year term. Term livestock grazing permits, by themselves,

do not authorize the permittee to develop water, construct fences, build roads or trails, manipulate vegetation, or do other ground-disturbing activities.

Allotment Management Plans (AMP) – an administrative document developed by the Forest Service that incorporates elements of the decisions made by the responsible official. The AMP documents management requirements and actions decided upon in the Record of Decision.

Annual Operating Instructions (AOI) – on an annual basis, these documents provide instructions to the term permit holders regarding management requirements, projects, agreements, and so forth for the current grazing season. They are not decision documents; they simply implement, on an annual basis, elements of the decision.

Given the purpose and need, the responsible official reviews the alternatives and the environmental consequences in order to make the following decisions:

Determine how to provide enhanced protection of ecosystem values affected by grazing including streams, fisheries habitat, riparian areas, sensitive plant species, terrestrial wildlife habitats, vegetation, and recreation sites;

Update the allotment management plan to reflect current laws, regulations and management direction and provide for adaptive management;

Authorize construction of needed range improvement projects, including fence lines, water developments and related facilities, and the redesign of existing range improvement projects;

Determine the specific areas, if any, that would be authorized for grazing and whether changes to the allotment boundary are necessary;

Which specific improvements, strategies, and activities would take place on these areas;

Does the decision meet the trust responsibility to the Tribes;

Determine the best management practices and design criteria actions listed in chapter 2 to implement;

Determine how to apply adaptive management monitoring and strategies that would occur during and after implementation.

Public Involvement

The project was first scoped with the public as an Environmental Assessment (EA) in 1998. Another EA was initiated and scoped in 2013 with a new proposed action. During the course of this analysis the Interdisciplinary Team (IDT) and district ranger determined it would be necessary to prepare an Environmental Impact Statement. The third scoping period began with publication of a Notice of Intent in the Federal Register to inform the public of the Forest Service's intent to analyze the allotment with an Environmental Impact Statement.

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. Throughout the planning process issues raised by the public, current grazing permit holder, other agencies and governments, County Commissioners, and the Kalispel Tribe were analyzed to identify those related to potential impacts of the proposed action, were within the control of the Forest Service, and within the scope of the project. These were documented as

"issues," and were reviewed by the responsible official as well as tracked throughout this document.

As part of the public involvement process, the Forest Service used multiple methods to determine the major issues that would inform the decision maker (responsible official). In summary, the Forest Service gained valuable information and concerns from members of the public, Tribes, interested private groups, and State and Federal agencies by:

Listing the project in the Schedule of Proposed Actions (SOPA), which is published quarterly by the Colville National Forest. This project was first published in spring 2013.

Sending a letter requesting comments and concerns (April 22, 2013) to landowners whose property is within or adjacent to the project analysis area:

- to individuals or groups having Special Use permits within the project analysis area; and
- to members of the public, Tribes, interested private groups, and State and Federal agencies.

Notice of Intent (NOI) to analyze the grazing allotment with an Environmental Impact Statement was published in the Federal Register on April 18, 2014. The NOI asked for public comment on the proposal from April 18, 2014 to May 19, 2014.

Discussions with Current Allotment Permittee

The Forest Service met with the LeClerc Creek allotment permittee multiple times in 2013 and 2014 to discuss 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 with the Range Specialist, District Ranger and IDT leader. Permittee input that met the purpose and need of the project was incorporated into the proposed action (now alternative C). In the spring of 2014 during field season, the permittee applied criteria prescribed in the proposed action that he had previously agreed to for his on-the-ground operations. After determining that some of the criteria (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, he requested modifications to the proposed action (alternative C). The permittee stated in letters 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 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 that resulted in alternative D in this DEIS.

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 reply was received from the Spokane or Colville Tribes. Comments were received from the Kalispel Tribe and consultation with the Tribe is ongoing.

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, and September 10, 2014.

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.

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 meetings with the Forest (February 19, 2013).

County Participation

Pend Oreille County Board of Commissioners was sent a letter dated April 22, 2013, advising them of the proposed action, and their opportunity to comment. They requested to remain on the mailing list.

Letters mailed to adjacent landowners, special use permittees, and other parties on the Forest Service mailing list included a map and a description of the proposed action for their review and comment. Information compiled for this environmental impact statement is included in the analysis file for this project.

Cattlemen’s Association

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

Summary of Public Comments Received To Date

The following summary of comments and concerns were received from members of the public during the 2013 and 2014 scoping periods:

<u>Natural Resource Concerns:</u>

Providing cattle access to the creeks allows widespread use with the least amount of damage and a better plan for dispersing the cattle in the allotment;

Would like to see an established setback of 50-100 feet from the bankfull edge of any tributary in the LeClerc Creek watershed;

Would like to see upslope watering provisions employed;

Concerned about water quality;

Concerned about the increasing spread of noxious weeds;

Concern about livestock grazing having the potential to sequester carbon, which may help to mitigate climate change effects;

Fencing the creek should not be considered;

Interested in having the land in the allotment boundary and cumulative effects analysis area be managed in an ecologically sustainable manner;

Restore the allotment to a state of ecological integrity;

Address long-term sustainability of soil productivity across the allotment;

The environmental analysis must take a hard look at all streams, wetlands, and riparian areas in the allotment;

Management of the allotment must be consistent with recovery of endangered species, and based upon scientifically sound conservation strategies for sensitive, management indicator, and other focal and keystone wildlife species;

Disclose the degree to which livestock grazing has affected the succession of forested stands in the area, and thus may cumulatively impact vegetation and wildlife.

Adjacent Private Landowner concerns:

Private landowners in the vicinity of the project area are concerned about boundary adjustments;

Private landowners in the vicinity of the project area are concerned that cattle are a nuisance and constant problem for private landowners who cannot afford to fence them out of their property;

Private landowners in the vicinity of the project area are concerned about the constant defecation on private landowner properties and the stench and mess it creates;

Private landowners near the allotment are concerned about the safety of their children and pets due to past experiences of cattle “chasing” them;

Removal of grazing from the Caldwell Lake area due to private landowners concerns about cattle on their property, trampling of gardens, knocking down fences, etc.;

The management rights and needs of the private landowners are being ignored.

Economics:

Concerned about grazing impacts to significant financial investments made to improve fish habitat in the LeClerc watershed;

The analysis should contain all costs and adequately discuss all current, in-place benefits—the costs of past and proposed specific improvements, and the cost of restoration/rehabilitation costs should be fully disclosed;

Statement that adoption of the proposed alternative could bring several improvements that enhance the permittees ability to manage the livestock on the permit and that cattle grazing plays an important role in the local economy in Pend Oreille County;

Concerned about how many new fences are being proposed, the cost, and maintenance of fences being a hardship for the permittee even if the fault of the destruction of fences falls to the Forest Service and logging operations.

General:

Support multiple uses of the forest;

Support for proposed alternative C, adaptive management;

Concerned about limiting motorized access (as pertains to MA-11);

The range is healthy, please don't implement more changes;

Logging contractors do more damage than cattle grazing;

Concern that the USFS conduct timely monitoring in conjunction with permittee on the allotment;

Private groups are concerned about using an EIS to analyze effects instead of an EA;

All prescriptive standards should be determined and measured at the allotment project level and that the desired condition should be clearly laid out;

Private groups are concerned about USFS allowing the maximum level of flexibility in planning all grazing activities and allowing these decisions to be made at the allotment planning level with local allotment managers and permittees developing plans that include site specific planning and monitoring data.

Comments received from the Kalispel Tribe of Indians:

We do not believe that the proposed action strikes a fair or legal balance between grazing and competing resource concerns on this particular allotment, and recommend that the proposed action be cancelled or modified pursuant to the suggestions below:

Concerned about grazing impacts to significant financial investments made to improve bull trout recovery area in the LeClerc watershed;

To ensure compliance with the 1988 Forest Plan's requirements for protecting riparian areas and Class I streams, allotment management plans must include a measurable future condition, necessary management actions to meet riparian objectives within a specific time frame, and measurable objectives for key parameters. The Forest Service has never developed an allotment management plan to comply with these requirements;

The 1988 Forest Plan requires that grazing either be harmonized with competing riparian uses or abandoned where incompatible. The cost of harmonization throughout the allotment is too exorbitant to justify;

There are only two viable alternatives. The first is to cancel the allotment. The second alternative would be to redraw the allotment boundaries….to avoid riparian conflicts.

Concerned about cultural resources (traditional cultural properties (TCPs)) and the impacts grazing could potentially have on these areas.

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 proposed action scoped in 2013 and 2014 was used to formulate issues concerning the proposed action. An issue is a point of dispute or disagreement with the proposed action based on some anticipated environmental effect. The interdisciplinary team separated the issues into two groups: significant and non-significant. Significant issues were defined as those directly or indirectly caused by implementing the proposed action. Significant issues and their indicators are used to measure the differences of environmental effect of alternatives. These should not be confused with the potential for significant environmental effects that drives the Agency to prepare an EIS. Non-significant issues were identified as those:

Outside the scope of the proposed action;

Already decided by law, regulation, policy, the Forest land and resource management plan, or other higher level decision;

Irrelevant to the decision to be made; or

Conjectural and not supported by scientific or factual evidence.

The Council on Environmental Quality NEPA regulations explains this delineation in Sec. 1501.7. "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review…."

The issues are not listed in any order of priority. Measures are listed below each issue displaying the differences between each alternative.

<u>Issue 1</u> - Effects of Current and Historic Livestock Grazing on Riparian and Aquatic Functions

In discrete, local areas, livestock trailing on stream banks/wetland margins may have caused bank sloughing, soil compaction, and sediment input to surface waters, possibly degrading water quality. The recovery of riparian plants in both density and diversity is essential for healthy and sustainable ecosystems.

Restoration of both channel and riparian habitat would provide for the recovery of bull trout, a listed species and the continued sustainability of the Westslope cutthroat trout, a sensitive species.

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?

<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

Recent timber harvest and new road construction has opened up once dense timber stands and created new movement pathways for livestock on this 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 already used to the proper level. Recent timber harvest will usually result in long-term increased forage production potentially resulting in livestock foraging less in sensitive riparian areas, provided stock water is available.

Measures:

Miles of pasture/allotment boundaries with constructed barriers (fencing)

Miles of boundaries with natural features intended to control livestock movement

<u>Issue 3</u> - Disturbance to wildlife during critical periods

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.

Measures:

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

<u>Issue 4</u> - Feasibility of successful allotment management

Measures:

Number of pastures separate from the rest of the allotment.

Total miles of fencing the permittee must maintain.

<u>Issue 5</u> - Effects of Livestock Grazing on Social or Cultural Issues

Livestock grazing within the LeClerc Creek Allotment Project area 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 the value ranching operations generate through grazing livestock on the National Forest System lands in the project area, as well as the values a working ranch provides to the county and local communities such as open space, family values and more resilient local communities.

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 (TCPs) 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 identified parcels.

Measures:

Areas considered culturally, spiritually, or botanically important within the allotment

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.

- Spread of noxious weeds: resolved by mitigation and monitoring that is similar for all action alternatives.
- Livestock grazing having the potential to sequester carbon, which may help to mitigate climate change effects: the proposed livestock grazing would have a neutral outcome on the resiliency of the analysis area related to climate change.
- Cattle present on or around private lands: based on past experience the likelihood of damage is small and does not vary between the 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.
- Grazing impacts to significant financial investments made to improve bull trout recovery area in the LeClerc watershed: resolved by mitigation and monitoring that is similar for all the action alternatives and the adoption of adaptive management.
- Using an EIS to analyze effects instead of an EA: already decided by law, regulation, Forest Plan or other higher level decision. It was also determined through conversations with the IDT and the responsible official that there could be a potential for significant effects within the project area. NEPA requires agencies to follow a review process which is:

  Prepare an Environmental Assessment (EA) to determine whether an Environmental Impact Statement (EIS) is required; and Prepare an EIS if required (an EIS is required if a proposed action may “significantly affect the quality of the human environment”) (Regulations (40 CFR 1500-1508)).
- Long-term sustainability of soil productivity: resolved by monitoring that is similar for all the action alternatives and the adoption of adaptive management.

Chapter 2. Alternatives, Including the Proposed Action

Introduction

This chapter describes and compares the alternatives considered for the LeClerc Creek Grazing Allotment EIS in response to the issues identified. This chapter is intended to describe the proposed action for the LeClerc Creek allotment and how it was formulated. It provides readers and the responsible official a summary of the entire project, displaying the proposed action, the monitoring requirements, and the potential effects of the proposed action 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, including the no action and proposed action alternatives, in response to issues raised by the public.

Alternative A—No Change (Current Management)

The LeClerc Creek Allotment is categorized as a Cattle and Horse (C&H) allotment with 101cow/calf pairs authorized to graze from June 1 to September 30 each year. The allotment is managed using a deferred rotation grazing strategy with 5 pastures.

Table 3. Current Pasture Designations

Current Pasture Designations	Acres
Dry Canyon	3,037
Fourth of July	2,460
Lower Bunchgrass	5,621
Mineral Creek	5,603
Upper Bunchgrass	6,691
TOTAL	23,412

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 has led to areas with higher than desired impacts to stream banks and riparian/wetland soils.

This alternative would authorize grazing under the existing management plan. There would be no change to 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.

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 2 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 Holding Pen: This is an existing fenced enclosure of the northern half of Hanlon Meadow (T. 36 N., R. 44 E., Section 20, SE ¼). 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 holding pen 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 towards the end of the grazing season.

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 proposed action. 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 FS 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.

An approximately 800-foot long section of the old 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. 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 holding pen.

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. 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.

Alternative C—Proposed Action

This proposed action has not changed since the 2013 scoping for the Environmental Assessment. This alternative was developed to address issues 1 and 5 to meet the Kalispel Tribe concerns, and issues 2, 3, and 4 to meet resource concerns. 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. The LeClerc Creek allotment would remain as a Cattle and Horse (C&H) allotment, but current management would change as described in the following sections.

Maps of project locations are located in appendix A.

Monitoring and Adaptive Management

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.

Monitoring helps determine how well Forest Plan and NEPA decisions are being implemented, whether 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 towards 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 or not 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 alternative C, if a management action is determined not to be effective, the monitoring will 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 PACFISH-INFISH Biological Opinion (PIBO) site near wetland plant community south of the Hanlon Meadow holding pen in T36N R44E S29 NE1/4 NE1/4 would be excluded from the allotment with this alternative. 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. This site has been monitored twice in the past (see Hydrology report for more information).

Trigger Points or Thresholds

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 towards desired conditions?” The point at which monitoring indicates a possible need for change is called a trigger point or monitoring threshold. Once a trigger point is reached, the district ranger will convene a team, composed of Forest Service specialists in consultation with the affected permittee. The team will 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 will 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 (Tables 4 and 5). The triggers are applied at the allotment level.

Based on the analysis of the project area the following potential sites were identified for implementation of adaptive management strategies. Effects of implementing each potential adaptive management strategy are analyzed further in chapter 3 under each resource.

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/cultural resources would be assessed. Approximate locations of potential sites include:

T. 36 N., R. 44 E., sec. 5, SE1/4 SE1/4

T. 36 N., R. 44 E., sec. 7, NE1/4 SE1/4

T. 36 N., R. 44 E., sec. 18, NE1/4 NE1/4

T. 37 N., R. 44 E., sec. 27, NW1/4 SE1/4

T. 37 N., R. 44 E., sec. 30, SW1/4 NE1/4

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.

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.

Adaptive Management Strategy

The following two tables represent the adaptive management strategies, monitoring, triggers/thresholds, resource parameters, and proposed responsibilities. These tables and the proposed monitoring and adaptive management discussed above are the same for both alternatives C and D.

Table 4. LeClerc Creek Grazing Allotment Monitoring and Adaptive Management Strategy for Alternatives C and D Based on Current Livestock Grazing (part 1)

Resource Parameter	***Streambank Integrity(~350 acres)***	***Riparian Shrub Habitat (~350 acres)***
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 (MIM) Permanent photo points established after decision Establish channel cross sections at all MIM sites	Cole browse Permanent photo points Visual estimate
Monitoring Standard / Threshold	No more than 20% stream bank alteration Wetted width to depth ratios meet INFISH RMO <10 or are moving towards	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 towards the management goal after 3 years of monitoring, implement management strategies 1 - 4 (below) as necessary / feasible. If standards are still not trending towards the management goal after 3 more years of monitoring, implement management strategies 1-4 (below) as necessary / feasible. If standards are still not trending towards the management goal after the 9th year of monitoring, reinitiate NEPA review of the allotment.	
Potential Adaptive Management Strategies	1. <u>Implement strategies for reducing re-grazing of pastures;</u> • 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. 2. <u>Implement strategies for reducing livestock use of riparian habitats;</u> • install additional upland water developments, • increase range riding. 3. <u>Implement strategies for reducing site-specific impacts to riparian habitats / function;</u> • re-build / armor livestock crossing / watering structures, • install exclosure fencing around impacted riparian areas,	

Resource Parameter	*Streambank Integrity(~350 acres)*	*Riparian Shrub Habitat (~350 acres)*
	• plant native vegetation to shade stream and stabilize banks. 4. Reduce livestock numbers and / or grazing season.	
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 fence is completed 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	Refer to MIM 2011 technical reference. Three to five years for streambank stability, and bank alteration would be read annually.	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. LeClerc Creek Grazing Allotment Monitoring and Adaptive Management Strategy Based on Current Livestock Grazing (part 2)

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 towards 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	Revisit selected sensitive plant populations annually for 3 years to establish a base population size and area. Use standard sighting

Resource Parameter	*Green forage vigor and productivity*	*Sensitive plants*
	Permanent photo points	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	1. <u>Implement strategies for reducing re-grazing of pastures;</u> • install additional pasture fencing, cattle guards, or other structures to reduce livestock drift between pastures, • increase pasture fence maintenance frequency, • increase range riding 2. <u>Block livestock access to sensitive plant populations with fencing or other means</u> 3. <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 re-growth, 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 Upland sites assessed by landscape appearance method	Known sensitive plant sites

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 tables 4 and 5. Any sites where new range improvement projects are proposed for construction would have all applicable surveys completed and clearances issued.

In developing the adaptive management strategy, the IDT considered a variety of different indicators that would help determine if management actions were favorably affecting conditions on the landscape. Two indicators that were proposed for monitoring were eliminated from being included in the adaptive management strategy; those indicators and the reason they were determined to be inappropriate indicators are listed below.

Water temperature – while the Forest understands the value of monitoring water temperature, particularly in those streams which are listed on the 303(d) list as temperature impaired, this indicator was determined to be inappropriate for this project because the effects that livestock grazing would have on stream temperature may take many years, perhaps decades, to be realized. To address issues relating to water temperature, the Forest has chosen to rely on monitoring of stream and riparian vegetation attributes to assess and track the condition of streams and water quality, as this is seen to yield a more rapid response to changes in management.

Rest rotation grazing strategy – implementing a rest rotation grazing strategy was considered and determined to be not a viable solution for this project. Of the 4 pastures included in alternatives C and D only the Lower Bunchgrass pasture has conditions that are conducive to grazing in the spring; the Dry Canyon pasture has large areas that are inundated by water and the Upper Bunchgrass and Mineral Creek pastures generally have saturated soil conditions and lack of vegetation green-up. Using one of these pastures as a spring pasture so that the Lower Bunchgrass pasture may be rested for a year may result in undesired impacts to vegetation and soils.

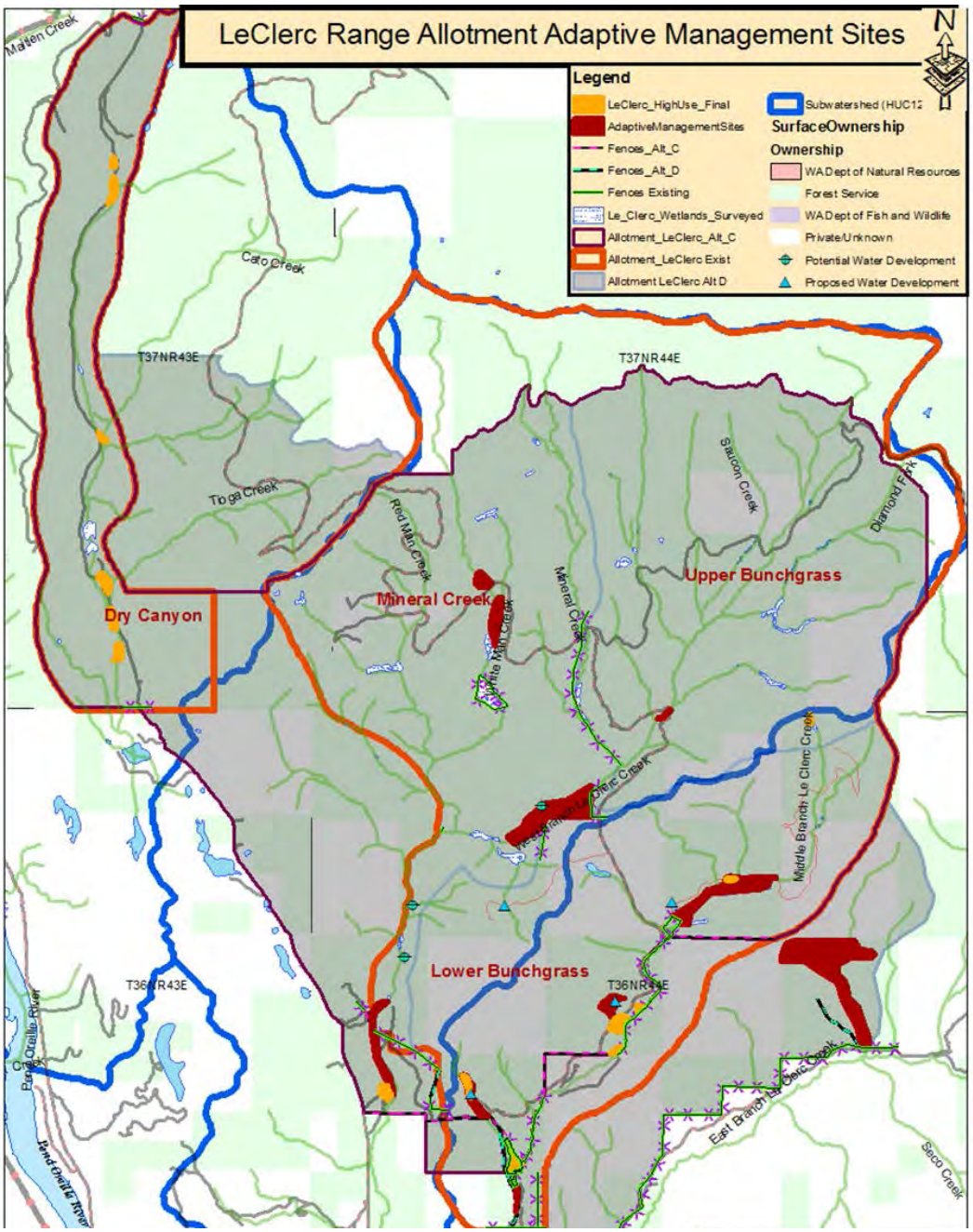


Figure 3. Potential Adaptive Management Sites

Livestock Numbers

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, etc.

Timing of Grazing

This alternative 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. As the adaptive management strategy is implemented and monitoring information is analyzed and assessed, dates may be adjusted. 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.

Allotment/Pasture Boundary Changes

The analysis area is the LeClerc Creek Grazing Allotment boundary and encompasses about 23,412 acres of land within the LeClerc Creek subwatershed.

Fourth of July Pasture – Remove this pasture and associated improvements from the allotment. Presently it 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. This pasture was dropped due to lack of control barriers and tribal concerns. Removing this pasture from the allotment would result in a reduction of approximately 2,460 acres from the allotment boundary.

Lower Bunchgrass Pasture – Move the southeastern boundary of this pasture to the west side of the Middle Branch LeClerc Creek, restricting cattle access from approximately 2.3 miles of the creek. Shift the southern boundary of the pasture to the north, restricting cattle access from an additional half mile of creek and areas of deciduous scrub/shrub wetlands to address resource concerns in these areas. Move the western pasture boundary to the ridgeline east of the 1935-105 road; and add the area between the old and new pasture boundaries to the Mineral Creek pasture. Block existing stock trails or other paths that cattle could use to drift outside the new allotment boundary with sections of fencing, slash piles or other means. Adjustment of the allotment boundary here would result in a decrease of approximately 1,249 acres.

Dry Canyon Pasture – Connect this pasture 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. Block existing stock trails or other paths that cattle could use to drift outside the new allotment boundary 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. Connecting this pasture to the allotment would result in the addition of approximately 2,988 acres.

Upper Bunchgrass and Mineral Creek Pastures – Move the northern boundary of these pastures 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. Block other existing stock trails or paths that cattle could use to drift outside the new allotment boundary with sections of fencing, slash piles, or other means. Adjusting the allotment boundary here would result in removal of approximately 2,047 acres from these two pastures.

Range Improvements

The following improvements would be completed to better control and distribute livestock across the allotment, and reduce localized impacts to riparian areas and other habitats.

Allotment Boundary Fencing – Install new boundary fencing as needed to address identified natural resource issues. To the extent feasible incorporate cliffs, talus, rock outcrops, steep side-hills, and dense forest stands into new pasture/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/allotment "boundary," survey the stands for any trails that cattle could potentially use to drift off the allotment. Take steps as needed to effectively block these trails with sections of fencing, piled slash, felled "jackpots" of trees, or other means.

Pasture Fencing – Improve existing fence that crosses West Bank LeClerc Creek in T. 36 N., R. 44 E., sec. 8, NW1/4 NW1/4 to decrease drift between pastures.

Improve existing pasture fencing to bring it up to standard and act an as effective barrier to cattle drift (3 sections of fence in; T. 36 N., R. 44 E., sec. 4, SW1/4 and NW1/4; T. 36 N., R. 44 E., sec. 8, NE1/4; and T. 37 N., R. 44 E., sec. 33, SW1/4 and NW1/4) (appendix A).

Unnecessary Fencing – As funding becomes available, remove existing, unnecessary fence sections on changed allotment/pasture alignments. Remove the existing drift fence outside the allotment on the East Branch LeClerc Creek.

Cattle Guards (see appendix A for maps)

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.

Move the existing cattle guard on the Middle Branch LeClerc Creek Road (NFS road 1935) north to the new allotment boundary in T. 36 N., R. 44 E., section 20, SE ¼. Tie the structure in to the new allotment boundary fencing.

Install two new cattle guards on the Middle Branch LeClerc Creek Road where the road crosses through a section of private property in T. 36 N., R. 44 E., section 21, NW ¼. Tie these structures in to new pasture fencing along the section boundaries

Install a new cattle guard in the Paupac Road (NFS road 1936) in the Coyote Hill area. Construct fence segments from either side of the cattle guard to control points, as needed. This action is necessary to prevent cattle drift on this road and off the allotment.

Water Development – Provide off stream watering opportunities by developing four water troughs in the Lower Bunchgrass pasture where there are small springs or other water sources. Approximate locations are:

T. 36 N., R. 44 E., sec. 8, NW¼SW¼

T. 36 N., R. 44 E., sec. 10, NW¼SW¼

T. 36 N., R. 44 E., sec. 16, NW¼SE¼

T. 36 N., R. 44 E., sec. 20, SE¼NW¼

Hardened crossings identified in the proposed action would serve as watering sites as well.

Exclosure Fencing –

Install fencing to protect sensitive plants (T. 36 N., R. 44 E., sec. 20 NW/SE). Plants are discussed in the chapter 3 and sensitive plants report.

Install fencing exclosure 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.

New Access Route to Hanlon Meadow

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

An approximately 800-foot long section of the old 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. 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 holding pen.

Harden/Improve Stream Crossings

Harden the stream crossing inside the holding pen and add exclosure fencing.

Improve two existing hardened crossings, located at:

T. 37 N., R. 44 E., sec. 32, SE¼SW¼

T. 36 N., R. 44 E., sec. 20, SE¼SE¼

Develop one new hardened crossing. Approximate location:

T. 37 N., R. 44 E., sec. 33, SW¼SW¼

Continue 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. The allotment will feature four pastures - Lower Bunchgrass, Upper Bunchgrass, Mineral Creek, and Dry Canyon. The projected pasture rotation would be to turn livestock out into Hanlon Meadow first, then be actively moved 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 standards are met.

Additional Improvements

Expand the catch pen fences at the Diamond City corrals to make the catch pens larger if needed, provide a loading chute for getting cattle onto and off of stock trucks (T. 36 N., R. 44 E., sec. 18, SW¼SE¼).

Utilize existing vegetation 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 directional falling, brush barriers, placement of root wads, or others.

Design Criteria

The following design requirements are accepted practices that have proven effective in mitigating adverse effects of grazing allotment associated activities. These actions would be taken 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.

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 design criteria to meet the needs of various resource specialists.

Noxious Weeds

3. Seeding of approved desirable species with weed free seed in areas of soil disturbance related to construction such as cattleguard installation sites and hardened water crossing sites.
4. Use of noxious weed -free fill and barrow material at cattleguard installation sites and hardened water crossing sites.
5. Clean all motorized equipment that would be operating outside of a road prism such as hardened water crossing sites.

Hydrology

6. All range improvements would be implemented using applicable BMPs as listed in appendix B.
7. 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).
8. Cattle would be effectively managed to reduce or eliminate drift by pasture rotation as identified in the AMP[2] 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.

Vegetation Management

9. Methods utilized to create barriers may include directional falling, 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. Avoid commercial sized trees,
    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’ 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 trees greater 7” DBH are needed to create a barrier due to lack of smaller diameter trees then use the above preferred species and spacing recommendations,
    e. If near streams or wetlands ensure there is adequate shade remaining to prevent increase in water temperature,
    f. Any vegetative material cut but not utilized for the barrier would be lopped and scattered to a maximum depth of 2’, to reduce fire hazard,
    g. 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.

Sensitive Plants

10. 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 FS 2008a and 2014b).

[2] Allotment Management Plan.

Wildlife

11. 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.
12. Range condition - The AMP would specify that the range condition class be good to excellent in order to achieve forage conditions favorable to grizzlies.
13. Livestock carcasses - 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.
14. 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.
15. 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.
16. Compliance - The AMP would specify that the permittees 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.

Recreation

17. 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.
18. 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.

Transportation

19. 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.

Mitigation Measures

The Forest Service also developed the following mitigation measures to be used as part of all of the action alternatives.

Heritage

1. 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.
2. 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 heritage resources.

Sensitive Plants - All Proposed Activities

3. 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.

Wildlife

4. 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.
5. Livestock carcasses - If a livestock carcass is discovered on the allotment, the permittee would, as soon as possible, contact the Washington Department of Fish and Wildlife (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 FS Range Specialist. The permittee and WDFW would agree to a method to minimize the opportunity for large predators to scavenge the carcass unless otherwise directed by a regulatory agency. The carcass could be dealt with in one or more of the following ways, or by other accepted methods:
    a. complete removal,
    b. destruction,
    c. burial (which if on NFS land would require clearance by the Forest Archaeologist),
    d. covering with a dark tarp,
    e. treatment with lime,
    f. installing fladry (a line with attached flagging) around the carcass, and
    g. installing electrified (turbo) fladry around the carcass.
6. 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 listed above. Steps to improve the ability of investigators to determine the cause of depredation could include but are not limited to the following:

a. avoiding walking in and around the area,

b. keeping dogs away from the area to protect evidence,

c. placing a tarp over the carcass,

d. using cans or other objects to cover tracks and scat, and

e. taking photos of the carcass, tracks, scat and other predator sign.

Special Uses

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

Habitat Improvement Projects

With alternatives A, C, and D the following habitat improvement projects could be completed in the allotment using grants, cost share monies, volunteer labor, etc.

- Protect or Maintain Aspen - Cut down small (noncommercial) conifers within selected aspen stands to forestall the aspen trees from being shaded out over time. Fence selected aspen stands to limit livestock browsing of young sprouts.
- Maintain Meadows - Periodically cut down small (noncommercial) conifers where they are encroaching into Fourth of July and other meadows, in order to keep these sites in an open, productive condition for big game and other wildlife. Use prescribed fire to remove encroaching conifers and grass thatch, and rejuvenate grasses, in meadows.

Alternative D - Modification of Proposed Action

This alternative addresses issue 5 brought forward by the current permittee and would continue to authorize grazing within the project area. This alternative incorporates all of the elements of alternative C, but with modifications to address concerns regarding ease of implementation for the current permittee while still addressing resource and management concerns. The LeClerc Creek allotment would remain as a Cattle and Horse (C&H) allotment, but current management would change as described in the following sections.

Maps of project locations are located in appendix A.

Implement Adaptive Management Including a Monitoring Plan

Same as alternative C except the addition of the PIBO site. (Table 4 and Table 5). The PACFISH-INFISH Biological Opinion (PIBO) site near the wetland plant community south of the Hanlon Meadow holding pen in T36N R44E S29 NE1/4 NE1/4 would be included in alternative D. Including this site within the allotment boundary under alternative D will 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 of the DEIS) it would be excluded and an alternate monitoring site identified.

Timing of Grazing and Livestock Numbers

Same as alternative C.

Allotment/Pasture Boundary Changes

The analysis area is the LeClerc Creek Grazing Allotment boundary and encompasses about 23,412 acres of land within the LeClerc Creek subwatershed.

Designate Hanlon Meadow as a pasture – The Hanlon Meadow holding pen would be identified as a pasture within the allotment and would be monitored to standards. 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 after grazing standards were met would be approved on a case-by-case basis by the Forest Service (i.e. 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.

Fourth of July Pasture – Would be removed the same as alternative C.

Lower Bunchgrass Pasture – The proposed fence around the NW corner of T. 36 N., R. 44 E., section 21 would not be incorporated into this alternative because of concern by the permittee about the viability of moving cattle around the fence in that area due to steep slopes. The SE allotment/pasture boundary 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 in 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 NE1/4 to include the shrub wetland south of the holding pen 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. Additionally, the proposed cattle guard at the north end of the holding pen in section 20 would not be incorporated into this alternative and the existing cattle guard in section 29 would be left in place. Depending on future collaboration with interested parties, the PIBO DMA 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.

Construct new fence 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. Adjustment of the allotment boundary here would result in approximately an additional 1,780 acres in this pasture. (See Map A-6 in appendix A)

Dry Canyon Pasture – Connect this pasture 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 as well as the purpose would be the same as alternative C. The new addition would be to construct a short drift fence across the NFS road 1933141 to reduce

cattle drift out of the Dry Canyon pasture and off the allotment. Adjustment of the allotment boundary here would result in approximately an additional 2,981 acres in this pasture.

Upper Bunchgrass and Mineral Creek Pastures – Modify the northern allotment boundary 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 in the Mineral Creek Pasture and a decrease in the Upper Bunchgrass Pasture by approximately 1,281 acres (see alternative D maps in appendix A).

Range Improvements

The following improvements would be completed to better control and distribute livestock across the allotment, and reduce local impacts to riparian areas and other habitats.

Allotment Boundary Fencing – Same as alternative C

Pasture Fencing – Same as alternative C

Unnecessary Fencing – Same as alternative C

Cattle Guards

Install two new cattle guards, one on the 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. Construct fence segments from either side of the cattle guard to 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.

Water Development – Same as alternative C

Exclosure Fencing – Same as alternative C

New Access Route to Hanlon Meadow- Same as Alternative C

Harden/Improve Stream Crossings

Harden the stream crossing inside the holding pen and add exclosure fencing.

Improve two existing hardened crossings

T. 36 N., R. 44 E., sec. 20, SE¼SE¼

T. 37 N., R. 44 E., sec. 32, SE¼SW¼

Develop one new hardened crossing. Approximate location:

T. 37 N., R. 44 E., sec. 33, SW¼SW¼

Continue a 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. The allotment would feature five pastures - Lower Bunchgrass, Hanlon Meadow, Upper Bunchgrass, Mineral Creek, and Dry Canyon.

Additional Improvements

Same as alternative C.

Design Criteria

Same as alternative C.

Mitigation Measures

Same as alternative C.

Alternatives Considered but Eliminated from Detailed Study

Federal agencies are required by 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. Some of these alternatives may have been outside the scope of the project, duplicative of the alternatives considered in detail, or determined to be components that would cause unnecessary environmental harm. Therefore, a number of 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, also to adjust south and southwestern boundaries away from the creek in order to protect the fisheries resource in this area.

Rationale for eliminating from detailed study:

PIBO monitoring data revealed that resource conditions within the allotment and cattle utilization monitoring data collected by the FS over time do not demonstrate a need to remove cattle grazing from the areas proposed to be excluded.

A portion of this alternative would be covered/or is already covered by the No Action alternative

Alternative F – Consider other allotments, including closed allotments, as a replacement to the LeClerc Creek Allotment.

Rationale for eliminating from detailed study:

The allotments in question (Lost Creek and Lost Lake) were administratively closed and do not meet our purpose and need for this project. Analyzing allotments which have been closed as surrogates for an allotment that has data showing standards for utilization and stream bank alteration have not been exceeded is outside the scope of the project. Stocking those allotments would require a new NEPA decision.

These allotments would only hold a small percentage of the current livestock stocking rate. The two combined allotments (Lost Creek and Lost Lake) would be around 80% of the 101 cow/calf pair that is currently grazed on the LeClerc allotment.

These allotments were closed in 2005 (Lost Complex EA Decision Notice and FONSI) and would require new NEPA documentation to issue a permit to bring them to standard. Lost Lake is a powerline allotment with no controls and poor access.

Alternative G - Single pasture, season-long use. 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. It was thought that changing the allotment to a single pasture unit would allow the permittee to increase compliance with the direction provided by the Forest Service by making the prescribed grazing use more easily attainable.

Rationale for eliminating from detailed study: 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 will not be considered in 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	101 Cow/Calf Pairs	0	101 Cow/Calf Pairs	101 Cow/Calf Pairs
AUMs	535	0	535	535
Increased Monitoring Needs	No	No	Yes	Yes
Costs of water developments	N/A	None	$8,800	$8,800
Costs of proposed fencing	N/A	None	$26,400	$15,840
Cost of proposed brush barriers	N/A	None	$240	$240
Allotment size (acres)	23,412	0	~20,640	~25,865

Table 7. Comparison of Significant Issues by Alternative

Significant Issues	Measures between alternatives (approx. values)	Alternative A (No Change)	Alternative B (No Grazing)	Alternative C (Proposed Action)	Alternative D (Mod. of Alt C)
Effects of Current & Historic[3] 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
	Acres of wetlands accessible to livestock	40	N/A	35	35
	Number of hardened stream crossings for livestock	3	0	5	5
	Number of upland water sources needed (water troughs)	0	0	4	4
	Adaptive management strategy in place?	No	N/A	Yes	Yes
Lack of effective livestock movement controls potentially leading to increased duration of use and decreased opportunity for vegetative growth or regrowth	Miles of pasture/allotment boundaries with constructed barriers (fencing)	11.5	0	9	13
	Miles of boundaries with natural	48.5	0	43	45

[3] Measures between alternatives represent current effects of grazing. Historic effects of grazing are not included in the table due to insufficient data collection and inconsistencies with grazing types and numbers in the past.

Significant Issues	Measures between alternatives (approx. values)	Alternative A (No Change)	Alternative B (No Grazing)	Alternative C (Proposed Action)	Alternative D (Mod. of Alt C)
	features intended to control livestock movement				
Disturbance to wildlife during critical periods	Presence of livestock during the post-wintering/ spring reproductive period for elk and rare carnivores	No change	N/A	Livestock turned onto the allotment two weeks later in spring	Livestock turned onto the allotment two weeks later in spring
Feasibility of successful allotment management	Number of pastures separate from the rest of the allotment	2	N/A	0	0
	Total miles of fencing the permittee must maintain	~14.5	0	~10.6	~13.1
Effects of livestock grazing on social or cultural issues	Areas considered culturally, spiritually, or botanically important within the allotment (acres)	482	N/A	0	25

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. 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 file, located at the Newport-Sullivan Lake Ranger District office in Metaline Falls, 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

This assessment of effects assumes compliance with standards and guidelines established in the 1988 Colville National Forest Land and Resource Management Plan (hereafter referred to as the Forest Plan) as amended in 1995 by the Inland Native Fish Strategy (INFISH), Regional standards, State and Federal laws, and National policies. These standards, guidelines, policies, and laws provide measures which minimize and sometimes avoid adverse impacts, and require rehabilitation of resources affected by Forest programs. A summary of effects of the alternatives is listed by resource and the discussion centers on effects that are direct, indirect, or cumulative. These impacts can be either beneficial or adverse. The area used to determine direct and indirect effects for each resource was the planning area unless otherwise stated. A list of past, present and reasonably foreseeable actions within the LeClerc Creek Grazing Allotment planning area is included in the project files. Specialists incorporated those activities pertinent to their resource area for the cumulative effects analysis. In addition, 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. Forest Service Handbook 1909.15, Environmental Policy and Procedures Handbook (USDA Forest Service 2008A), identifies a list of environmental factors to be considered in data collection and environmental analysis.

The environmental consequences discussion centers on direct, indirect, and cumulative effects of the alternatives, including recommended mitigation measures. Effects can be neutral, beneficial, or adverse. These terms are defined as follows:

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.

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

Unavoidable adverse effects are those that cannot be avoided due to other constraints (Section 3.1.3).

Irreversible effects are permanent or essentially permanent resource use or losses. They cannot be reversed, except in the extreme long-term. Irretrievable effects are 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, and summarized in Section 3.1.4.

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

Analysis of Cumulative Effects

According to the Council on Environmental Quality (CEQ) NEPA regulations, “cumulative impact” is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such actions (40 CFR 1508.7).

The cumulative effects analysis area is described for each resource, but in most cases includes 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. 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. Relevant present and reasonably foreseeable future activities are identified and analyzed in the cumulative effects analysis for each resource. An inventory of present and reasonably foreseeable future actions potentially contributing to cumulative effects is available in **Appendix C:** Recent or Reasonably Foreseeable Activities Within and Adjacent to the LeClerc Creek Allotment Analysis Area.

Factors which would not be affected by the proposed activity are:

Consumers, civil rights, and women,

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 Environmental Impact Statement 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.

The area does not contain nor would it affect prime farmlands.

Maps of alternatives are located in appendix A.

Rangeland Management *(Issues 2 & 4)*

Information provided in this Environmental Impact Statement about rangeland management is excerpted from the LeClerc Creek Grazing Allotment Range Report by Chase Bolyard, District

Rangeland Management Specialist (2015c). The full text of this report is incorporated by reference and is part of the project record.

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.

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.

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 current Forest Plan which states:

1. Management of grazing by domestic livestock will be guided by project level allotment plans. The development of these plans will be integrated with the needs associated with use and values present in the area. All associated uses and values will be considered, with special consideration given to: (1) fish and wildlife habitat needs; (2) timber harvest and cultural activities; (3) riparian values; (4) recreation use; and (5) threatened, endangered and sensitive species. Further considerations are contained as other resource standards and guidelines in this section of the plan (Forest Plan page 4-44).
2. Coordination requirements will include: (1) timing of the timber harvest and associated activities and grazing schedules; (2) protection of livestock barriers or mitigation of these values where desirable; (3) reducing the spread of noxious weeds where present; (4) seeding of livestock and wildlife forage species, considering desirability of seeding palatable and nonpalatable forage species and species competitive with tree production; and (5) livestock-wildlife conflicts (Forest Plan page 4-45).

As provided in the 1988 Forest Plan, the allowable use levels in upland areas is 45 percent for forest lands and 55 percent for grasslands in satisfactory condition. Interagency Technical Reference 1734-3, Utilization Studies and Residual Measurements (USDA 1996), considers these levels of use to be “Moderate” use. The technical reference mentioned above classifies utilization by grouping a range of potential utilization observations to form categories of use. The use categories are displayed below.

Table 8. Forage Utilization Categories

Category	Percent Utilization
No use	0 to 5 percent
Slight	6 to 20 percent
Light	21 to 40 percent

Category	Percent Utilization
Moderate	41 to 60 percent
Heavy	61 and above

Individual direction regarding the implementation of grazing in the LeClerc Creek Allotment is found in Allotment Management Plan (AMP) that was last issued in 1982. The AMP for the LeClerc Creek Allotment is tiered to the Forest Plan (1988) as amended by the Inland Native Fish Strategy (INFISH) Environmental Assessment (1995).

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. Documents that provide this annual instruction and direction have had different names over the years that have included Annual Operating Plan (AOP), Annual Operating Instruction (AOI) or annual turnout letters. Currently these documents are referred to as “annual turnout letters,” but do provide annual direction on how livestock use is to occur. The information contained in the annual plans is based on information contained in the most recent AMPs, changed physical conditions, any relevant monitoring information and/or other NEPA decisions that may affect grazing rotation schedules.

Affected Environment

The National Forest System Lands that make up the LeClerc Creek Allotment were purchased through the Resettlement Administration during the Great Depression in 1935 to 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, at which point 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 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 the stocking rate set so that forage consumption will not exceed the production capability of the ecosystem. Historic stocking rates were somewhat variable, especially in 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).

Private land leases and their associated Term Private Land Grazing Permits have also varied throughout the history of this allotment. A Term Private Land Grazing Permit authorizes additional AUM's for private lands within the allotment boundary; the stocking rate for those private lands must be determined by the land owner and a grazing lease issued from the land owner to the Forest Service grazing permittee. The Forest Service can then issue a Term Private Land Grazing Permit that specifies the kind and class of livestock, permitted numbers and season of use for the private lands within the allotment. Without a grazing lease from the land owner, the Forest Service has no authority to issue a Term Private Land Grazing Permit so permittees must provide proof their grazing leases with private land owners in order to maintain their rights under the Term Private Land Grazing Permit. Holding a Term Private Land Grazing Permit in conjunction with a Term Grazing Permit allows the permittee to graze the National Forest System (NFS) lands and private lands in unison. As an example; if a permittee holds a Term Grazing Permit for 80 cow/calf pair and a Term Private Land Grazing Permit for 20 cow/calf pair they can graze 100 cow/calf pair total on the allotment, and the entire 100 cow/calf pair may be present on either NFS or privately owned lands within that allotment. This allows a simplified way to manage both NFS and private lands within an allotment without the need to fence the private land and manage it separately. The permittee is still responsible for meeting livestock grazing standards on the NFS lands within the permit per the terms of the Term Grazing Permit; the FS has no jurisdiction or authority to enforce grazing standards on privately owned lands. That responsibility falls with the private land owner and is an agreement between the permittee and the land owner exclusively.

There was a Term Private Land Grazing Permit for the LeClerc Creek Allotment up 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 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 re-evaluation 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). Currently the allotment is authorized for 101 cow/calf pair or 535 AUMs to be utilized between June 1 and September 30.

Historic permitted stocking levels for the lands that make up the current day LeClerc Creek Allotment are summarized below in Table 9. 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 records available. Records prior to 1964 are not available.

Table 9. Historic Use Summary

Year	Stocking Rate	AUMs
1964-1965	152	805

Year	Stocking Rate	AUMs
1966	154	815
1967-1977	147	778
1978	187	990
1979	147	778
1980	115	609
1981	197	1043
1982-1989	191	1011
1990-1991	131	694
1992-2009	138	731
2010-2014	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 how many 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.

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.

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/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).

Using a grazing strategy in riparian areas that provides for re-growth 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.

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. The desirable plant species are favored during this time period.

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.

Current Management

The LeClerc Creek Allotment is categorized as a Cattle and Horse (C&H) allotment with 101 cow/calf pairs authorized to graze from June 1 to September 30 each year. The allotment is managed using a deferred rotation grazing strategy with five pastures.

Table 10. Current Pastures

Current Pasture Designations	Acres	Percentage of Allotment	Season 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.

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.

The current management strategy is a deferred rotation grazing schedule, but lack of effective barriers to cattle drift over time (both from natural degradation and from changes in the landscape due to timber harvest) have created porous allotment and pasture boundaries that cannot effectively contain cattle, resulting in cattle drift. 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 (1934000) and the predominantly privately owned lands around Scotchman and Caldwell Lakes. The Forest Service recognizes these shortcomings, and the permittee has worked diligently to move stray cattle as directed by the Forest Service as well as to locate and move cattle on their own. The Forest Service has determined to implement the current deferred rotation grazing strategy as best as possible until new or better solutions to more effectively manage the allotment and control cattle movement could be properly analyzed through the NEPA process.

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 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.

Pastures

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 Holding Pen: This is an existing fenced enclosure of the northern half of Hanlon Meadow (T. 36N., R. 44E., 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 holding pen 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 towards the end of the grazing season.

Range Improvements

Existing range improvements for the LeClerc Creek Allotment consist of 10 livestock management fences totaling approximately 14 miles and two corral/loading chute facilities. 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 / 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.

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 leads 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 higher than desired impacts to stream banks and riparian/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.

Table 11. 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 Holding Pen	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 exclosure fences not represented in the above table that are maintained by District wildlife staff and/or 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, such as a previously grazed pasture, that is undesired or uncontrolled), 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 FS personnel working in the area..

Vegetation

The LeClerc Creek Allotment is 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, redtop, 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. The 5,452 acres for the existing condition was developed by taking the total acres of suitable grazing for the existing allotment (6,693 acres) and subtracting 1,241 acres on 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 to be performed. Due to this lack of data the only assessment 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, the following coarse scale assessment, which is based on the Parker 3-step assessment methodology, would be utilized:

Table 12. Parker 3-step assessment methodology

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

As determined by the Rangeland Management Specialist, rangeland vegetation appears to be in fair to good condition, with no apparent trend. Trend is not able to be evaluated without at least three reference points available and is difficult to impossible to determine based solely on professional judgement.

Effects

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 equates to vegetation maturing at different times throughout the growing season. Generally vegetative growth of grasses and forbs (spring green up) initiates in April, but is subdued by cold soil temperatures and nighttime freezing until after approximately mid-May. The formation of floral structures (early boot stage) for key forage grasses normally begins sometime near the first of June. Peak of flowering (anthesis) in key forage grasses typically occurs toward the end of June to mid-July. Seed ripe (when hard seed is produced) is usually achieved by mid-August. These growth stage dates (phenological stages) are approximations that vary with elevation and climatic conditions, and are extrapolated for site-specific areas within the LeClerc Creek Allotment to determine maximum grazing seasons of use.

The ability of native grass plants to complete their critical physiological processes during the growing season relates to plant health. Forage species must complete their annual carbohydrate storage cycle on a regular basis in order to ensure sustained plant vigor, reproductive success and survivability (Donart 1969). In this analysis of grazing impacts, the period of critical plant growth and carbohydrate storage is considered relative to expected grazing effects. Forage species are most susceptible to grazing damage from the time they begin developing floral structures (early boot) to the time they flower (anthesis) (Donart 1969). Grazing grasses in early spring while they are in the vegetative stage of growth is generally not harmful to the plant providing that it is able to complete its carbohydrate storage cycle thereafter (White 1973). Grazing after flowering, when the carbohydrate storage cycle is essentially complete, is generally also not harmful to the plant. Research by Ganskopp et al. (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. In addition to and independent of grazing, plant health and seed production can be affected by timing and quantity of precipitation, growing season temperatures, and insects (Cook and Child 1971).

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 in order to mitigate grazing impacts and sustain healthy, productive plant communities (Mueggler 1974).

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.

Alternative A – No Change (Current Management)

Direct and Indirect Effects

Under this alternative permitted livestock would continue to graze the LeClerc Creek Allotment under a five pasture deferred rotation grazing strategy. Stocking rate would remain at 101 cow/calf pair (535 AUMs) and livestock would be rotated through the allotment as described in Table 10 under the Current Management section. No additional range improvement projects would be constructed to improve livestock distribution or reduce livestock drift both between pastures and off the allotment. See appendix A for maps of the existing allotment pastures.

This analysis does not detail optional management strategies the permittees can use to attain improved resource conditions. Some management strategies are not mandated, but administratively available to implement. They cannot be mandated through the U.S. Forest Service permit system, but 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 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 in 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).

Monitoring will determine the effectiveness of an alternative’s implementation on resources. Permittees are encouraged to monitor their grazing so as to be proactive in determining livestock moves.

Vegetation Cover and Composition

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.

Alternative A is expected to continue to maintain upland vegetation desirable state or trend. The ability to use other management options (salting, supplement placement, additional riding) are available for the permittee to use.

The mitigations of additional fences and new water developments with water source protection would not be implemented under alternative A. Cattle would continue to water at streams and springs throughout the allotment which may cause increased grazing pressure in riparian and wetland areas. 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 area of high livestock impacts would be expected to persist and may show a stable or downward trend over time.

Unmanaged or improperly managed grazing can be detrimental to plant communities. This alternative has known deficiencies in infrastructure and management that contribute to improperly managed grazing. Infrastructure can be reconstructed and permit action allows for deficiencies in management to be addressed to a limited extent; without a comprehensive adaptive management strategy certain actions are not allowed without additional NEPA analysis. Plants should not show a loss of vigor or reproduction activity in upland vegetation. Thus, upland composition and cover are expected to be maintained under this alternative. Plants should not show a loss of vigor or reproduction activity in riparian vegetation when compared to existing conditions. However, 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 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.

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. 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.

Drift between pastures and off the allotment has been an ongoing concern that effects 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 T36R44 has been identified. The cattle trail utilizes an old railroad grade/closed road/trail which is predominantly located within the RHCA management zone of upper West Branch LeClerc Creek. Portions of this railroad grade/road/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/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 holding pen located within the Lower Bunchgrass pasture.

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/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.

Without addressing known management concerns identified under alternative A, such as a lack of defendable allotment and pasture boundaries which leads to cattle drift and re-grazing of areas after their proposed season of use, vegetative conditions in riparian and wetland areas may continue to be impacted by livestock and will not allow for recovery of these areas.

Range Infrastructure/Improvements

Grazing permittees have always been responsible for maintenance of range improvement projects and project maintenance is a term and condition of their grazing permits. Current range improvement project maintenance are displayed below. Further information on existing range improvements and their condition can be found under Existing Conditions above.

Table 13. Range Improvements under Alternative A

Allotment	Alternative A – Current Management		
	Fence (miles)	Water developments	Corrals
LeClerc Creek	14.5	0	2

Note- miles of fence are approximate.

Usual maintenance for projects that are in good or satisfactory condition generally requires little to be done 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. Despite ongoing maintenance of improvements, some improvements have degraded with age and are not functioning as intended which leads to livestock drift. Additional fencing or reconstruction of degraded fencing that is needed to reduce livestock drift would not be implemented under alternative A.

Short term administrative actions may be used as tools to reduce livestock effects. These administrative management strategies are included in alternative A. These actions include salting, changing season of use, change in animal numbers, change in animal class, change in the number of days available for utilization, change in the grazing system, change in trail routes, and use of riders. The flexibility to promptly implement one or more of these measures allows management to take actions improving livestock distribution and forage utilization. Again, this would lead to improved vegetative conditions.

Monitoring Recommendations

Monitoring related to range management for alternative A would follow the methods, procedures and frequencies currently being implemented.

Cumulative Effects

For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek allotment analysis areas, refer to Appendix C on page 298.

Spatial Bounding

Cumulative effects for alternative A are spatially bounded 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).

Temporal Bounding

Cumulative effects for alternative A are temporally bounded to the time frame within 5 to 10 years of implementation of the decision and resolution of the objection process. No additional projects and treatments in addition to alternative A would have large scale effects to grazing or vegetation resources within the allotment boundary. Continued timber harvest, invasive species

treatment, road maintenance, and recreational activities are anticipated to be the reasonably foreseeable future events.

Past, Present, and Reasonably Foreseeable Actions

Vegetation management projects such as Hanlon and Scotchman Stewardship projects have or will implement burning, thinning and other overstory vegetation management activities which overlap the allotment boundary for alternative A. Grazing mitigation measures from these projects would be implemented. They would 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.

Grazing with fuels reduction/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 rehab-seeded against noxious weeds. Therefore, the overall composition and cover typically is not affected.

Fire suppression is not expected to have an effect to vegetative composition and cover. This is due to the policy that suppression activities restore any Forest Service structures damaged by suppression activities. Wildfire effects are evaluated after the event. Post fire the resources are considered and analyzed and activities depend upon the extent and severity of the burn. Vegetation composition and cover effects would be determined at that time. The change in vegetation cover and composition would likely stay about the same in site size and location. Composition might change relative to which species are fire tolerant versus those which increase without grazing.

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 preventing noxious weeds from further displacing desirable plants in new sites. Overall, the Forest wide 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 their potential, 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 to be semi-permanent primary range areas are increasingly used as camping locations for 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.

Livestock have the potential to affect traditional cultural use of the landscape by Native American Tribes, in particular the Kalispel Tribe (see Heritage Resources report for more information). The extent and location of traditional cultural properties (TCPs) within the LeClerc Creek Allotment are not well-known by the Forest Service, therefore determining the extent of these effects is difficult.

Continuing the permitting of livestock within the project area could have some impact on post-harvest regeneration rates of timber on NFS and private lands. Impacts to tree regeneration have been observed to be insignificant in dry, upland areas and therefore, the impact is likely minimal.

Forest Plan Compliance

The existing conditions within the Forest Plan Standards and Guidelines have allowed for grazing on the LeClerc Creek Allotment. Grazing under alternative A would be consistent for the management areas (MAs) within the allotments. The capable AUMs exceed the permitted AUMs proposed in this alternative. This meets resource needs and management area direction as long as defendable allotment and pasture boundaries are addressed.

Specific to rangeland management, the Forest Plan (p. 4-46, 4-47) states:

1. Management of grazing by domestic livestock will be guided by project level allotment plans. The development of these plans will be integrated with the needs associated with use and values present in the area. All associated uses and values will be considered, with special consideration given to: (1) fish and wildlife habitat needs; (2) timber harvest and cultural activities; (3) riparian values; (4) recreation use; and (5) threatened, endangered and sensitive species. Further considerations are contained as other resource standards and guidelines in this section of the plan.
2. Identify lands in unsatisfactory condition. Develop allotment plans with specific objectives for these lands on a priority basis under a schedule established by the Forest Supervisor. These objectives will define a desired future condition based on existing and potential values for all resources. The allotment plan will include: (1) a time schedule for improvement; (2) activities needed to meet forage objectives; and (3) an economic efficiency analysis.
3. Livestock stocking levels in project plans will be determined by considerations including: (1) Forage availability, suitability and condition; (2) other resource needs as shown above; (3) demand for grazing on the allotment and other livestock forage needs; (4) permittees

ability to self-monitor management and maintenance in project allotment management plans and grazing permits; and (5) economic factors including development and maintenance cost of facilities.

4. Coordination requirements in the above considerations will include: (1) timing of the timber harvest and associated activities and grazing schedules; (2) protection of livestock barriers or mitigation of these values where desirable; (3) reducing the spread of noxious weeds and controlling noxious weeds where present; (4) seeding of livestock and wildlife forage species, considering desirability of seeding palatable and nonpalatable forage species and species competitive with tree production; and (5) livestock-wildlife conflicts, i.e. restrict domestic sheep grazing on Bighorn sheep range.
5. Table 4.15 (Allowable Use of Available Forage, Riparian Areas) and Table 4.16 (Allowable Use of Available Forage, Suitable Range Except Riparian Areas) the standards for utilization which will be used in preparing allotment plans in both riparian and other areas to be grazed.

Please see The Forest Plan for the tables referenced above. This alternative is expected to meet these requirements as it is designed to improve riparian conditions and an AMP is a product of the analysis.

The alternative meets the Forest Plan as amended by INFISH as applicable for this analysis. Monitoring has shown that standards for livestock use as described in PIBO have not been exceeded; this information is incorporated by reference and is available at the Newport-Sullivan Lake Ranger Districts offices.

Alternative B - No Action (No Grazing)

Direct and Indirect Effects

Under the no action alternative, the Term Grazing Permit would be cancelled within 2 years upon implementation of the decision and resolution of the objection process. No permits would be issued for the LeClerc Creek Allotment until, or unless, there was a subsequent NEPA analysis and a decision made to re-stock the allotment. Permittees would be given 2 years written advance notice of cancellation of their permits as provided for under 36 CFR 222.4 (a)(1). During the 2 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. 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. Range improvements (i.e., fences and corrals) would be allowed to deteriorate or be removed (funding dependent) and stock trails would not be maintained.

Range Improvement Projects

Range improvements including fences and corrals, would remain on the allotments but would no longer be the responsibility of the permittees to maintain. Subsequent decisions would be needed regarding construction of new improvements for other resource needs such as wildlife or recreational use. Alternative funding sources for maintenance or removal of range improvements would need to be secured if range improvements were to remain functional, or they would deteriorate on the landscape. If livestock management fences and water developments are not maintained and fall into a state of disrepair, there could be negative impacts to wildlife (Rosenstock et al. 1999). Deteriorating fences could also have a negative impact on motorized

and non-motorized recreation since loose wire could entangle motorized vehicles, people, horses and pets.

Private, state, and other federal lands within or adjacent to the project area that are unfenced or have poorly constructed and/or maintained fences would not experience incidental livestock use from Forest Service permitted livestock as a result of the no action alternative since livestock grazing would not be authorized.

Vegetation Cover and Composition

Effects on upland and riparian vegetation are based upon some general assumptions. These assumptions are: 1) active prevention and control measures limit invasive plant species introduction and/or spread, which would offset desired plant ecosystems; 2) recreational livestock use remains at existing levels; and 3) wild grazing ungulate use levels remain close to existing levels.

Upland vegetation cover and composition is expected to maintain or improve slightly. This is due to it currently meeting desired conditions. Upland vegetation, currently with a stable trend, would be expected to slowly improve to an upward trend. An upward trend is still possible given the plant ecology measures species and percent cover relative to 100 percent. Since 100 percent doesn't occur in a natural environment, the desirable condition has been met at a "Good" rating. 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 on-site rather than being consumed.

There is research that indicates some species (such as bunch grasses) do not increase long term without grazing. Several articles indicate that without active removal of grass tillers (i.e., grass blades) the plant becomes decadent and less healthy (Busso & Richards, 1995; Clark et al, 1998; Clark et al, 1998b). Based on professional experience, where permitted grazing was eliminated long-term range ecology plots showed a high percentage of native species presence and an increased percentage of litter (dead plant material).

Elimination of domestic livestock grazing may not be expected to 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.

Under the no grazing alternative, herbaceous plants and shrubs would no longer be utilized by livestock. Plant productivity, diversity and species composition may change over time in absence of livestock grazing. Preferred plants with low tolerance to grazing may increase in the 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 Vavara (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 un-grazed 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 Vavara 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.

Without livestock grazing on the allotment there would no longer be salting located away from riparian areas. Minerals and supplements put out for cattle are often used by wildlife, though they would not be present in the no action alternative.

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. Noxious weeds would need to be controlled in order to provide opportunity for desirable vegetation to establish itself within these homestead meadows. Seeding may also be needed to prevent noxious weeds from re-establishing after treatment and dominating the site. 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.

With more herbaceous litter being present on the landscape under the no action alternative potential risk for forest fire starts may be increased since herbaceous vegetation in the forest and along roads would not be grazed. The basic process of grazing reduces fuel loads by two basic concepts which are: animals remove vegetation, and thereby reduce the amount of burnable material, and hoof action incorporates fine fuels into the soil to eliminate the number of combustible materials. Therefore, the absence of livestock grazing in the LeClerc Creek Allotment would result in a greater amount of fine fuels in the project area and increase the potential for higher rates of fires spread and fire intensity.

The amount of resource monitoring occurring on National Forest Land would be decreased under the no action alternative within the LeClerc Creek Allotment. Livestock monitoring and compliance inspections would not take place since no livestock would be present.

Cumulative Effects

For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek allotment analysis areas, refer to Appendix C on page 298.

Spatial Bounding

Cumulative effects for alternative B are spatially bounded by the existing allotment boundary. The effects of grazing and livestock could be present throughout the existing 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).

Temporal Bounding

Cumulative effects for alternative B are temporally bounded to the time frame within 2 years of implementation of the decision and resolution of the objection process as described in 36 CFR 222.4 (a)(1), at which point grazing would be discontinued.

Past, Present, and Reasonably Foreseeable Actions

Vegetation management projects such as the Hanlon and Scotchman Stewardship Projects which implement burning, thinning, and other overstory vegetation management activities, overlap with the current grazing permits. However, with the no grazing alternative, there would be no need for the mitigation measures from these projects regarding grazing. 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 since no grazing would occur.

Other ongoing forest uses may contribute to effects on vegetation or riparian health. Examples include, but are not limited to areas which were managed with heavy equipment operations and subsequent seeding of Kentucky bluegrass, may have less ability to recover given less available native species present. An active road system through a meadow may continue to contribute to soil and watershed conditions preventing establishment of more desirable native plants within the community. Roadways can contribute to noxious weed spread given the propensity of plant particulates to be in the undercarriage of vehicles and roadsides provide a potential seed bed for their propagation (Mack 2003). Noxious weeds are not part of desirable plant ecosystem composition.

Noxious weed best management practices for the vegetation management/burning projects that affect grazing (for instance Early Detection Rapid Response (EDRR), equipment cleaning, etc.) would still be implemented and could affect vegetative cover and composition (refer to Noxious Weeds specialist report for more information). If grazing were no longer permitted, the EDRR measures performed by the permittee would be discontinued. There would also be less EDRR through Forest Service range inspections. Since permittees are very active in EDRR, the elimination of those efforts may increase the likelihood of a new invasive species changing the vegetative cover and composition negatively somewhere within the analysis area.

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

Wildfire and a no grazing scenario do not anticipate an overlapping effect to vegetative composition and cover. The change in vegetation cover and composition would likely stay about the same in site size and location. Composition might change relative to which species are fire tolerant versus those which increase without grazing. Plant composition and health affects fuel structure. In general fine fuels, such as grass and forbs, should increase without livestock grazing. This may serve to carry more fire in an event.

Eliminating grazing would not result in a change of vegetation relative to culvert replacement or their upgrades. Eliminating grazing coinciding with road decommissioning or maintenance would not change vegetation.

Since there is no current interaction between grazing and Special Use permits, no effect is expected by removing cattle.

There would be no interaction between the permittees and compliance with Access and Travel Management. No effect is expected for vegetation.

Livestock may affect traditional cultural use of the landscape by Native American Tribes, in particular the Kalispel Tribe (see Heritage Resources report for more information).

There would no longer be concern regarding recreationists (hunter, hikers, ATVs, etc.) leaving undesired locations available to livestock via open gates, etc. No effect to vegetation is expected.

Livestock would not utilize 45 percent of the available forage within the LeClerc Creek Allotment. Therefore, based on an average consumption of 26 pounds of forage per day per animal unit, there would be an additional 13,903 pounds of forage available to wildlife over the 23,412 acres contained within the LeClerc Creek Allotment.

Forest Plan Compliance

The existing conditions within the Forest Plan Standards and Guidelines have allowed for grazing on the LeClerc Creek Allotment. Not grazing under alternative B would be consistent for the management areas (MAs) within the allotments. Since no grazing would occur, no standards defined for livestock use would be exceeded. This meets resource needs and management area direction.

Please see the list of the five Forest Plan rangeland management requirements under alternative A (p. 61). This alternative is expected to meet these requirements as it is designed to improve riparian conditions and an AMP is a product of the analysis.

The alternative meets the Forest Plan as amended by INFISH as applicable for this analysis. Monitoring has shown that standards for livestock use as described in PIBO have not been exceeded; this information is incorporated by reference and is available in the project file.

Alternative C - Proposed Action

Direct and Indirect Effects

Under this alternative permitted livestock grazing of NFS Lands would continue with changes to the grazing system, construction of improvements to increase effectiveness of livestock distribution and management of the allotment, and changes to the allotment boundary.

This analysis does not detail optional management strategies the permittees can use to attain improved resource conditions. Some management strategies are not mandated, but 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). 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).

Monitoring will determine the effectiveness of an alternative's implementation on resources. Permittees are encouraged to monitor their grazing so as to be proactive in determining livestock movement.

Vegetation Cover and Composition

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.

This alternative utilizes multiple range infrastructure changes and adaptive management strategies to meet desired conditions for the allotments. The infrastructure changes are those management steps (i.e., fences, water developments, modified allotment and pasture boundaries, etc.) which are designed to improve resource conditions. The following describes how the changes work toward improving or maintaining vegetative composition and cover.

Alternative C implements multiple water developments, fencing, and improved corrals to improve livestock distribution away from riparian areas. It also modifies allotment and pasture boundaries to facilitate more effective movement of livestock between pastures by having spatially connected pastures, as well as identifying defendable allotment and pasture boundaries that are more resistant to livestock drift.

Alternative C is expected to improve riparian vegetation cover and composition. Upland vegetation already exists at a desirable state or trend. This is expected to continue. Alternative C would reduce livestock riparian use when the range improvements are in place and functioning. Also, the ability to use other management options (salting, supplement placement, additional riding) are 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 (pages 26-30) would be implemented; adding additional range improvements where needed. The emphasis is to do this where monitoring dictates the need and to do so over time, as logistically and economically feasible.

The mitigations of 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 to improve vegetative cover and condition. Rationale for grazing effects on vegetation are described based upon observations within the analysis area and standard rangeland management science. These are discussed in some of the following sections.

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. This reduces the amount of monitoring required by rangeland management specialist and the time the permittees must spend to move livestock from concern areas.

Unmanaged or improperly managed grazing can be detrimental to plant communities. This alternative has been developed to address known deficiencies in infrastructure and management that contribute to improperly managed grazing. Therefore plants will 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 this alternative.

Table 14 below compares acres suitable for grazing between Alternative A and C. 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 judgement, the Rangeland Management Specialist does not feel that the reduction in suitable grazing acres will necessitate an immediate change to the stocking rate for the LeClerc Creek Allotment.

Table 14. Comparison of Suitable Acres Between Alternatives A and C.

Suitable Acres	Alternative A	Alternative C
	5,452	4,565

Range Infrastructure and Improvements

Range infrastructure affects grazing management. This alternative utilizes permit administration and adaptive management with range infrastructure. The following discussion explains how the infrastructure and management maintain or improve vegetation.

Grazing permittees have always been responsible for maintenance of range improvement projects and project maintenance is a term and condition of their grazing permits. Current range improvement project maintenance and that which would be required under alternative C are displayed in Table 15.

Table 15. Range Improvements under Alternative C

Allotment	Current		Alternative C	
	Fence (miles)	Water developments	Fence (miles)	Water developments
LeClerc Creek	14.5	0	10.5	4-9

Note- miles of fence are approximate, and total fencing under this alternative would depend on the amount of drift fence required to reduce cattle drift.

Range improvement project maintenance is expected to increase with alternative C. 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 little to be done 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 permittees 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 spending 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 installed with this alternative, 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). Under this alternative, 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 throughout the current allotment boundary. Currently one of the primary trails used by livestock in the Lower Bunchgrass pasture is the NFS road 1935000. Under alternative C two additional cattle guards would be installed in the NFS road 1935000 which 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).

Administrative actions may be used as tools to reduce livestock effects. These administrative management strategies are included in both alternative C and alternative D. These actions include salting, changing season of use, change in animal numbers, change in animal class, change in the number of days available for utilization, change in the grazing system, change in trail routes, and use of riders. The flexibility to promptly implement one or more of these measures allows management to take actions improving livestock distribution and forage utilization. Again, this would lead to improved vegetative conditions.

Adaptive Management Effects

Adaptive management strategies of additional fences or water developments to reduce livestock effects would be implemented. As said above, proper watering developments help distribute livestock away from areas which might otherwise receive impact. This reduces the time required by permittees to implement other livestock distribution strategies. This allows them more time to manage the grazing and attain goals of improved livestock distribution which leads to improved vegetative conditions.

Monitoring Recommendations

Monitoring related to range management for alternative C would follow the methods, procedures and frequencies described in the Adaptive Management/ Monitoring Strategy (p. 11).

Adaptive Management Strategies

Alternatives C and D incorporate an adaptive management strategy, in an ongoing effort to meet, or trend toward, desired conditions (p. 7). Adaptive management incorporates an "implement-monitor-adapt" strategy that provides flexibility to adapt to changes in environmental conditions, or to respond to subsequent monitoring information indicating that desired conditions are not being met. See Adaptive Management Strategy for more detailed information (DEIS pages 26-30).

Permit Administrative Actions

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. 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. Modifying the season of use for an allotment would be minor, and must keep to the two weeks parameter for livestock on and off dates. Again, this is considered to be 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 (p. 7) would continue to be attained. Therefore, vegetative composition and cover is expected to improve.

Please note, changes in the kind of livestock (ex: changing an allotment from cattle to sheep), are a modification. However, since it is not covered in this analysis, a new environmental analysis would be required.

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 will 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.

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.

Grazing System Modifications

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.

Range 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. Effectiveness of fences, water developments, and handling facilities is covered in more detail in alternatives C and D.

Cumulative Effects

For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek allotment analysis areas, refer to Appendix C on page 298.

Spatial Bounding

Cumulative effects for alternative C are spatially bounded by the proposed allotment boundary for this alternative. The effects of grazing and livestock could be present throughout the proposed 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).

Temporal Bounding

Cumulative effects for alternative C are temporally bounded to the time frame within 5 to 10 years of implementation of the decision and resolution of the objection process. No additional projects and treatments in addition to alternative C would have large scale effects to grazing or vegetation resources within the proposed allotment boundary. Continued timber harvest, invasive species treatment, road maintenance, and recreational activities are anticipated to be the reasonably foreseeable future events.

Past, Present, and Reasonably Foreseeable Actions

Vegetation management projects such as Hanlon and Scotchman Stewardship projects have or will implement burning, thinning and other overstory vegetation management activities which

overlap the allotment boundary for alternative C. Grazing mitigation measures from these projects would be implemented. These measures include postponing construction of improvements after an activity unit (timber sale) is completed. They would 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.

Grazing with fuels reduction/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 rehab-seeded against noxious weeds. Therefore, the overall composition and cover typically is not affected.

Fire suppression is not expected to have an effect to vegetative composition and cover. This is due to the policy that suppression activities restore any Forest Service structures damaged by suppression activities. Wildfire effects are evaluated after the event. Post fire the resources are considered and analyzed and activities depend upon the extent and severity of the burn. Vegetation composition and cover effects would be determined at that time. Since grazing may affect fine fuels, it may affect wildfire burn patterns. The change in vegetation cover and composition would likely stay about the same in site size and location. Composition might change relative to which species are fire tolerant versus those which increase without grazing (consultation with the Fuels/Fire and Silviculture Specialists 2014).

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 preventing noxious weeds from further displacing desirable plants in new sites. Overall, the Forest wide 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 can’t already access.

Within the last ten years, recreation-related uses have increased in the LeClerc Creek area. Recreation as well as livestock grazing has been observed as having measureable impacts to riparian areas, which degrade and damage riparian resources and increase the amount of

sediment in streams. The proposed action would act to lessen impacts to riparian areas from livestock grazing by encouraging riparian recovery and likely reducing the amount of time livestock spend in riparian areas. Due to recreation use combined with livestock use, some riparian areas and streams may demonstrate characteristics that are less than their potential, but impacts to these areas are likely to be reduced by the proposed action compared to the existing condition.

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 to be semi-permanent primary range areas are increasingly used as camping locations for 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.

Livestock may affect traditional cultural use of the landscape by Native American Tribes, in particular the Kalispel Tribe (see Heritage Resources report for more information).

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.

Continuing the permitting of livestock within the project area could have some impact on post-harvest regeneration rates of timber on NFS and private lands. Impacts to tree regeneration have been observed to be insignificant in dry, upland areas and therefore, the impact is likely minimal.

The activities in alternative C would act to guide the LeClerc Creek Allotment to improved resource conditions while sustaining the current level of permitted livestock and AUMs.

Forest Plan Compliance

The existing conditions within the Forest Plan Standards and Guidelines have allowed for grazing on the LeClerc Creek Allotment. Grazing under alternative C would be consistent for the management areas (MAs) within the allotments. The capable AUMs exceed the permitted AUMs proposed in this alternative. This meets resource needs and management area direction.

Specific to rangeland management, the Forest Plan states [see numbers 1-5 under alternative A of the Range Management Section (page 61 of this document)]. This alternative is expected to meet these requirements as it is designed to improve riparian conditions and an AMP is a product of the analysis.

The alternative meets the Grazing Management Objectives of PACFISH/INFISH Biological Opinion (PIBO) as applicable for this analysis. Refer to Aquatics/Fisheries report for details. PIBO amended the Forest Plan. Monitoring has shown that standards for livestock use as described in PIBO have not been exceeded, this information is incorporated by reference and is available in the project file.

Effects Summary

Alternative C would 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. By providing for 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.

Alternative D – Modification of Proposed Action

Alternative D was developed based on input from the current allotment permittee and further field reconnaissance to address operational concerns and allow for more effective and efficient management of the allotment.

Direct and Indirect Effects

Effects are the same as for alternative C except as described below.

Compared to alternative C, alternative D increases the size of the Lower Bunchgrass pasture by expanding the southeast pasture/allotment boundary from the Middle Branch LeClerc Creek to existing fence along the East Branch LeClerc Creek Road (Forest Road 1934000). The size of the pasture would increase to 7,401 acres from 5,621 acres (a 24 percent increase in acreage). 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.

Alternative D also increases the size of the Mineral Creek pasture by including acres in the Paupac area. The size of the pasture would increase to 7,023 acres from 5,603 acres (a 20 percent increase in acreage). 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 (IDT) when analyzing this project was livestock impacts to a wetland plant community south of the Hanlon Meadow holding pen in T36N R44E S29 NE1/4 NE1/4. This area has hummocks (vegetated mounds typically less than 1m in height and diameter which create uneven ground and are often associated with riparian areas and wetlands) that the IDT believed may be a result of livestock grazing of this wetland. Research by Smith et al (2012) found that there was no relationship between hummock formation and domestic livestock grazing, and concluded that the hummocks were likely formed by natural freeze-thaw processes. This area is of particular interest to rangeland management because it also contains a PACFISH-INFISH Biological Opinion (PIBO) monitoring site that is used to evaluate the effectiveness of grazing management. 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. This site has been monitored twice in the past (see Hydrology report for more information) and standards for livestock use have not been

exceeded. This site is excluded from the allotment with alternative C but is included in alternative D; including the site within the allotment boundary under alternative D will 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 of the DEIS) it would be excluded and an alternate monitoring site identified.

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. The desirable plant species are favored during this time period. 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.

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.

Table 16 below compares acres suitable for grazing between Alternatives A and D. Alternative D would result in a gain of 461 acres of suitable grazing land. The proposed pasture boundary changes in the Lower Bunchgrass and Mineral Creek pastures add slightly to the acres suitable for grazing, which may lead to decreased grazing pressure and decreased undesirable resource impacts within those pastures. 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.

Table 16. Comparison of Suitable Acres Between Alternatives A and D

Suitable Acres	Alternative A	Alternative D
	5,452	5,913

Range Infrastructure/Improvements

Range infrastructure/improvements are the same for alternative C except as listed below.

Current range improvement project maintenance and that which would be required under alternative D are displayed in Table 17.

Table 17. Range Improvements under Alternative D

Allotment	Current		Alternative D	
	Fence (miles)	Water developments	Fence (miles)	Water developments
LeClerc Creek	14.5	0	13	4-9

Note- miles of fence are approximate, and total fencing under this alternative would depend on the amount of drift fence required to reduce cattle drift.

Table 18. Comparison of Improvements between Alternatives C & D

Allotment	Alternative C		Alternative D	
	Fence (miles)	Water developments	Fence (miles)	Water developments
LeClerc Creek	10.5	4-9	13	4-9

Note- miles of fence are approximate.

Compared to alternative C range improvement project maintenance is expected to increase with alternative 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 little to be done 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 permittees over time.

Livestock trails exist on the landscape in several areas throughout the current allotment boundary. Currently one of the primary trails used by livestock in the Lower Bunchgrass pasture is the 1935000 road. Under alternative D, livestock would be able to continue to use the 1935000 road 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 the 1935000 road and greatly complicate the movement of livestock along the road.

Adaptive Management Effects

Same as alternative C.

Adaptive Management Strategies

Alternatives C and D incorporate an adaptive management strategy, in an ongoing effort to meet, or trend toward, desired conditions (p. 7). Adaptive management incorporates an “implement-monitor-adapt” strategy that provides flexibility to adapt to changes in environmental conditions, or to respond to subsequent monitoring information indicating that desired conditions are not being met. See Adaptive Management Strategy for more detailed information (page 25). See full text under alternative C (p. 70).

Cumulative Effects

For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek allotment analysis areas, refer to Appendix C on page 298.

Spatial Bounding

Cumulative effects for alternative D are spatially bounded by the proposed allotment boundary for this alternative. The effects of grazing and livestock could be present throughout the proposed 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).

Temporal Bounding

Same as alternative C.

Past, Present, and Reasonably Foreseeable Actions

Same as for alternative C except as listed below.

The activities in alternative D would act to guide the LeClerc Creek Allotment to improved resource conditions while sustaining the current level of permitted livestock and AUMs. The acres of land suitable for grazing would increase to 5,913 acres from the existing condition of 5,452 acres. The 5,452 acres for the existing condition was developed by taking the total acres of suitable grazing for the existing allotment (6,693 acres) and subtracting 1,241 acres on 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.

Forest Plan Compliance

The existing conditions within the Forest Plan Standards and Guidelines have allowed for grazing on the LeClerc Creek Allotment. Grazing under alternative D would be consistent for the management areas (MAs) within the allotments. The capable AUMs exceed the permitted AUMs proposed in this alternative. This meets resource needs and management area direction.

Specific to rangeland management, the Forest Plan states (see numbers 1-5 under alternative A of the Range Management Section, page 63 of this document). This alternative is expected to meet these requirements as it is designed to improve riparian conditions and an AMP is a product of the analysis.

The alternative meets the Grazing Management standards of PACFISH/INFISH Biological Opinion (PIBO) as applicable for this analysis. Refer to Aquatics/Fisheries report for details. PIBO amended the Forest Plan. Monitoring has shown that standards for livestock use as described in PIBO have not been exceeded, this information is incorporated by reference and is available at the Newport-Sullivan Lake Ranger Districts offices.

Effects Summary

Same as alternative C.

Table 19. Comparison Summary of Alternatives

Alternative	Fence (miles)	Water developments	Suitable Acres
A – No change (current management)	14.5	0	5,452
B – No action (no grazing)	N/A	0	N/A
C – Proposed action	10.5	4-9	4,565
D – Modification of Proposed Action	13	4-9	5,913

Economic Analysis

Information provided in this Environmental Impact Statement about economics is excerpted from the LeClerc Creek Grazing Allotment Social and Economic Report by Chase Bolyard, District Rangeland Management Specialist (2015a). The full text of this report is incorporated by reference and is part of the project record.

Data collection

An economic literature search was conducted on the proposed project area as well as discussions with the current and former permittee. 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.

Background, 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.

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.

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 between alternatives, estimates of some administrative costs 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 for the proposed action 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 of the proposed action on the small ranching operation. This analysis evaluates estimated operational costs and employment needs to compare across alternatives.

Affected Environment

The affected area for the LeClerc Creek Allotment would be Pend Oreille County in northeast Washington, which has a population of approximately 12,980 (Ng 2014c). Wage and salary

employment (people who work for someone else) in retail trade and services are important sources of employment and income in this region. 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). Reliance on timber and forage from federal lands appears to be moderate to high for local businesses and employment (Headwaters, 2009).

Federal rangelands are critical to the economic viability of the livestock industry in 11 western states, including Washington (USDI BLM and 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 Forest Service, 1994).

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.

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).

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). This was also demonstrated at local working group meetings, that occurred in various communities near the Colville National Forest, related to the U.S. Forest Service's "proof of concept" new business model.

Economics

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). Fifty percent of the grazing fees collected annually on the Colville National Forest return to the Forest as range betterment funds. 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.

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/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 to a size by mid-spring 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.

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 will have a social impact to rural life styles.

General Effects

If the Forest Service were to reduce their role in this grazing system, the permittee may need to find other private or public lands to hold their cattle while forage is being grown, or they would likely need to reduce their total livestock numbers. Buying and shipping large amounts of forage from outside sources is not considered economical because of the high costs involved. During the winter of 2013/2014, hay prices in the local area were approximately $150 to $180 dollars per ton plus shipping costs. An average cow would consume 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.

This allotment makes up approximately 17 percent of the range program on the Newport-Sullivan Lake Ranger Districts. Approximately 170 person-days are spent annually to administer the district range program. Total administration and monitoring requirements for alternatives A, C, and D would be approximately 50 person-days; these days are calculated for the first 3 years of the AMP implementation. Monitoring results would determine the success of the proposed actions and mitigation measures. If the monitoring indicates additional adaptive management is needed, then the days estimated for monitoring would increase. However, if the proposed action and mitigation measures are successful then monitoring days may decrease, but implementation monitoring would continue. Determining a cost for monitoring as described above is difficult due to days required being estimated and personnel costs that vary depending on whether monitoring work is conducted by seasonal employees or full-time employees. However, based on the above described monitoring needs the cost would range between $6,500 and $15,000 approximately.

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).

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.

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).

Employment

Pend Oreille County appears to have disproportionately high unemployment compared with the 2006 Washington State average of 5.0 percent and the National average of 4.6 percent. The unemployment rate in Pend Oreille County during 2006 was 7.4 percent. (Headwaters 2009) and rose to 11.5 percent in 2013 (Ng 2014b). Natural resources and mining account for approximately 14 percent of the employment in Pend Oreille County (Ng 2014b). Local

government, construction, health care, accommodation/food services and retail trade employ the most people in Pend Oreille County (Headwaters, 2009).

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 4 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.

Average Wages

Average annual pay per job provides an indication of the wage contribution of jobs in the analysis area. Average income for Pend Oreille County is below the national and state averages: United States $45,817.00, Washington $47,057.00, Pend Oreille County $35,705.00 (Headwaters, 2009). The average household income for Pend Oreille County is also below the Washington state average with household income in Pend Oreille County being $39,131.00 and Washington state being $56,911.00 according to data provided by http://www.city-data.com/ (2014).

Per Capita Income

Per capita income measures economic well-being, taking into account both population and income changes, although it does not address income distribution. Per capita personal income is total personal income divided by the estimated population. Per capita income in Pend Oreille County is approximately $22,896.00, while Washington State is $35,479.00 and the national is $34,471.00 (Headwaters, 2009). Therefore, Pend Oreille County lags behind the statewide and national averages.

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 Ferry County was 1,332 (USDA Census of Agriculture, 2007). Of these, 101 cow/calf pairs graze within the LeClerc Creek Allotment during the summer and fall months. The 2005 agricultural revenue for Pend Oreille County totaled $5,985,000.00. Cow and calf sales comprised 36.8 percent of this agricultural revenue in Pend Oreille County or $2,203,000. This compares with 23.3 percent of agricultural revenue from crops or $1,393,000 (Headwaters, 2009).

Financial Effects

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, 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. In total, approximately 45,511 pounds of live weight beef production is gained. Based on current market conditions, this gain could equate to $65,990.95 based on $1.45/lb. live weight (cattle market price, 2013). These amounts do not take into account the costs to care for and maintain the herd throughout the year, which are substantial.

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 current grazing fee being $1.35 per Animal Unit Month (AUM). The rate charged has been less than $2.00 per AUM for at least the last ten years. It has been found that although grazing fees on private land are significantly higher than National Forest System land, overall grazing costs are much higher on National Forest System land. The increased expense associated with grazing on public land was attributed to: the cost of transporting animals to and from federal 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 utilized each year. Total grazing fees collected for this allotment amount to $546.75 each year based on there being 405 AUMs and the rate charged per AUM being $1.35.

Of the grazing fees collected from Forest Service grazing lands 50 percent are returned to the Forest where they originated for range betterment purposes, 25 percent are deposited in the national treasury, and 25 percent are paid to the county where the grazing lands exist.

Alternative A – No Change (Current Management)

Direct and Indirect Effects

Alternative A would continue with the current management strategy for the LeClerc Creek Allotment. 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. Due to the way that funding is received and allotment administration is carried out, providing amounts for the cost of allotment administration for the LeClerc Creek Allotment is not possible.

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 on page 298.

Alternative B - No Action (No Grazing)

Direct and Indirect Effects

The no grazing alternative would eliminate livestock grazing and the Term Grazing Permit on the LeClerc Creek Allotment unless there was a subsequent NEPA analysis to again authorize

use. No grazing fees would be collected on these allotments, therefore approximately $273 fewer range betterment dollars collected from associated grazing fees would return to the Colville National Forest and payments to Pend Oreille County resulting from grazing fees would be reduced by approximately $137.

Operational costs would likely increase for the permittees with the loss of summer pasture including increased feed costs, increased transportation costs, and disruption of current marketing strategies. These changes may have a negative impact to the individual permittee. Based on the minor contribution cattle ranching has to boost local employment, impact to the local economy is expected to be less than 7% of the total employment for the county. Under the no grazing alternative, 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 permittees to maintain. 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.

Reducing permitted livestock levels would likely affect economic viability of individual ranch operations because of costs associated with securing replacement range and livestock transportation. In addition there may be an overall increase in the time required by permittees in managing ranch operations.

Alternative C - Proposed Action

Direct and Indirect Effects

The proposed action alternative would continue livestock grazing on the LeClerc Creek Allotment. Grazing fees and payments similar to those currently collected and dispersed would continue into the future.

Alternative C identifies several new fences, water developments, hardened stream crossings, cattle guards and brush barriers. The permittee and the Forest Service would be cooperatively involved in the implementation of these activities. Therefore, the implementation costs associated with this alternative will have a negative economic impact on the permittee and the Forest Service. The estimated cost to fully implement alternative C would be between $104,390 and $120,640.

Table 20. Estimated Cost to Implement Alternative C

Allotment	Brush Barrier (acre)	Fencing/ mile (low estimate)	Fencing/ mile (high estimate)	New Trough (each)	Cattle guard installation (each)	Hardened Crossing (each)	Cost total
Per Unit Cost	$400	$17,250	$20,500	$2,200	$1,500	$800	
LeClerc Creek*	$240	$86,250	$102,500	$8,800	$7,500	$1,600	$104,390 $120,640
Total	**$240**	**$86,250**	**$102,500**	**$8,800**	**$7,500**	**$1,600**	**$104,390** **$120,640**

*Values used to populate this table are approximations based on the best available data at the time of analysis.

Alternative C requires an increased level of livestock management. Emphasis in this alternative involves changing cattle use and distribution within the LeClerc Creek Allotment. Due to the increased management requirements, operational costs may increase and result in a slightly negative economic impact on the permittee, though long-term viability of livestock grazing would improve. Operational costs for the Forest Service would increase slightly from the current management. Due to the way that funding is received and allotment administration is carried out, providing amounts for the cost of allotment administration for the LeClerc Creek Allotment is not possible.

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.

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. 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.

Permittees would continue to produce beef in Pend Oreille County and generate revenue which leads to the diversified economy of the area. However, if local ranching operations become economically unviable, it is likely that the ranches would be sold, broken up, and developed for residential properties or converted to other uses. Gradually the ranching component of the social setting could be decreased or lost.

Due to increases in fuel prices and inflation, costs for all agricultural products and practices, such as growing crops, feeding livestock, managing livestock, and maintaining range

improvement projects have increased. 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.

For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek allotment analysis areas, refer to Appendix C on page 298.

Alternative D – Modification of Proposed Action

Direct and Indirect Effects

Alternative D would continue livestock grazing on the LeClerc Creek Allotment. Grazing fees and payments similar to those currently collected and dispersed would continue into the future.

Alternative D identifies several new fences, water developments, hardened stream crossings, cattle guards and brush barriers. The permittee and the Forest Service would be cooperatively involved in the implementation of these activities. Therefore, the implementation costs associated with this alternative would have a negative economic impact on the permittee and the Forest Service. The estimated cost to fully implement alternative D would be between $66,890 and $76,640.

Table 21. Estimated Cost to Implement Alternative D

Allotment	Brush Barrier (acre)	Fencing/ mile (low estimate)	Fencing/ mile (high estimate)	New Trough (each)	Cattle guard installation (each)	Hardened Crossing (each)	Cost total
Per Unit Cost	$400	$17,250	$20,500	$2,200	$1,500	$800	
LeClerc Creek*	$240	$51,750	$61,500	$8,800	$4,500	$1,600	$66,890 $76,640
Total	**$240**	**$51,750**	**$61,500**	**$8,800**	**$4,500**	**$1,600**	**$66,890** **$76,640**

*Values used to populate this table are approximations based on the best available data at the time of analysis.

Alternative D requires an increased level of livestock management. Emphasis in this alternative involves changing cattle use and distribution within the LeClerc Creek Allotment. Due to the increased management requirements, operational costs may increase and result in a slightly negative economic impact on the permittee, though long-term viability of livestock grazing would improve. Operational costs for the Forest Service would increase slightly from the current management. Due to the way that funding is received and allotment administration is carried out, providing amounts for the cost of allotment administration for the LeClerc Creek Allotment is not possible.

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.

Adaptive Management Effects for Alternative C and D

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. Decreasing livestock numbers would have negative social and economic effects for the permittee due to the decrease in profit and local output to the economy.

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. 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. Within the rural communities of the surrounding area, particularly in very small communities, the loss of a single job may be very important to that community, even though it may be barely noticeable within the larger economy. Continuing livestock grazing for the next 10 years on the allotment within 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.

Permittees would continue to produce beef in Pend Oreille County and generate revenue which leads to the diversified economy of the area. However, if local ranching operations become economically unviable, it is likely that the ranches would be sold, broken up, and developed for residential properties or converted to other uses. Gradually the ranching component of the social setting could be decreased or lost.

Due to increases in fuel prices and inflation, costs for all agricultural products and practices, such as growing crops, feeding livestock, managing livestock, and maintaining range improvement projects have increased. 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.

For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek allotment analysis areas, refer to Appendix C on page 298.

Forest Plan Compliance

The current forest plan does not include any standards or guidelines relating to range economics. However, alternative B does 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" (FP 4-2).

Hydrology and Water Quality *(Issue 1 & 2)*

Information provided in this Environmental Impact Statement about hydrology is excerpted from the LeClerc Creek Grazing Allotment Hydrology Report by Rob Lawler, District Hydrologist (2015). The full text of this report is incorporated by reference and is part of the project record.

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 East Branch LeClerc Creek subwatersheds. Rarely, do the 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. Analysis will be discussed through effects of water quality and hydrologic function.

Historical and current fieldwork, GIS-generated data, historical hydrology files, aerial imagery, published scientific literature, and current on-going research and monitoring were used to assess the effects of this project based on the following issues:

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

Water Quality

- Sediment input to surface waters
- Decreased stream temperatures form decreased stream shading

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

Hydrologic Function

- Stream bank condition (Channel Morphology)
- Watershed condition

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

A full description of the desired future conditions for the LeClerc Creek allotment analysis area are listed on page 7.

The Forest Plan and its amendments (e.g. INFISH) outline standards that meet Forest-wide 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.

Forest Plan desired future conditions for aquatics include the following:

- Stream and riparian conditions fully supporting fish populations under normal climatic conditions.
- Stream crossings of Class I and II streams will be minimized (p. 4-63).
- Stream crossing structures (e.g. hardened crossings) will be designed to provide upstream fish passage (p. 4-63).
- Livestock grazing will be more intensively managed. Permittee control will be at an adequate level and, overall, more intensive management systems will be employed (p. 4-63).
- All allotments will emphasize riparian habitat protection and/or recovery (p. 4-63).
- Water quality will remain high and a monitoring program will be in effect to insure that water quality standards are met. (P. 4-64).
- Riparian areas will be stable and show some evidence of uneven-age harvest, without any resource conflicts (p. 4-64).
- By 2038, Riparian areas will be occupied by diverse, healthy plant communities and water quality will consistently exceed state standards. (P. 4-65).
- Riparian areas providing travel corridors for old growth dependent species and habitat diversity will be evident throughout the Forest (p.4-62).

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).

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/rearing, wildlife, livestock, recreation, and aesthetics (DOE: WAC 173-201A-200).

Washington Water Quality Rules and Regulations

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

> "The purpose of this chapter is to establish water quality standards for surface waters of the state of Washington consistent with public health and public enjoyment of the waters and the propagation and protection of fish, shellfish, and wildlife, pursuant to the provisions of chapter 90.48 RCW. All actions must comply with this chapter. As part of this chapter: (a) all surface waters are protected by narrative criteria, designated uses, and an anti-degradation policy." (WAC 173-201A-010)

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 of the State not named in the WAC, are to be

> .."protected for the designated uses of: Salmonid spawning, rearing, and migration; primary contact recreation; domestic, industrial, and agricultural water supply; stock watering; wildlife habitat; harvesting; commerce and navigation; boating; and aesthetic values."

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 2012 water quality report has the most current 303(d) official list of streams not supporting beneficial uses (approval expected 2015). Segments of East Branch, Middle Branch, and West Branch Leclerc Creeks are 303d listed as impaired or as waters of concern for temperature (Figure 6). The 2006 approved 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. The Washington State Department of Ecology and the United States Forest Service Region Six 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. Ecology will also utilize its existing resources and authorities under RCW 90.48 to implement this TMDL. Water quality concerns can be above state standards under natural conditions and when this is the case, the Clean Water Act and WADOE approved CNF TMDL Implementation Plan for water temperature and fecal coliform (2006) provides no

allowance for management activities to increase fecal coliform levels above their natural condition.

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;
- Diversity and productivity of native and desired non-native plant communities in riparian zones;

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.
- RA-1 Identify and cooperate with Federal, Tribal, State and local governments to secure instream flows needed to maintain riparian resources, channel conditions, and aquatic habitat.
- 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

Watershed conditions are not based on a single parameter but rather upon a compilation of a wide variety of parameters. Management issues for protecting water resources as related to grazing include hydrologic function, riparian function, water quality, and cumulative watershed effects. Livestock are a non-native species introduced to North America in the 1500s. Potential impacts from grazing on the native lands 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 (e.g. 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.

The LeClerc Range Allotment (LRA) Project area is primarily located within the West Branch LeClerc Creek (WBLC) [21 670 acres], East Branch LeClerc Creek (EBLC) [26 665 acres], and Maitlen Creek [22 040 acres] HUC12 subwatersheds[4] (Figure 4). 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). These two catchments are separated by a topographical feature which drains Maitlen Creek and several unnamed tributaries into the Pend Oreille River. Tioga and Cato Creeks of the Dry Canyon catchment drain to the south into a series of glacial potholes (e.g. Caldwell and Scotchman Lakes). These lakes have no obvious surface water inlet or outlet and are suspected to fill and drain through subsurface connectivity between the Dry Canyon catchment and West Branch LeClerc Creek subwatershed due to surface geology and glacial deposits. Analysis of the Maitlen Creek subwatershed will be limited to the Dry Canyon catchment (9,500 acres) due to its

[4] Hydrologic Unit Code (HUC) is a watershed delineation system developed by the U.S. Geological Survey. A more complete description of HUCs may be found at: http://water.usgs.gov/GIS/huc.html

topographical nature and limited impacts associated with the Dry Canyon pasture as discussed below.

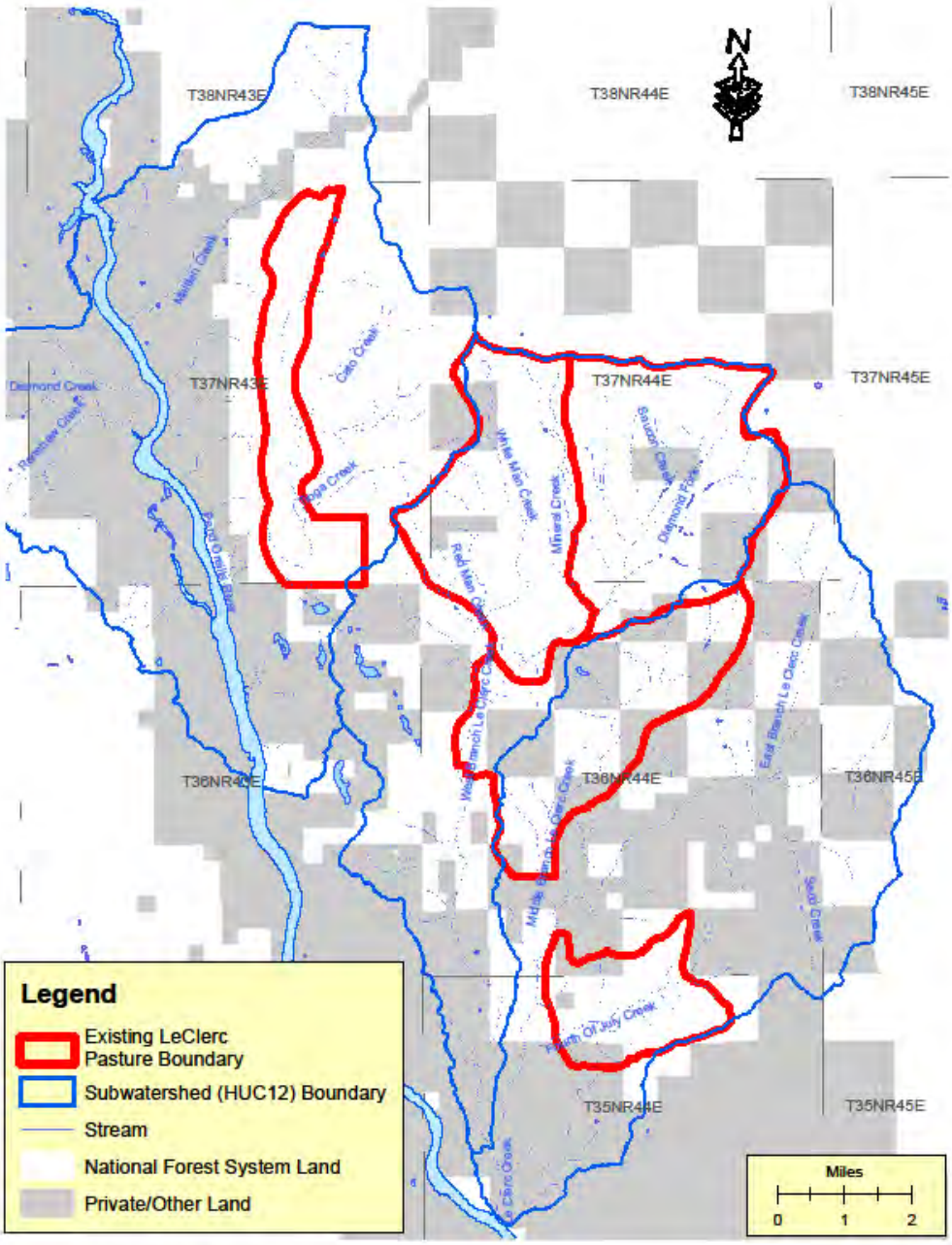


Figure 4. Existing LeClerc Creek Range Allotment and pasture boundary and HUC 12 analysis area

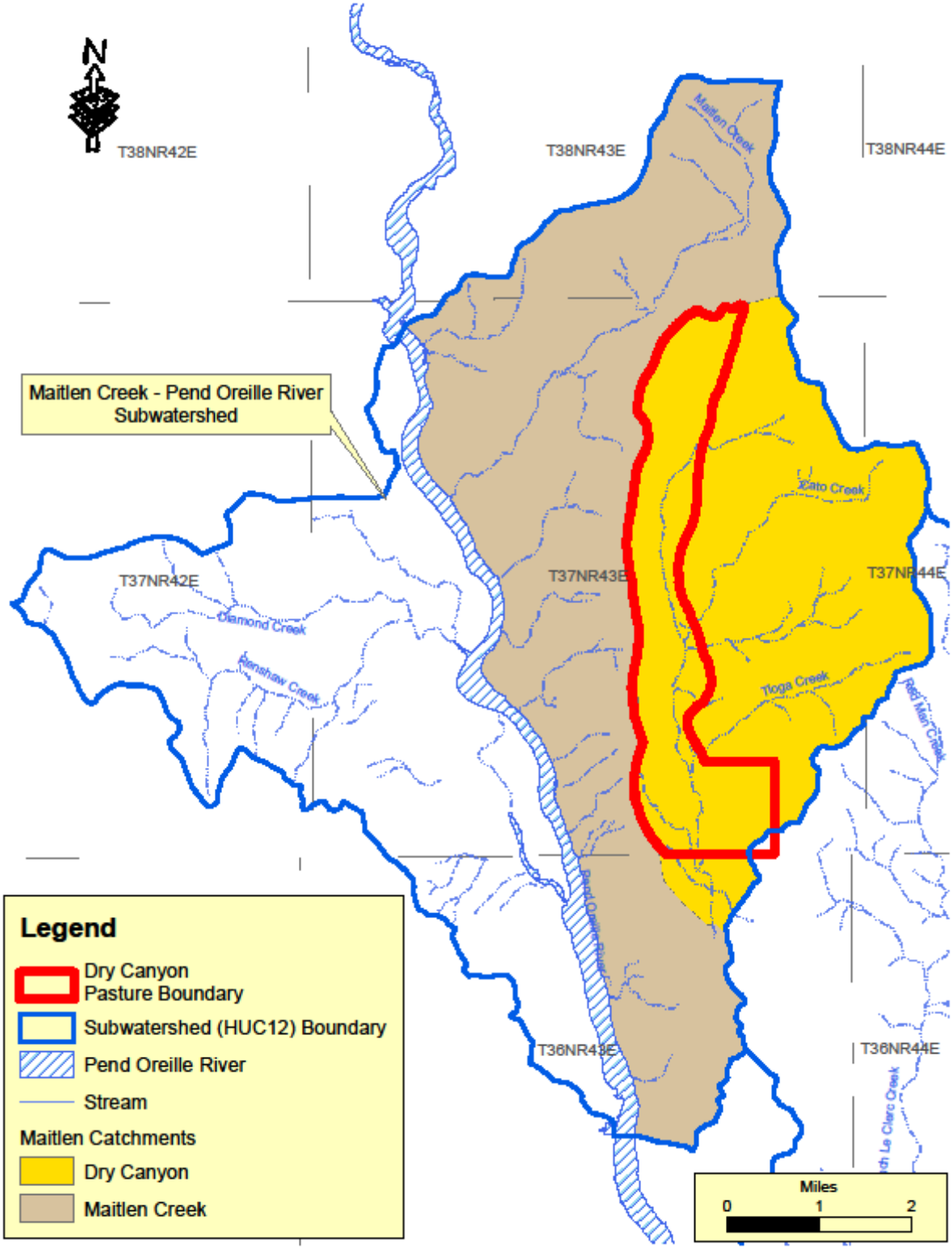


Figure 5. Maitlen Creek Subwatershed Catchments in relation to Dry Canyon Pasture

Although the range management data concludes that the allotment is not over-utilized, some riparian areas with highly concentrated use can often appear to have 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 barrier components such as brush or topography).

Most of West Branch LeClerc Creek is still recovering from being straightened, damned at multiple locations, used as a flume, and railroad/road construction alongside the streams in the early 1900s. The stream reach starting just below the Diamond City area and upstream is temperature impaired (see Figure 8). This is likely an artifact of the logging impacts that occurred during the early 1900's or a natural temperature regime of the stream. The stream travels through areas with steep side slopes of which some are unstable and failing, likely accelerated by the road construction that occurred during the logging boom of the early 1900's. 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.

Other Watershed Activities: Homesteading and Timber Harvesting

Logging and land clearing has been occurring in the West Branch and East Branch LeClerc Creek subwatersheds since at least the early 1900s. Early reports document that much of the two subwatersheds were heavily harvested by large timber companies such as Diamond Match Company. The East Branch LeClerc Creek subwatershed maintains a checkerboard ownership between Forest Service, Washington State DNR, and Stimson Lumber Company. Stimson Lumber Company lands were predominantly owned previously by Plum Creek Lumber Company. Beginning in the 1950s, Forest Service record keeping improved significantly and data was recorded as timber was harvested. Timber harvest results in transitory rangelands which may provide an upland grazing resource in some instances. Recent harvest activities include the Hanlon and Scotchman Stewardship sales in both East and West Branch LeClerc subwatersheds as well as various sites on Stimson Lumber Company ownership. These harvest activities create large openings and result in opportunities for cattle to drift out of pastures and off the allotment.

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[5]. Several essential aquatic restoration projects were identified in both subwatersheds. Projects that have been completed or in process include relocation of Middle Branch LeClerc Creek road to an upland location, in-stream habitat restoration in Middle Branch LeClerc Creek, partial exclosure of approximately 2 miles of riparian management area along Middle Branch LeClerc Creek, replacement of six fish barrier culverts with aquatic organism passage structures, 1.8 mile 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, West Branch LeClerc Creek channel restoration projects including legacy dam removal, historic channel restoration, large wood placement, and replace additional fish barrier culverts with aquatic organism passage structures.

[5] Prior to the WCF designations, the HUC10 LeClerc Creek Watershed was identified as a focus watershed for restoration.

Middle Branch LeClerc Creek receives the majority of the grazing impacts throughout the grazing season. Although the cattle are driven to the appropriate pastures at the appointed time (Table 22), groups of cattle, ranging from 2 to more than 30 head (personal observations, 2011-2014) habitually return to Lower Bunchgrass pasture during periods identified for non-use (July 7 through early October), predominantly to the riparian areas of Middle Branch LeClerc Creek. Some of these cattle groups also drift off allotment into East Branch LeClerc Creek and Fourth of July Creek[6]. Extended periods of grazing in Middle Branch LeClerc Creek riparian areas likely contribute to existing elevated levels of sedimentation and water temperature. Historical homestead and logging use impacts are still apparent in much of the East and West Branch LeClerc Creek subwatersheds. A few recreation sites with current use are located within the RHCA management zone and may also have a negligible contribution to water quality concerns.

Table 22. Allotment rotation plan prior to 2013

Pasture Name	Season of Use	# of Days
Lower Bunchgrass	6/1 – 7/6	35
Mineral Creek and Upper Bunchgrass	7/7 – 9/15	70
Dry Canyon and Fourth of July	9/16 – 9/30	14

Typically, the groups of cattle drifting between pastures or off the allotment follow and/or cross stream channels along cattle trails back to RHCA areas. These high use cattle trails often tie into roads at stream crossings, meadows, wetlands, and/or recent harvest units and provide cattle easy access to the stream for water and more desirable vegetation.

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/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 to move the cattle to higher ground in early July to decrease the amount of time cattle are present on Middle Branch LeClerc Creek have been 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[7].

Drift between pastures and off the allotment has been an ongoing concern that effects 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 T36R44 has been identified. The cattle trail utilizes an old railroad grade/closed road/trail which is predominantly located within the RHCA management zone of upper West Branch LeClerc Creek. Portions of this railroad

[6] Fourth of July pasture is a disconnected pasture identified for use during the last two weeks of the grazing season in recent years.
[7] Ongoing efforts by the permittee are made throughout the season to move cattle back to appropriate pastures.

grade/road/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/fall and hunting activity in the fall in this area is regular enough to keep a travelable path present.

There are approximately 1.2 miles of riparian habitat along West Branch LeClerc Creek beside the old railroad grade (approximately 10 acres) with a shallow groundwater dependent ecosystem as identified by small pockets of meadow interspersed with springs, seeps, and perennial streams (visual estimate: 20% of the area; T 36N R 44E S 08 N ½, S 05 SE ¼ & S 04 SW ¼). Signs of hoof punching are present in many of the springs, seeps, and streams that are present in these pocket meadows. A legacy wooden dam and sand filled reservoir are located at the downstream end of this meadow complex where cattle cross West Branch LeClerc Creek. Bank instability and over-widened stream reach are present due to historic logging practice and current cattle use. Past efforts to control drift in this area have been implemented with the construction of fence at three locations along West Branch LeClerc Creek and Mineral Creek, totaling 2.25 miles. The fisheries report and the USFWS biological opinion completed in the 1998 analysis, recommended additional fencing of this West Branch LeClerc Creek reach as well as the reach in NENE ¼ section 3 and NWNW ¼ section 4 of T36R44 just below where NFS road 1935000 crosses West Branch LeClerc Creek in section 33 of T37R44.

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 holding pen located within the Lower Bunchgrass pasture.

The holding pen is located such that the cows are moved into a fenced area located north of Middle Branch LeClerc Creek. This enclosure includes a tributary and wetland area. Generally the cattle are kept here short term and minimal impacts are found inside the holding pen. For the majority of the season, this holding pen acts as an exclosure and protects the portion of the stream/wetland located within the fenced area. Loading cattle at end of season for transport requires the cattle to be moved 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 of the holding pen fence and crosses a tributary and wetland as well as the main stem of Middle Branch LeClerc Creek. Other areas of the riparian area have been fenced off as exclosures. The exclosures have been effective towards maintaining healthy riparian vegetation and stream channel stability. Additional loading facilities on the allotment include a loading chute located at the north end of Dry Canyon pasture and remnants of a corral near Diamond City. The Diamond City corral is located outside the RHCA management zone and no hydrologic concerns are associated with the Dry Canyon loading chute.

The LeClerc Creek pastures were three separate allotments (Dry Canyon, Fourth of July, and LeClerc) that have been combined into one allotment (Bolyard 2015c). The current LeClerc 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. The allotment has been managed using pasture rotation methods for several years.

Table 23. Pasture and watershed statistics – Existing Condition

Subwatershed	Pasture	Pasture Strm mi	Total Strm mi$	Subwshd acres	Pasture Acres	% wshd^
EBLC (East Branch LeClerc Creek)	4th of July	13	36	26,641	2,460	9%
	Lower Bunchgrass	23			4,415	17%
WBLC (West Branch LeClerc Creek)	Upper Bunchgrass	35	67	21,654	6,691	31%
	Mineral Creek	27			5,603	26%
	Lower Bunchgrass	5			1,205	6%
	Dry Canyon	0			0	0%
Maitlen (East of Pend Oreille River)	Dry Canyon*	10	10	22,040	2,985	14%
	Mineral Creek	0				
Catchment				*Cat. Acres*		*% Past/Cat.*
Dry Canyon Catchment	Dry Canyon*	10	10	9,500	2,985	31%

*An additional 52 acres of Dry Canyon pasture is located in the WBLC subwatershed (< 0.5%).
^ Percent of watershed that is incorporated by the pasture boundary.
$ Total miles of stream located within the pastures by subwatershed.

Mineral Creek pasture (approximately 5,535 acres, 26% of WBLC subwatershed) predominantly affects the middle reaches of West Branch LeClerc Creek and its tributaries including Mineral Creek, White Man Creek, and Red Man Creek. Upper Bunchgrass pasture (approximately 6 485 acres, 30% of WBLC subwatershed) affects the upper reaches and headwater tributaries (e.g. Diamond Fork Creek, Saucon Creek) of West Branch LeClerc Creek. Lower Bunchgrass pasture is predominantly located within the EBLC subwatershed (approximately 4,415 acres, 17% of EBLC subwatershed). This pasture affects Middle Branch LeClerc Creek and its tributaries. A small portion of the Lower Bunchgrass pasture (approximately 1,205 acres, 6% of WBLC subwatershed) affects about 2 miles of West Branch LeClerc Creek in the Diamond City area. Fourth of July pasture (approximately 2,455 acres, 9% of EBLC subwatershed) affects the middle reaches of Fourth of July Creek and its tributaries. Dry Canyon Pasture (approximately 9 500 acres, 14% of Maitlen subwatershed, 31% of Dry Canyon Catchment) affects Cato and Tioga Creeks and their tributaries.

Water Quality

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.

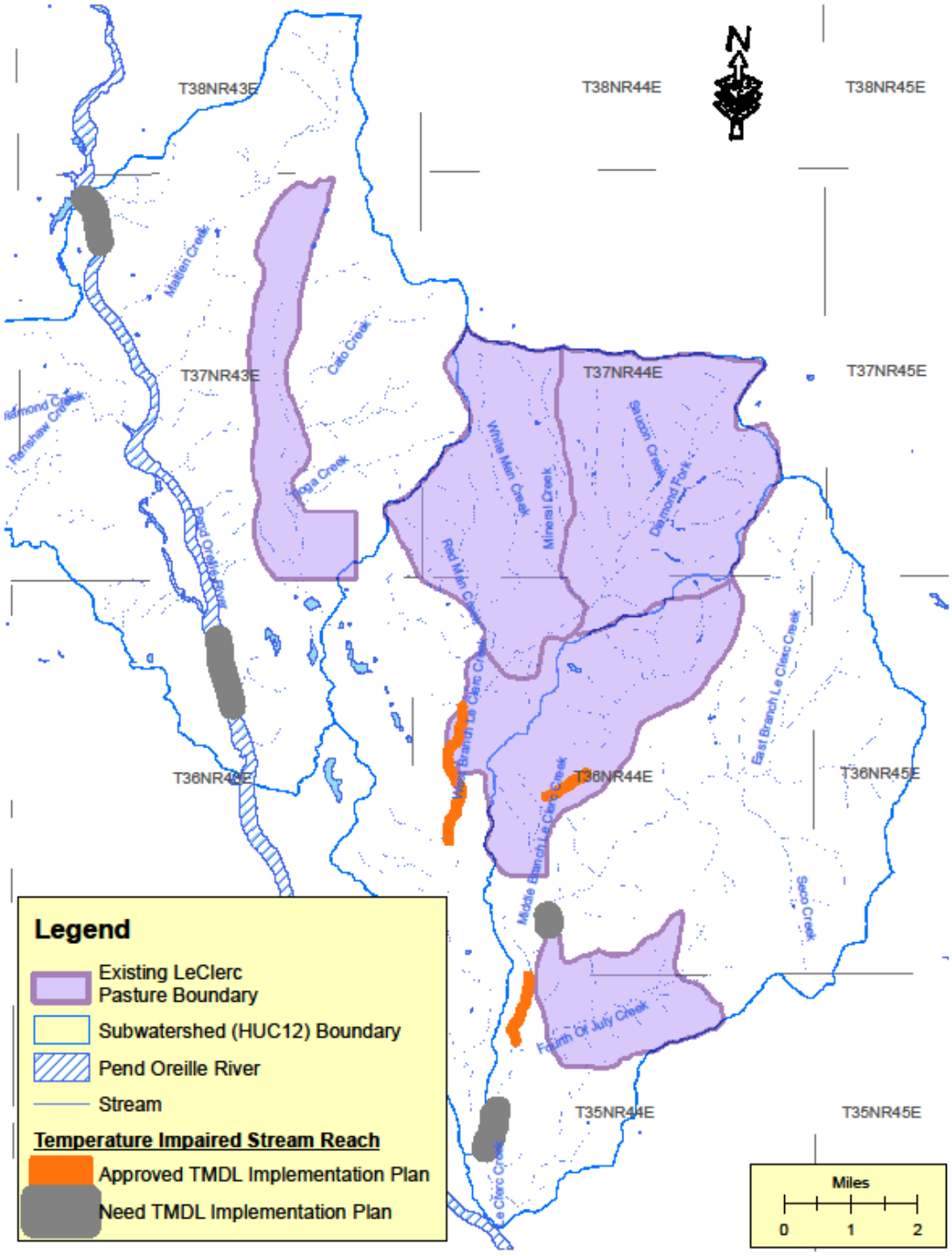


Figure 6. Department of Ecology 305b report (2012) listed West, Middle, and East Branches of Leclerc Creek as temperature impaired. Orange indicates TMDL control plan is needed (303d), grey indicates EPA has accepted the reaches as impaired and a TMDL control plan

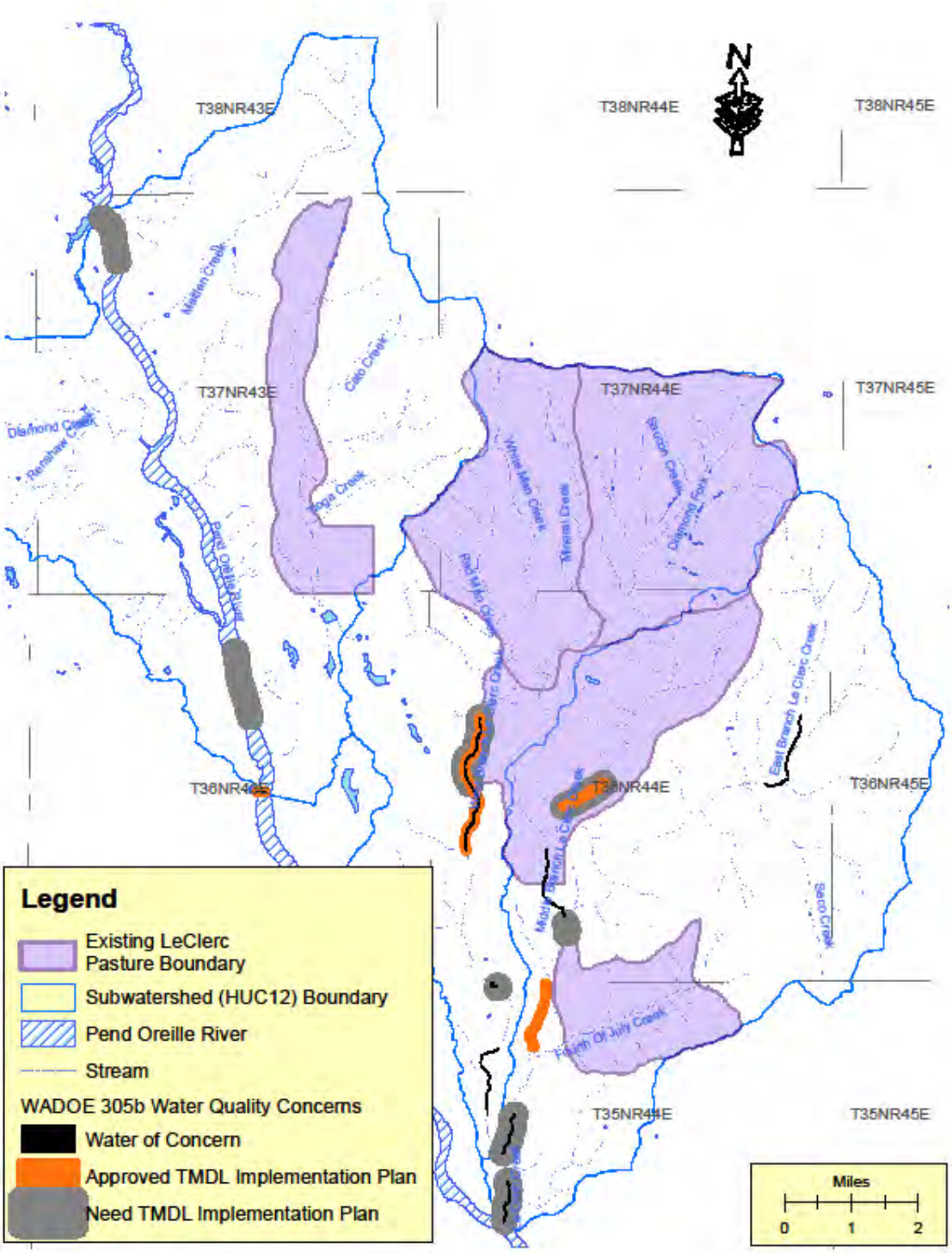


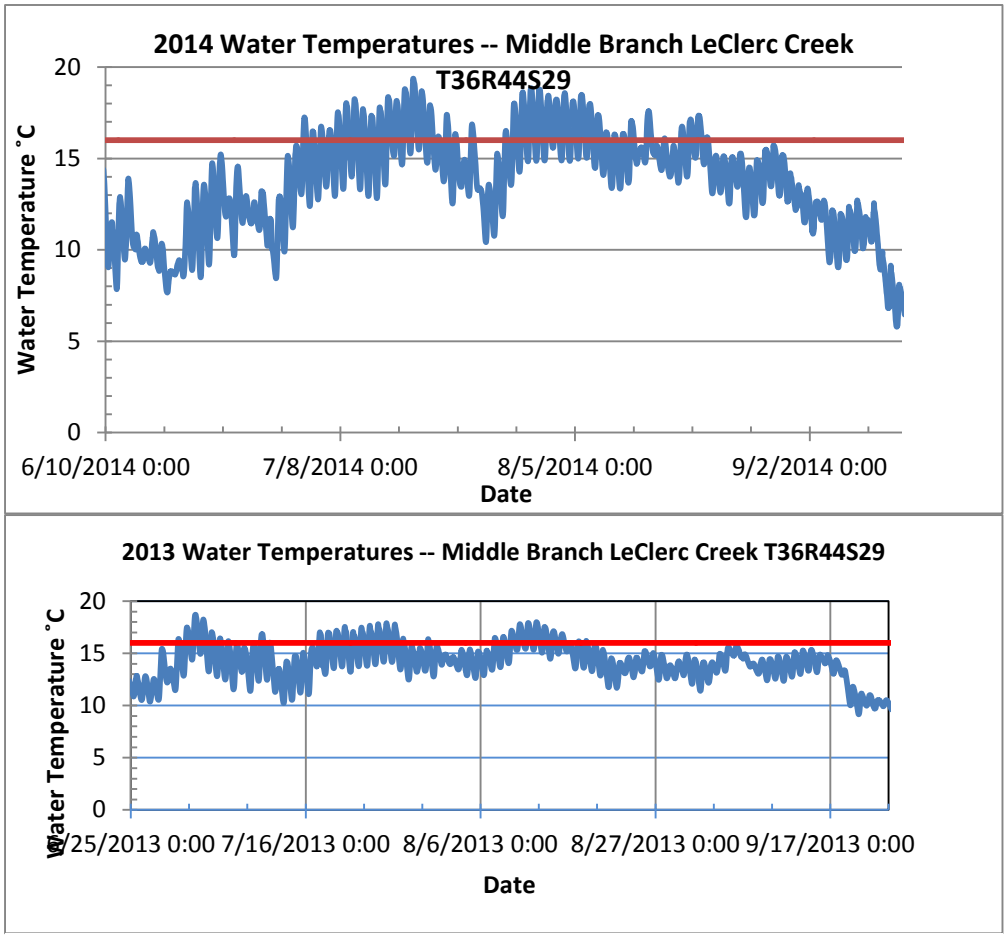
Figure 7. Impaired reaches for all Water Quality Assessment Categories 2, 4, and 5 labeled.

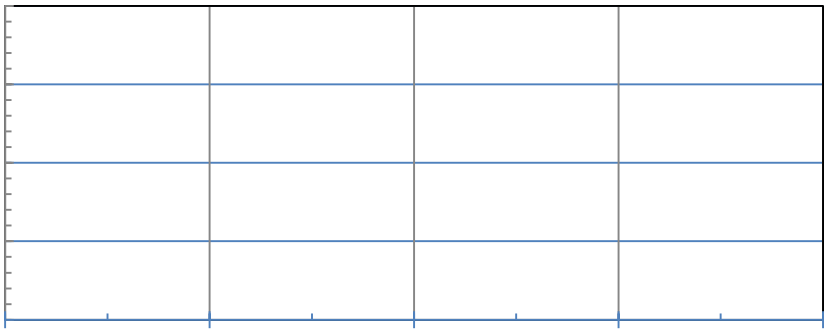
The water quality parameters of concern in the East and West Branch LeClerc Creek subwatersheds are water temperature and fecal coliform. High water temperatures are commonly influenced by a lack of sufficient shade, over widened stream channels, and excessive sediment. Bacteria from fecal matter enter 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 (FC) monitoring on the Colville National Forest has shown that some stream reaches have FC levels not meeting state standards. There are a mix of stream reaches not meeting state FC 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 FC contributions to streams from wildlife. In some instances, stream reaches with high FC levels also have high beaver/otter activity. Stream reaches that have FC 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 FC levels through management activities. Research has also shown and demonstrated under proper management actions and appropriate resource conditions, multiple uses (e.g. recreation, range, aquatic resources, timber management, etc.) are compatible with each other (Roche et al., 2013). Watershed function condition is an appropriate leading indicator when making decisions regarding water quality and aquatic habitat (Aron et al. 2013). 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 and a Middle Branch LeClerc Creek reach did not meet state standards[8].

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 as influenced by hyporheic exchange and subsurface geology. 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.

Currently, the water quality parameters impairing East, West, or Middle Branches of LeClerc Creek or their tributaries are sediment, water temperature, and fecal coliform. These parameters are known to be affected by grazing based on current research (Hudson 2008, Maloney et al.

[8] A site must have less than 10% 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 T36R44 met standards with one exceedance in 11samples and the Middle Branch Leclerc site in section 29 of T36R44 did not meet standards with four exceedances in 11samples.





1999). Figure 8 shows the exceedance for temperature in Middle Branch LeClerc Creek occurring during the months of July and August of 2010, 2013, and 2014. Data from 2011 and 2012 were lost due to vandalism of the data loggers.

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

temperatures exceeding the state water quality standard of 16°C by early July and continuing to exceed throughout the summer into late August. This trend can be observed in Figure 8 where temperatures in Middle Branch LeClerc Creek were in exceedance 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/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. 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 with the state water quality standard of 16º or lower is 84%, an increase of 24% (i.e., canopy cover needed [84%] – existing canopy cover [60%] = increase in canopy cover needed [24%]).

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.

Stream segments are defined in this document using the Rosgen (1996) channel types. Using a modified Rosgen (1996) level B methodology, 55 stream surveys within the analysis area were performed by the Forest Service in summer 2008 and 2009 (Table 24). These surveys indicate a variety of channel conditions including sediment supply, stream bed stability, width/depth condition, and stream type. These surveys provide an indication to the geomorphologic condition of the area streams and the overall condition of the subwatershed.

Table 24. 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

Subwatershed	Named Streams	# stream Surveys	Condition per stream survey
Dry Canyon Catchment	Cato Creek, Tioga Creek	14	Excellent=0, Good=10, Fair=4 , Poor=0

The surveys were conducted on main channels (Table 24) and tributaries. Stream types A, B, C, E, F, and G (Rosgen 1996) were identified. Channel morphology predominantly rated good or fair condition. There were zero excellent ratings and three poor ratings: two poor ratings were located in East Branch LeClerc Creek in the East Branch LeClerc Creek subwatershed and one was located in Lower White Man Creek in the West Branch LeClerc Creek subwatershed. One location is downstream of a naturally unstable slope that is a source of sediment input for East Branch LeClerc Creek.

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, many of which were included in the essential projects list under the Watershed Condition Framework Watershed Action Plan (See Other Watershed Activities: Homesteading and Timber Harvesting Section). 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.

The Dry Canyon Catchment overall is in good condition. The Dry Canyon catchment is a narrow valley with a limited number of acres in meadow status. The Dry Canyon pasture has had very little impact over the past few years (Figure 9).

Figure 9. Dry Canyon Meadow

Vegetation along stream banks is an important element of flood control, providing roughness and erosion control. Where vegetation is lacking, stream reaches have a higher capacity for increased velocities and erosion which has been shown to affect fish habitat and health (Gunderson, 1968). 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% forest plan standard at both collection periods, it also shows a downward tendency from 15% to 19% as monitored by the MIM protocol over the 5 year period. In 2008 the allotment was permitting 136 cow/calf pairs. 2010-2012 season stocking rates were 101 cow/calf pairs. In 2013, the allotment permitted 101 cow/calf pairs and authorized 85 cow/calf pair 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.

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.

In summary, 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/fair condition and are functioning at risk (Table 24). 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.

Effects

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

Hydrologic and Pasture Environment Effects

Four alternatives are being considered for the LeClerc Range Allotment Management Plan: Alternative A (No Change - existing management), Alternative B (No Action - No Grazing), Alternative C, and Alternative D. A list of the alternatives not analyzed and reasons for the decision to not analyze can be found in chapter two of the LeClerc Range Allotment Management Planning DEIS.

Direct impacts to the East and West Branch LeClerc Creek subwatersheds and Dry Canyon catchment have occurred as a result of historic fires, prescribed burning, homesteading, grazing, road building in conjunction with timber harvest, firewood cutting, and recreation (e.g. dispersed camping, off-highway vehicle (OHV) use). 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/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, wetland meadows).

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.

Alternative A – No Change (Current Management)

Direct and Indirect Effects

This alternative would authorize grazing under the existing management plan.

There would be no change to existing allotment or pasture boundaries or season of use. Fourth of July pasture would continue to be available for cattle use. Pasture rotations would continue as is. Current cattle trails would continue to be used and cattle would continue to drift back outside pasture and allotment boundaries throughout the season, predominantly Lower Bunchgrass pasture and outside of the allotment. This would be expected to result in continued higher than desired impacts to localized areas of Middle Branch LeClerc Creek as well as drift off the allotment into East Branch LeClerc Creek. Some cattle would also continue to drift into the Caldwell Lake and West Branch LeClerc Creek area which are predominantly located outside of the allotment on private ground. Other drift occurs along a cattle trail which crosses West Branch LeClerc Creek in Section 8 of T. 36N R. 44E. This drift appears to allow cattle to hang out in RHCAs of Middle Branch LeClerc Creek and other nearby tributaries and lakes. The result likely contributes to continued impacts to hydrologic function and water quality from compromised stream bank stability, reduced vegetation complexity, over widened stream channels, and elevated stream temperatures, sediment loading, and bacteria counts.

The permitted number of cow/calf pairs (101) would remain the same. Effects of the number cow/calf pairs would continue to be similar to the current management of the herd.

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. This exclosure would help reduce and possibly eliminate cattle impacts to stream reaches on Lower Middle Branch LeClerc Creek. Existing condition of this area lacks vegetation with age diversity, shade, and stream bank stability that may be caused by grazing and/or recreation depending on the site. Other localized areas with high impacts would likely continue to be impacted at the same level without the implementation of needed brush barriers and/or fences to make the pasture rotations effective. Cattle guards and fencing would remain and would be

expected to receive annual maintenance to maintain or improve current effectiveness. Additional cattle guards and fencing identified in alternatives C and D to manage the herd and reduce drift would likely not be installed.

Currently, there are no water developments/troughs in the LeClerc Creek allotment. Developed hardened crossing and undeveloped crossing sites are predominantly located on Middle Branch LeClerc Creek, Mineral Creek, Red Man Creek, and West Branch LeClerc Creek. 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.

Current monitoring would continue to occur just below Stimson property line in T36R44S20, and in the upper stream reach located in T. 36, R. 44 E., section 10 SE¼; four locations on tributaries to West Branch LeClerc Creek in T. 36, R. 44 E., section 04; T. 36, R. 44 E., section 05; T. 37, R. 44 E., section 34; and T. 37, R. 44 E., section 26; Whiteman Creek in T. 37, R. 44 E., section 29; Redman Creek in T. 37, R. 44 E., section 31; Cottonwood Lake in T. 37, R. 43 E., section 27; and Fourth of July Creek in T. 35, R. 44 E., section 04. Current PIBO monitoring site on the Middle Branch LeClerc Creek below Hanlon meadow would be relocated, since the POPUD is expected to install an exclosure around this reach from the bridge on NFS road 1935000 upstream to the exclosure below the holding pen (FSC 2012; USDA 2010).

Forest Plan Compliance

Current conditions are not meeting Forest Plan future desired conditions such as minimization of Stream Class I and II crossings, riparian habitat protection and/or recovery (p.4-63), nor the Forest Plan management objective to make efforts to minimize conflicts of livestock use with riparian values (p. 4-14).

This alternative would not meet Forest Plan standards and guidelines such as:

- Comply with State requirements in accordance with CWA for protection of waters of the State of Washington in that current BMPs would not be identified nor implemented and monitored; does not emphasize management of native fish species habitat (p.4-43);
- Comply with State requirements in accordance with CWA for protection of waters of the State of Washington (p.4-51). Army Corps of Engineers and Washington Department of Ecology 404/401 permit (i. e. Regional General Permit – 8 for National Forests in Washington State) does not allow hardened crossings in critical habitat.
- Degradation of fish habitat can be feasibly reduced (p.4-43);
- Further management of allotment is necessary to emphasize protection and improvement of riparian areas which are to be given preferential consideration when conflicts occur among land use activities (p.4-53);
- Maintaining State water quality standards (P. 4-44); TMDL temperature impaired reaches continue to be utilized reducing/maintaining shade below site potential.

INFISH standards and guidelines that have not been met include:

- Locating livestock handling and/or management facilities outside of Riparian Habitat Conservation Areas where feasible alternatives are present (p. A9 GM-2);

- Livestock trailing, bedding, watering, salting, loading, and other handling efforts not limited to those areas and times that would not retard or prevent attainment of Riparian Management Objectives or adversely affect inland native fish (p. A9 GM-3).

Alternative B - No Action (No Grazing)

Direct and Indirect Effects

This alternative would eliminate impacts from grazing through termination of the grazing permit. 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 in those localized areas currently impacted.

This alternative would not implement adaptive management since cattle grazing would no longer be permitted on the current LeClerc Creek allotment on National Forest Service public lands. The allotment would be closed within 2 calendar years after completion of the grazing season once the decision for this DEIS is signed 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). Monitoring of resource conditions are recommended to determine the level and rate of effectiveness that discontinuing grazing on this allotment would have on the affected resources, provided personnel and funding permit. Change in livestock numbers would decrease to zero. Timing of grazing would be changed to zero days. No new range improvements would be necessary. Fencing and cattle guards would be identified for removal as funding permitted. Riparian areas with indication of being in poor or fair condition would be identified for stream restoration opportunities through Watershed condition Framework process. Hardened crossing structures would be removed and stream channels restored to a natural condition which mimics the up and down stream conditions adjacent to the site where funding permits. Materials removed would be hauled off site to be properly disposed of and not left to compromise area streams. Improvements at the Hanlong Meadow holding pen and Diamond City corrals would not be necessary. No vegetation barriers would be necessary to control drift between pastures or out of the allotment.

Overall, the benefits of this alternative to the hydrologic resource, as compared to the other alternatives, are the most advantageous. Removing cattle from this area would be expected to allow sensitive stream reaches and wetland meadows and riparian areas with high cattle use, within the West and East Branch LeClerc Creek subwatersheds, to improve and move towards a properly functioning condition.

NFS road 1935117 along Middle Branch LeClerc Creek would likely be fully obliterated (approximately 500’) under this alternative. Relocation of NFS road 1935116 would not be necessary for range access, but would still be completed for recreation access.

Forest Plan Compliance

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) Streams and riparian conditions would be expected to fully recover and support fish populations under normal climatic conditions; existing hardened crossings would be removed provided funding is available; water quality 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.); cattle impacted riparian areas would stabilize and resource conflicts would be reduced and riparian values emphasized (Forest Plan pp. 4:62-65); 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; restoration of natural timing and variability of the water table elevation in meadows and wetlands; restoration of diverse and productive native plant populations in riparian zones; livestock handling facilities would be removed (provided funding is available) and riparian areas would benefit; unnecessary impacts from livestock trailing and watering would cease to occur and riparian areas and streams effected by current use patterns would be expected to move towards functioning properly; recent and future aquatic restoration efforts would be expected to continue and provide ecological integrity and obtainment of riparian management objectives more quickly (INFSH, pp. A.1-9).

Alternative C - Proposed Action

Direct and Indirect Effects

The greatest beneficial effect to the East Branch LeClerc Creek subwatershed is expected from changes to the allotment and pasture boundaries. Impacts to hydrologic function in Lower Bunchgrass are expected to decrease within the riparian area along lower reaches of Middle Branch LeClerc Creek. This expected decrease in hydrologic effects 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 holding pen.

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 (T. 36, R. 44 E., sections 3 and 4) below the NFS road 1935000 crossing (T. 36, R. 44 E., section 33), West Branch LeClerc Creek reach in T. 36, 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, R. 44, sections 18 and 19). These areas are to be monitored (see monitoring section of this report) and adaptive management actions applied to mitigate impacts where determined necessary. Incorporating adaptive management practices would allow changes to occur as needed and as determined by ongoing monitoring of key locations which have been identified by the Interdisciplinary Team. Adaptive management actions could include a change in the number of authorized cow/calf pairs, a change in the grazing season, a change in the dates of authorized use in a given pasture, or new range improvements such as fencing, brush/debris barriers, enhanced range riding efforts, and/or new water developments. Sites where new range improvement projects are proposed for construction would have all applicable surveys completed and clearances/permits issued. If monitoring is not performed or adaptive management is not

implemented, adverse effects to Middle and West Branch LeClerc Creeks and their tributaries would be expected to increase.

No change is proposed in the current stocking rate of 101 cow/calf pairs. 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 (Figure 10), Upper Bunchgrass and Mineral Creek pastures). Effective pasture boundaries are expected

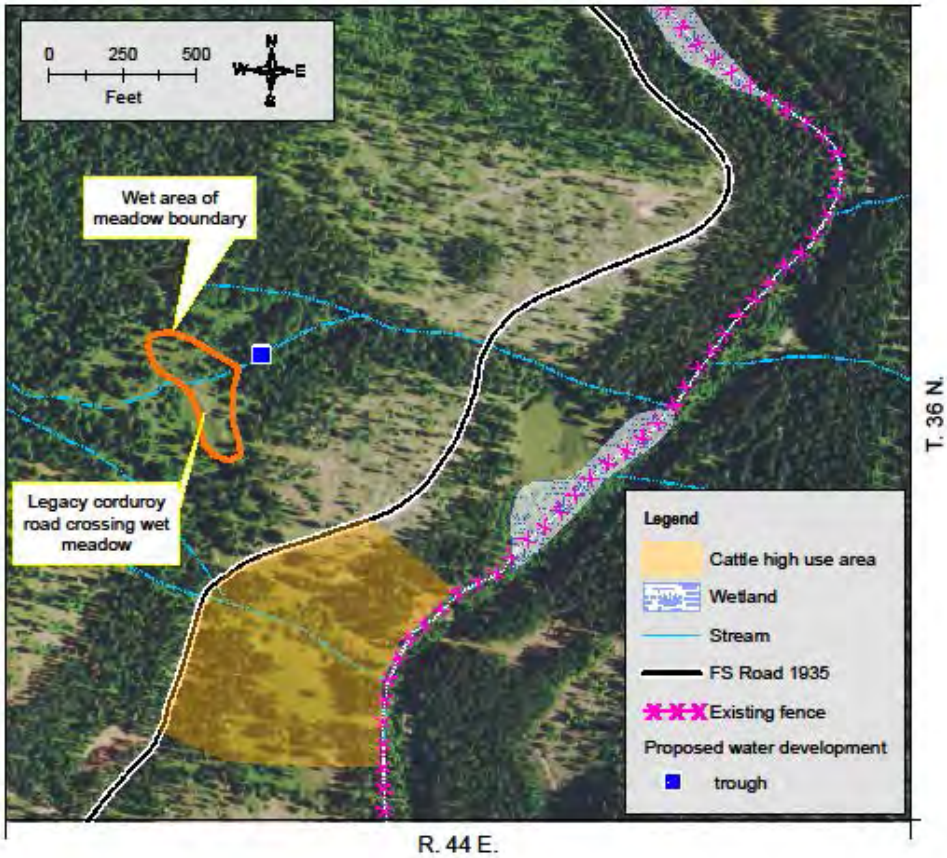


Figure 10. Lower Bunchgrass Pasture With High Cattle Use and Proposed Trough Location

to be implemented and are 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.

Predominant cattle use in the upper pastures tends to occur along Mineral Creek, Whiteman Creek, and West Branch LeClerc Creek. Mineral Creek, Whiteman Creek, and West Branch LeClerc Creek have adjacent meadows that have portions which are perennially or intermittently wet due to springs and steams that flow through them (e.g. riparian area adjacent to north side of

West Branch LeClerc Creek in T. 44, R. 36 E., section 08 N½. These wet meadow areas are likely to have increased cattle activity during the respective period of use in each pasture, provided effective boundaries are created between pastures; however monitoring and adaptive management implementation is expected to mitigate use and provide appropriate level of protection to aquatic resources. If monitoring is not performed or adaptive management is not implemented, adverse effects would be expected to increase in this area.

Grazing in Upper Bunchgrass pasture is predominantly limited to upland forage and road/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/stream crossings along NFS road 1935000 is recommended (see monitoring section) and would determine the need for adaptive management actions to be or not be implemented.

Overall impacts to the hydrology of East Branch LeClerc Creek subwatershed are expected to reduce adverse effects. A 53% reduction in streams within the pastures of the East Branch LeClerc Creek subwatershed is proposed (Table 25). 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% to less than 14% of the subwatershed (Table 25). 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. With appropriate placement of the trough, minimal to no adverse effects would be expected to occur in the surrounding riparian management area.

The overall impacts to the hydrology of West Branch LeClerc Creek subwatershed are expected to increase in adverse effects. A 12% increase in streams accessible by cattle is proposed by the changes to the pasture boundaries within the West Bank LeClerc Creek subwatershed (Table 25). 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. 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.

Table 25. Pasture and Watershed Statistics for Alternative C

Subwatershed	Pasture	Stream miles	% Stream Miles increase or Decrease	Subwshd acres	Pasture Acres	% past / Subwshd
East Branch LeClerk Creek	4th of July	0	-53% 18 mi decrease	26,641	0	0%
	Lower Bunchgrass	17			3,478	13%
	Upper Bunchgrass	0.5			157	<1%
West Branch LeClerk Creek	Upper Bunchgrass	33	**12% 8 mi increase**	21,654	5,254	24%
	Mineral Creek	25			4,838	22%
	Lower Bunchgrass	2			894	4%
	Dry Canyon	15			2,772	13%
Maitlen (East of Pend Oreille River)	Dry Canyon	11	**10% 1 mi increase**	22,040	3,245	15%
	Mineral Creek	0				

The overall impacts to the hydrology of Dry Canyon catchment are expected to be an increase in adverse effects. A 10% increase in streams within the pastures of the Dry Canyon catchment is proposed (Table 25). Dry Canyon pasture is likely to have limited use of up to two weeks, typically at the end of the season in October. Current patterns of use are cattle that drift or are driven into the pasture with the remainder of the herd being picked up at the holding pen or the Diamond City corrals in Lower Bunchgrass pasture. This pattern of use is expected to change with the increased monitoring of cattle movement with the intention of driving the whole herd to the Dry Canyon pasture north of Caldwell Lake. 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. The effects of cattle movement into the Dry Canyon pasture is highly likely to adversely affect stream reaches retaining water that are already not properly functioning aquatic systems (see fisheries report: PIBO data), although highly unlikely to have adverse down-stream water quality impacts since the streams subsurface and then go dry in late season.

Much of the middle and upper reaches of West Branch LeClerc Creek are located in a geological area rated as highly unstable and prone to mass wasting (WADNR, 1997). 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. 36 N., R. 44 E., section 18. Continuing to move cattle on unstable slopes could weaken the slopes and result in additional slope failures.

General locations for potential future water development sites have been identified within the riparian management zone of West Branch LeClerc Creek. Development of these sites would be expected to be placed outside the RHCA when implemented to avoid increased adverse effects to West Branch LeClerc Creek and the surrounding RHCA management zone. These sites would receive concurrence from Range, Fisheries, Hydrology, and Soils prior to implementation. The third site is located in SESE corner of section 5 of T. 36 N., R. 44 E. adjacent to a pasture boundary where drift is known to occur across the boundary between the Mineral Creek and Lower Bunchgrass pastures. An alternative site is recommended to be relocated to an upland location that would draw the cattle away from West Branch LeClerc Creek and the pasture boundary. Two sites have been identified in the upper reaches of West Branch LeClerc Creek in the area of proposed road relocation. These two sites have not been ground truthed and therefore a specific location is not known. Regarding location, further analysis and site consensus between Range, Fisheries, Soils, and Hydrology specialists would occur prior to implementation of these future potential water developments.

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. A study by Willms et al. (2002) identified cattle use was greatest at watering sites with the lowest level of bacteria when comparing trough sites to ponds with direct cattle access. 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 placement of troughs should be limited to areas not already experiencing high utilization or over grazed areas to draw cattle to areas which previously received little or no utilization to be effective..

A two week shift in the timing of grazing is not expected to result in any change to the hydrologic effects of cattle grazing in the West and East Branch LeClerc Creek subwatersheds. In combination with improved boundary effectiveness and pasture rotation efforts, it is expected the use period would improve hydrologic conditions in each pasture by allowing vegetation to mature and provide the appropriate levels of shade and bank stability.

Range improvements that have been identified include fencing along allotment and pasture boundaries, removal of fencing no longer applicable to the management of the allotment, installing or relocating cattle guards, improving stream crossing sites with hardened crossing areas, and water developments. The effects of these efforts to the hydrologic 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 unauthorized use in localized riparian areas and wetland meadows during pasture non-use periods, and drawing cattle away from the main stream channels by developing trough sites in underutilized upland areas. Sites for properly designed hardened crossing have been identified for construction or reconstruction which is expected to decrease the amount of unstable stream channel. Monitoring would determine if and when adjustments and adaptive management activities/tools are necessary to implement. 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.

A design criterion that is expected to provide additional improvement opportunity for the streams in this area includes operative pasture boundaries that would support effective pasture rotations. 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.

Of the additional 2,765 acres of land proposed to be added to the Dry Canyon pasture in the West Branch LeClerc Creek subwatershed, approximately 40% is private ownership. Due to the checkerboard ownership in this area, fencing in this area to reduce drift may be challenging and cattle drifting into the private areas along West Branch LeClerc Creek County Road 3503 might cause indirect effects to water quality in the surrounding glacial pothole lakes within this subwatershed. The proposed fencing between the proposed Mineral Creek and Dry Canyon Pastures near the southwest allotment boundary is expected to be reinforced and may provide the desired reduction in drift into the Caldwell Lake area and the additional acreage being added to the Dry Canyon pasture. No additional fencing would be placed along the County Road 3503 to reduce access to Caldwell Lake. Monitoring of cattle drift in this area would identify if additional fencing within the Dry Canyon pasture would be necessary to keep the cattle from drifting off the allotment. Grazing of this new portion of Dry Canyon pasture is not to occur beyond incidental grazing during trailing activities between Mineral Creek and Dry Canyon pastures since this area was only added for the purpose of trailing. In recent years, the movement of cattle between Mineral Creek and Dry Canyon pastures was permitted to occur the last two weeks of the grazing season and future use is expected to be similar.

The design criterion identifies closure of the trail in section 8 of T. 36 N., R. 44 E. by creating brush barriers by falling trees into the trail or fencing to curtail drift between Mineral Creek and Lower Bunchgrass pastures. Confidence level for this action to be successful is low due to surrounding low relief topography and open mature forest canopy.

Forest Plan Compliance: Alternative C

Alternative C, fully and effectively implemented, will comply with Forest Plan standards when the actions described below occur.

Hardened crossings and water gaps in critical habitat are 404/401 permitted and meet State requirements in accordance with the CWA for protection of waters of the State of Washington (p.4-51) and maintain water quality parameters within State water quality standards (p. 4-44). Currently, an Army Corps of Engineers and Washington Department of Ecology 404/401 permit is not in place. The RGP-8 for Washington State National Forests does not allow hardened crossings or water gaps in designated Critical Fish Habitat. To be in compliance with Forest Plan standards and guidelines, an individual approved 404/401 permit would need to be obtained for hardened crossings and water gaps in critical habitat. 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 identified for this project (p. 4-51).

Management of native fish species habitat would be further emphasized (p.4-43). This would be accomplished by relocating handling facilities outside of riparian habitat conservation areas (INFISH p. A9 GM-2) in critical habitat and fencing riparian areas of tributaries and main stem of West and Middle Branches of LeClerc Creek frequented by cattle and resulting in bank sloughing and widening of stream channel (resulting in potential further impacts to stream temperatures and excessive sedimentation).

Continued impacts and conflicts of livestock use with riparian values are mitigated through efforts to minimize impacts by implementation of adaptive management actions per annual monitoring results (p. 4-14). Final adaptive management action to be taken may be closure of the allotment.

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. 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) and be in compliance with Forest Plan standards and guidelines and attainment of Washington State water quality standards per CWA.

Alternative D – Modification of Proposed Action

Direct and Indirect Effects

Proposed changes to the allotment and pasture boundaries in this alternative are likely to have an increase of adverse effects 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 due to streams without current impacts being included within the proposed pasture boundary.

The POPUD fence along the lower section of Middle Branch LeClerc Creek would need to be continued on the southwest edge of Middle Branch LeClerc Creek to complete the partially fenced exclosures. About a 3,700 foot temperature impaired reach of Middle Branch LeClerc Creek, located on private ownership, would not be fenced in section 21. Without the exclosure fencing in section 21 on this private ground, it is reasonable to expect adverse effects to the subwatershed as a whole. 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. A direct effect of cattle using this area to cross this impaired reach is likely to result in adverse effects to the impaired stream reach as compared to alternative C.

Of the approximately 3,000 acres being added to Lower Bunchgrass pasture in alternative D, about 2,000 acres (or 67%) are private ownership. Five additional tributaries to East Branch LeClerc Creek would be included in the allotment and be accessible to cattle compared to alternative C.

An additional 1,000 feet of sensitive riparian[9] reach of lower Middle Branch LeClerc Creek would be accessible to cattle until POPUD fencing is completed after a signed decision for this DEIS as compared to alternative C. The majority of this 1,000 feet reach would be confined by proposed fences in alternative D and has the potential to concentrate cattle use in this wetland. This reach is located in a wide flood plain/wetland complex with an alder and willow shrub component, and includes braided stream with tributaries. Range of cattle number between 2 to more than 30 and remain in the area until herded back to appropriate pasture, sometimes repeatedly throughout the non-use period of Lower Bunchgrass pasture (2011-2014 field observations).

Until the POPUD fencing project is completed, adverse impacts to these reaches of Middle Branch LeClerc Creek and East Branch LeClerc Creek tributaries are likely. After the POPUD fencing project is completed, the impacts discussed here would likely be restricted to the reach of Middle Branch LeClerc Creek located in section 21 of T. 36, R. 44 on private ownership which would be the dominant access point to the allotment acres south of Middle Branch LeClerc Creek.

The 13 acre holding pen located at the southern edge of Lower Bunchgrass pasture is proposed to be a separate pasture with the name Hanlon Meadow. The Hanlon Meadow is proposed to be available for grazing throughout the season until thresholds are met. Over half of the holding pen area is a wetland/stream complex. Hoof punching has adversely affected the stream and wetland morphology both inside and outside of Hanlon Meadow. Use of this pasture throughout the grazing season could have detrimental effects for the wetland and tributary to Middle Branch LeClerc Creek located within the proposed Hanlon Meadow pasture.

Overall impacts to the hydrology of the East Branch LeClerc Creek subwatershed would result in increased adverse effects from concentrated cattle use to reaches of Middle Branch LeClerc Creek and tributaries on the north side of East Branch LeClerc Creek. The affected acres of East Branch LeClerc Creek subwatershed are expected to remain similar to the existing condition with about a 1% decrease in area impacted in the subwatershed (Table 25 and Table 26). An 8% decrease in streams located within the pastures of the East Bank LeClerc Creek subwatershed is proposed. 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. Approximately 33 miles of streams within the Middle and East Branches of LeClerc Creek would be located within the Lower Bunchgrass pasture with this alternative, as compared to 17 miles in alternative C, all of which would be accessible to cattle due to the low relief topography in East Branch LeClerc Creek subwatershed. Removing the Fourth of July pasture and adding the ground between Middle and East Branches of LeClerc Creek concentrates the impacts to the northern portion of the subwatershed on streams that are identified as Bull Trout Critical Habitat and tributaries to these streams. Tributaries with potential to most likely have increased impacts in the East Branch LeClerc Creek subwatershed are those with proposed stock troughs in high cattle use areas and on the north side of East Branch LeClerc Creek.

Confidence level is moderate for effects to the Upper Bunchgrass, Mineral Creek, and Dry Canyon pastures to be similar to alternative C; with exception of nearly 2,200 acres being added to Mineral Creek pasture within the Dry Canyon catchment. The streams located in this area

[9] Sensitive riparian area description: This wetland area often floods in the spring and typically does not dry out until mid to late summer, presenting soft soils and open access to the stream which is easily impacted and adversely affected by cattle use. Vegetation is dominated by grasses and sedges combined with woody shrubs of willow and alder.

(Cato, Tioga and unnamed tributaries), may have increased impacts, depending on the amount of active herding of the cows into this area during the pasture use period and would be determined through monitoring. The meadows adjacent to north side of West Branch LeClerc Creek in T. 44, R. 36, section 8 N½, would be expected to continue to receive similar high use relative to the existing condition and highly likely to increase during the Mineral Creek pasture period of use after effective boundaries are implemented. The same design criterion and adaptive management strategies suggested in alternative C to support recovery of stream channel morphology and ultimately improve water quality in this area are operative pasture boundaries that would support effective pasture rotations. 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.

The overall impacts to the hydrology of West Branch LeClerc Creek subwatershed and Dry Canyon catchment are expected to be similar to Alternative C. The main difference for the Dry Canyon catchment is a 110% increase in streams 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. Limited effects to these streams are expected as long as the area is grazed in mid to late summer.

There is no change to potential water development sites, timing of grazing, improvement or implementation of new hardened crossing sites, or removal of range improvements no longer necessary for the operation of the allotment relative to alternative C.

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. Concerns with glacial pothole lakes in the area such as Caldwell Lake are not located within the allotment boundaries and effective pasture boundaries are not easily achieved on county roads and private land ownership. An increase in impacts to these lakes may occur with the additional acres being added to the Dry Canyon pasture. 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 Forest Service 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 will remain just outside of the allotment to the west of the 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.

Table 26. Pasture and Watershed Statistics - Alternative D

Subwatershed	Pasture	Stream Miles	% Stream Miles increase	Subwshd acres	Pasture Acres	% past / subwshd
EBLC#	4th of July	0	-8%	26,641	0	0%
	Lower Bunchgrass	33	34 mi		6,520	24%

	Upper Bunchgrass	0.5			157	< 1%
WBLC	Upper Bunchgrass	33	**12%**	21,654	5,254	24%
	Mineral Creek	25			4,847	22%
	Lower Bunchgrass	2	**75 mi**		894	4%
	Dry Canyon	15			2,772	13%
Maitlen (East of Pend Oreille River)	Dry Canyon	11	**110% (11 mi added)**	22,040	3,245	15%
	Mineral Creek	10			2,176	10%
Catchment				*Cat. Acres*		*% Past /Cat.*
Dry Canyon Catchment	Dry Canyon	11	**110% (11 mi added)**	9,500	3,245	34%
	Mineral Creek	10			2,176	23%

[#] The decrease in stream miles in the EBLC subwatershed is a balance between a 94 % increase in 10 stream miles in Lower bunchgrass pasture and a 100% reduction of 13 miles in fourth of July pasture.

A weak pasture boundary intersected by a well-used cattle trail located in section 8 of T. 36, R. 44 E. has been discussed in alternative C, and design criteria for Alternative D would implement a brush barrier to restrict cattle use in the area. This barrier would have beneficial effects to this reach of West Branch LeClerc Creek with effective construction as determined by monitoring. Confidence level for effective construction of this brush barrier is low due to surrounding topography.

Forest Plan Compliance: Alternative D

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, particularly in the Lower Bunchgrass Pasture design elements. The design elements in Alternative D for Lower Bunchgrass Pasture recommend enclosure fencing around sensitive wetland/stream complex in bull trout critical habitat of Middle Branch LeClerc Creek at the southernmost end of the pasture. This fencing would concentrate cattle use within the wetland, an area with existing riparian concerns. Second, main access across Middle Branch LeClerc Creek would be limited to a TMDL impaired reach located on a section of private ground owned by Stimson Lumber Company which does comply with state water quality requirements and agreements between the Colville National Forest and Washington State Department of Ecology.

Otherwise, when Alternative D is fully and effectively implemented Forest Plan standards and guidelines compliance would occur when:

- Hardened crossings and water gaps in critical habitat are 404/401 permitted and meet State requirements in accordance with CWA for protection of waters of the State of Washington (p.4-51) and maintaining water quality parameters within State water quality standards (P. 4-44). Currently, Army Corps of Engineers and Washington Department of Ecology 404/401 permit is not in place. The RGP-8 for Washington State National Forests does not allow hardened crossings or water gaps in designated Critical Fish

Habitat. To be in compliance with Forest plan standards and guidelines, an individual approved 404/401 permit would need to be obtained for hardened crossings and water gaps in critical habitat. Further compliance with State water quality requirements in accordance with CWA for protection of waters of the State of Washington would occur through implementation of current BMPs identified for this project (P.4-51).

- Management of native fish species habitat would be further emphasized (p.4-43). This would be accomplished by relocating handling facilities outside of riparian habitat conservation areas (INFISH p. A9 GM-2) in critical habitat and fencing riparian areas of tributaries and main stem of West and Middle Branches of LeClerc Creek frequented by cattle and resulting in bank sloughing and widening of stream channel (resulting in potential further impacts to stream temperatures and excessive sedimentation).

- Continued impacts and conflicts of livestock use with riparian values are mitigated through efforts to minimize impacts by implementation of adaptive management actions per annual monitoring results (p. 4-14). Final adaptive management action to be taken may be closure of the allotment.

- 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 is to occur on the system roads only. 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 in the allotment boundary) and be in compliance with Forest Plan standards and guidelines and attainment of Washington State water quality standards per CWA.

Alternative D is not expected to meet all Forest Plan Desired Future Conditions such as:

- Intensive management of livestock riparian habitat protection and/or recovery not sufficiently emphasized under proposed management (p.4-63). Number of cattle crossings in critical habitat would be increased by new allotment boundaries. Known sensitive riparian areas would be enclosed in this alternative, particularly in the Lower Bunchgrass pasture and an increase in adverse impacts would be expected in these areas.

Effects of Adaptive Management

The following strategies have been identified for implementation when monitoring data concludes resource conditions are not meeting standards:

1. <u>Implement strategies for reducing re-grazing of pastures;</u>
   - 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.

Effects: These actions could range in effects between beneficial, adverse, and no effect (neutral) as well as short term to long term in each case. Shorter use periods in each pasture would be expected to have beneficial short and long term effects. Longer use periods would be expected to have adverse short and long term effects. Additional fencing of sensitive riparian areas would be expected to have beneficial short and long term effects. Increased range riding may or may not have a beneficial effect depending on frequency and number of riders. Altering pasture rotations is a limited opportunity in this allotment due to elevation and pasture size and forage availability. Pasture rotations combined with a reduction in cow-calf pairs may provide an opportunity to graze Dry Canyon pasture early and may have a beneficial effect. Increase in fence maintenance frequency may have a limited beneficial effect; extent of effect depends on extent of fence system and ability for a properly maintained fence system to control cattle movement.

2. Implement strategies for reducing livestock use of riparian habitats;
   - install additional upland water developments,
   - increase range riding.

   Effects: Upland water troughs can be beneficial in drawing cattle away from sensitive riparian areas when installed in low use areas away from high use areas, salt is strategically placed in conjunction with trough location, and range riding is incorporated into management of cows. Trough placement alone may or may not reduce impacts to sensitive riparian areas. The greatest beneficial effect with troughs occurs when fencing of sensitive riparian areas is incorporated. Without fencing, the beneficial effect of implementing troughs is expected to be limited and minimal.

3. Implement strategies for reducing site-specific impacts to riparian habitats / function
   - re-build / armor livestock crossing / watering structures,
   - install exclosure fencing around impacted riparian areas
   - plant native vegetation to shade stream and stabilize banks.

   Effects: Hardened crossings have beneficial effects in limiting impacts to streams and riparian areas when effectively designed, located, and incorporated with exclosures. Planting native vegetation can have a beneficial effect over the long term if protected from grazing and allowed to grow to maturity.

4. Reduce livestock numbers and/or grazing season.
   Effects: reduction in livestock numbers and use periods has the greatest potential to have long term beneficial effects.

The overall effects of implementing these tools and strategies would be dependent on the extent and frequency at which the tools are implemented and are expected to range between minimal/no change to beneficial in the long term to the aquatic environment and water quality condition of the subwatersheds analyzed in this report. 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 towards a functioning condition that would maintain healthy populations of riparian and aquatic species. Our ability to affect change on private ownership would remain limited (e.g. 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 to be necessary.

Water Quality – Comparison of TMDL effects for all alternatives

In certain reaches each alternative could either result in a beneficial upward or an adverse downward trend to the stream reaches identified as impaired. In the East Branch LeClerc Creek subwatershed, the impaired reach of the Middle Branch LeClerc Creek is expected to continue to be heavily utilized under the alternatives A (No Change) and D, likely resulting in a downward trend for TMDL impaired reaches. No cattle utilization of the TMDL impaired reaches of Middle Branch LeClerc Creek are expected under alternative C (Proposed Action) and alternative B (No Action) alternatives and an upward trend to the vegetative condition, an essential stream shading component would be expected and result in a beneficial effect. An improvement in stream side vegetation would be expected to move the impaired stream reach towards the state standard.

To move stream temperatures towards attaining state standards, a healthy and diverse vegetation complexity with appropriate age-diversity is necessary to maintain stream shading and appropriate temperature conditions. Alternative A (No Change) and alternative D would likely result in increased grazing use of the TMDL impaired reach of Middle Branch LeClerc Creek due to the gap in the POPUD fencing at this location on private land. The current monoculture like vegetative condition and lack in age diversity along this stream section would not be expected to improve since this area would likely become a concentration point for cattle use, as a result of both the recent and proposed future fencing as well as the recent road obliteration along the lower reaches of Middle Branch LeClerc Creek.

In the West Branch LeClerc subwatershed, the impaired reach of the West Branch LeClerc Creek would be expected to have similar low-to-moderate use patterns and TMDL conditions are not expected to change under the No Change alternative. Under alternatives C and D, the proposed allotment boundary would include approximately an additional 0.9 miles of TMDL temperature impaired stream, nearly double the amount of TMDL impaired reach of West Branch LeClerc Creek in T. 36 N., R. 44 E. sections 18-19 within the current allotment boundary. Increased cattle utilization along this West Branch LeClerc Creek TMDL impaired reach (Figure 6) could occur if a change in management practice of driving the herd down West Branch LeClerc Creek to move the cattle between Mineral Creek and Dry Canyon pastures, typically near the end of the grazing season in late September, becomes a seasonal practice. Over the long term, a downward trend could result in the riparian vegetative condition and bank stability along the two-mile temperature impaired reach of West Branch LeClerc Creek, previously predominantly located outside of the allotment. Recent management of the allotment has not been using the old railroad grade/closed NFS road 1935105 for several years. Increasing and adding cattle use to riparian areas along impaired stream reaches may result in increased adverse impacts to this reach. The Colville National Forest TMDL Water Quality Implementation Plan, approved by WADOE in 2006, recommends a reduction in cattle use within impaired reaches and associated riparian areas to allow these reaches to recover.

Under alternative B (No Action), cattle use would be removed which may result in improved vegetative health along this 2 mile impaired stream reach in the Diamond City area. Improved vegetative health would be expected to result in increased stream shading and potential to lower stream temperatures towards an acceptable level. The improvement in this area would likely not be measurable when compared to current use patterns under this alternative.

Table 27 provides a snapshot of the relative differences of effects from the project on water quality by subwatershed between alternatives. The differences are based on expected effects to TMDL impaired stream reaches, general effects to water quality parameters (temperature, sediment, or fecal coliform), and changes to address drift concerns that have potential to adversely or beneficially impact these stream reaches.

Table 27. Relative Trend Effects Comparison of Alternatives on TMDL

Subwatershed	Alternatives			
	Alternative A	Alternative C	Alternative D	Alternative B
West Branch LeClerc	NC	**-2**	**-2**	**+2**
East Branch LeClerc	**-2**	**+2**	**-3**	**+4**
Dry Canyon Catchment	No TMDL	No TMDL	No TMDL	No TMDL

Cumulative Effects

For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek allotment analysis areas, refer to Appendix C on page 298.

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, fire wood cutting, recreation, Native American gathering sites, and stream restoration (i.e. road relocations, road improvements, in-stream habitat improvements). Homestead meadows are typically located adjacent to water ways and incorporate a natural meadow or wetland. These localized areas are attractive to grazing as well as recreational use (e.g. dispersed camping, OHV activity) and often result in adverse impacts to the water quality by reducing riparian vegetation, stream bank stability, and shade. Timber harvest and associated road/skid trail construction in the past has occurred within the riparian area. Mixed effects result from timber harvest; negative in that stream access for cattle and recreation is often enhanced and positive in that transitory range lands provide grazing opportunities away from the streams. 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.

Present and reasonably foreseeable future actions on National Forest System (NFS) land in the West and East Branch LeClerc Creek subwatersheds 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, relocate approximately1.8 miles of NFS 1935000 road, a segment that has high sediment delivery to the West Branch LeClerc stream system, and removing legacy crib dams. The Hanlon Fuels and Timber 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 Creek

exclosure 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 Creek (NFS 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 C). The 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.

Conclusion

In summary, alternative B (No Grazing) would have the greatest potential to improve watershed health by allowing altered stream channels and riparian areas of concentrated use to recover and re-stabilize which would move the streams towards a properly functioning condition. Alternative A (No Change) would have the greatest adverse effect to East and West Branch LeClerc Creek subwatersheds.

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 impacts in the East Branch LeClerc Creek subwatershed. Some areas in the East Branch LeClerc Creek subwatershed would be expected to receive an increase in impacts and other areas would be expected to have a reduction of impacts. Impaired TMDL stream reaches would be expected to continue to not meet state standards due to 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. 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 is expected to be a mixed result with some areas receiving greater impacts and others remaining as is. 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. The increase in use along West Branch LeClerc Creek is expected to be of low frequency, however, over the long term, could result in continued impairment of the TMDL identified stream reach. Monitoring is expected to identify a downward, neutral, or upward trend to this reach and adaptive management strategies are expected to be implemented as necessary to maintain or improve the stream reach conditions. Additional impacts to West Branch LeClerc Creek and its tributaries are expected as effective pasture rotations are implemented. Adaptive management and monitoring are expected to find these areas of impacts and to address them in a timely fashion. 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 to 10 years. The combined effects of increased cattle activity and aquatic restoration efforts would be speculative at best and will not be fully known for at least a decade. Through intensive monitoring and implementation of adaptive management, the confidence level 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 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 *(Issue 1)*

Information provided in this Environmental Impact Statement about fisheries and aquatic habitat is excerpted from the LeClerc Creek Grazing Allotment Fisheries Biological Assessment by Cindy Cleveland and Amee Rief, Forest Service Enterprise Team Fisheries Biologists (2015a), and the LeClerc Creek Grazing Allotment Aquatic Specialist Report by Amee Rief (2015b) and edited by Karen Honeycutt, Acting Natural Resource and Wildlife Program Manager (2015). The full text of these reports is incorporated by reference and is part of the project record.

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

A full description of the desired future conditions for the LeClerc Creek allotment analysis area are listed on page 7.

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.

Colville National Forest Land Management Plan (FP) general goals (FP p. 4-1 to 4-2) and the Inland Native Fish Strategy (INFISH p. A-1 to A-2) (US Forest Service 1995) include:

- 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). RHCAs 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/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 following table.

Table 28. INFISH Objectives

Habitat Feature	Interim Objective									
Pool Frequency (key feature)	Wetted width (ft.)	10	20	25	50	75	100	125	150	200
	Pools per mile	96	56	47	26	23	18	14	12	9
Water Temperature (supporting feature)	No measurable increase in maximum water temperature (7-day moving average of daily maximum temperature measured as the average of the maximum daily temperature of the warmest consecutive 7-day period). Maximum water temperatures below 59F within adult holding habitat and below 48F within spawning and rearing habitats.									
Large Woody Debris (forested systems)	>20 pieces per mile; >12 inch diameter; >35 foot length									
Bank stability (non-forested systems)	Greater than 80 percent stable									
Lower Bank angle (non-forested systems)	Greater than 75 percent of banks with <90 degree angle									

Habitat Feature	Interim Objective
Width /Depth Ratio (supporting feature)	Mean wetted width divided by mean depth, <10

Affected Environment

Watershed Population Condition

The analysis area contains portions of the LeClerc Creek watershed. Limited historic information is available for the fish populations of LeClerc Creek, the drainage within the analysis area. LeClerc Creek has been historically stocked with eastern brook and rainbow trout by the state game department.

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 2005). 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 US 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.

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

Forest Service Surveys

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/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.

Table 29 below includes stream survey data for streams within the analysis area.

Table 29. Forest Service Stream Survey Data - Completed using the Forest Service Region 6 Survey Protocol, Pend Oreille Utility District (PUD) protocol, and PIBO monitoring

Stream Name	Survey Method	Stream Reach and Year Surveyed	Length	Avg. Width	Pool Fre-quency (pools per mile)	Large Woo-dy Debris	Bank Stab-ility	Bank An-gle	Wett-ed Width/ Depth Ratio
Dry Creek	PIBO	DMA (Designated Monitoring Area) Site 2013			0		100	141	
Fourth of July Creek	FS	1 (2007)	8,927	4.8	17.2	60			4.3
	PUD	PUD 1	2,019		49.6				
	PUD	PUD 2	818		45.4				
	PUD	PUD 3	2.955		71.3				
	PUD	PUD 4	1,770		65.5				
	PUD	PUD 5	1,430		51.7				
	PUD	PUD 6	2,970		67.6				
	PUD	PUD 7	5,973		47.5				
	PUD	PUD 8	1,312		48				
Middle Branch LeClerc Creek	FS	1 (2005)	3,681	6	39	3			6.9
	FS	2 (2005)	3,956	8	20	17			8.1
	FS	4 (2005)	6,404	7	44	7			5.4
Middle Branch LeClerc Creek (pre-project[10])	PUD	PUD 10	4,149		31.7				
	PUD	PUD 11	1,338		82.9				
	PUD	PUD 3	1,724		22.2				
	PUD	PUD 5	1,038		45.9				
	PUD	PUD 6	1,424		37				
	PUD	PUD 7	3,561		12.1				
	PUD	PUD 8	4,931		29				
	PUD	PUD 9	1,506		38.5				
Upper Middle Branch LeClerc Creek	PUD	PUD 12	984		37.5				
	PUD	PUD 13	365		72.3				
	PUD	PUD 14	2,805		47				
	PUD	PUD 15	3,272		100.3				
	PUD	PUD 16	1,462		39.6				
	PUD	PUD 17	1,619		42.2				
	PUD	PUD 18	2,714		46.5				

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

Stream Name	Survey Method	Stream Reach and Year Surveyed	Length	Avg. Width	Pool Fre-quency (pools per mile)	Large Woo-dy Debris	Bank Stab-ility	Bank An-gle	Wett-ed Width/ Depth Ratio
West Branch LeClerc Creek	FS	1 (2005)	6,623	20	11	18			6.8
	FS	3 (2005)	15,407	28	13	16			7.8
	FS	4 (2005)	9,779	26	4	18			8.5
	FS	5 (2005)	9,877	19	10	26			6.3
	FS	6 (2005)	6,574	16	11	13			4.1
	FS	7 (2005)	9,436	10	21	20			4.6
	FS	8 (2005)	4,066	7	36	78			5.1
	PIBO	DMA Site 2013			32		100	105	
White-man Creek	PUD	PUD RW1	4,316		97.7				
	PUD	PUD WM1	4,720		67.1				
	PUD	PUD WM2	2,412		107.2				
	PUD	PUD WM3	1,740		100.3				
	PUD	PUD WM4	341		77.6				
	PUD	PUD WM5	1,937		111.9				
	PUD	PUD WM6	3,838		115.6				

* Cells that are highlighted do not meet INFISH RMO standards.

Pools per mile

The INFISH pools per mile RMO is not being met in the surveyed reaches in the planning area. Overall, the LeClerc Creek watershed drains an area of decomposed granitic material. Stream bottoms, streambanks, and terraces consist of glacial drift and outwash in upper West Branch, Middle Branch, and the Fourth of July Creeks. Stream bottoms, streambanks, and terraces in the lower reaches of the West Branch and Dry Canyon consist of glacial-lacustrine material. This material is highly erodible, contributing to a high bed load that continually fills in pools.

Large Woody Debris

The INFISH riparian management objective is to have 20 pieces of large down wood (12 inches in diameter at 35 feet from the large end) in each mile of stream. This is achieved through the standard of managing the riparian habitat conservation areas to provide these large pieces of wood to the stream channel (INFISH TM-1b). For West Branch of LeClerc Creek, only reaches 5, 7, and 8 meet this objective. Fourth of July Creek meets this objective. Middle Branch does not.

A majority of the deficient reaches have some commonality in that low levels of large woody debris are most often related to segments of streams with roads located within the riparian area. These roads have eliminated a portion of the potential source area contributing instream wood. For many years increased access from these roads to dispersed recreation sites and for firewood cutting has also reduced contribution of instream wood. Currently, there are very few trees in these valley floors large enough to meet the INFISH criteria for large wood if they were to fall in

the stream. The lack of recruitment sources in these reaches may contribute to the low numbers of large woody debris.

Bank Stability / Bank Angle

The INFISH riparian management objective is to have >80 percent stable banks and >75 percent of banks with <90 degree angle. The two Designated Monitoring Areas (DMA) measured meet the standard for stable banks, but the bank angles do not meet the INFISH riparian management objectives.

Wetted Width Depth

The INFISH riparian management objective is to have a wetted width to depth ratio below 10. This is being met in all of the reaches surveyed.

Temperature

Water temperatures in all three branches of LeClerc Creek have been collected since 2002. The trend in Middle Branch and East Branch LeClerc Creeks has been fairly consistent with temperatures exceeding the state water quality standard of 16 ºC by early July and continuing to exceed throughout the summer into late August. This trend can be observed in figure 9 where temperatures in Middle Branch LeClerc Creek were in exceedance by as much as 3 ºC in 2010, 2013, and 2014. Previous year data consistently show exceedance as high as 6 ºC 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/Diamond City ball field are also in exceedance during the summer months (data available in the project file).

PIBO Monitoring

Kershner and Roper (2010) found that many of the PACFISH/INFISH Biological Opinion (PIBO) Effectiveness Monitoring reference reaches did not meet RMOs, such as wetted width-to-depth, percent undercut banks, number of pieces of large wood, and numbers of days exceeding 15 °C. These authors also stated that the current RMOs were originally designed as an early warning of potential negative effects of land management on stream/riparian conditions, and values that did not meet RMOs were thought to potentially represent unsuitable habitat conditions for important salmonids. Their analysis of data from federally-managed sites in the interior Columbia River basin indicates that the usefulness of RMOs may be questionable. In summary, they found that none of the 726 reference and managed reaches surveyed met all RMOs, and in a previous analysis (Henderson et al. 2005) found that only 2 percent of the reference reaches met the RMO for wetted width-to-depth ratio and that 16 percent met the reference criteria for percent undercut banks.

Natural disturbances play an imperative role in shaping the setting of streams and the conditions that are found within them (Benda et al. 1998). They went on to say that it is apparent that all streams will most likely not meet all habitat objectives during some point in their history as the series of natural disturbances both influences and resets them. In fact, some of the PIBO reference sites come from wilderness areas that have experienced severe disturbance from wildfires and associated debris flows.

Table 30, shown below, describes the PIBO survey results for the LeClerc project area and Table 31 outlines the reference values from PIBO used as measurement indicators.

Table 30. PIBO survey results for the LeClerc project area

Stream Name	Year	Bankfull W/D Ratio	Bank angle (°)	Percent undercut banks (%)	Percent pool habitat (%)	Bank stability (%)
West Branch Leclerc	2003	39.56	115	30	51	98
	2008	28.61	112	28	28	98
	2013	25.75	105	44	32	100
Average		31.31	111	34	37	99
Dry Creek	2003	11.49	134	5	0	98
	2008	16.58	140	3	60	95
	2013	11.84	141	5	0	100
Average		13.30	138	4	20	97

Table 31. PIBO Managed and Reference Mean Values for Selected Riparian, Channel Morphology, and Habitat Attributes

Riparian/Channel Attribute	PIBO Managed Mean	PIBO Reference Mean	RMSE[1]	Source of Information
Bankfull W/D Ratio	23.9	22.6	4.0	Henderson et al. 2005
Bank angle (°)	108.0	99.3	(6.5)	Al-Chokhachy et al. 2010
Percent undercut banks (%)	26.4	32.7		Al-Chokhachy et al. 2010
Percent pool habitat (%)	40.9	43.3	12.9 (5.8)	Al-Chokhachy et al. 2010
Bank stability (%)	74.6	79.9		Henderson et al. 2005

[1]RMSE is an estimate of the potential sampling error for selected stream attributes (a measurement of the temporal variability – based on repeat measures analyses at sites over a 9-year period). Values are from Roper et al. (2010) and Al-Chokhachy et al. (2011).

Using data from the PIBO table (Table 31) to interpret the LeClerc data (Table 30) reveals that bank stability; bank angle, percent undercut banks, and percent pool habitat, meet the PIBO Managed and Reference Mean Values. The data for Dry Creek indicates good bank stability and data for bank angle and percentage pool habitat are slightly below the PIBO estimates. Data for bankfull width to depth ratio for both streams surveyed with the PIBO protocol are outside of the values but appear to be trending toward improvement.

A channel's bankfull width-depth ratio is an important indicator of whether a stream is able to perform the various tasks that lead to a healthy riparian area. This indicator, along with appropriate riparian vegetation, is critically important for a stream to maintain its dimension, pattern, and profile even during moderate to high (10-25+ year return intervals) flow events. If continued monitoring shows that overall channel shape was maintained, the expected outcome will be improvement in the other stream attributes, thereby enhancing habitat complexity.

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. The Middle Branch LeClerc Creek project area is located in sections 16, 20, 21, and 29, T. 36 N., R. 44 E. The Upper Middle Branch LeClerc Creek project area is located in sections 10 and 11 of T. 36 N., R. 44 E. The Whiteman Creek project area is located in sections 5 and 8 of T. 36 N., R. 44 E., and sections 29 and 32 of T. 37 N., R. 44 E. The Fourth of July project area is located in sections 2, 3, 4, 5, and 8 of T. 35 N., R. 44 E. All of these project areas include some lands of other ownership outside of the analysis area.

One of these projects, the Middle Branch LeClerc Creek, has been completed to date. In 2011, the POPUD 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, a 2.6 mile section of stream adjacent road was decommissioned along the Middle Branch. 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 re-contoured to its channel.

Effects

The effects analysis for fish and aquatic habitat, for all alternatives, is in relation to Issue 1 (chapter 1, page 20 of the DEIS). For a complete list of recent or reasonably foreseeable

activities within and adjacent to the LeClerc Creek allotment analysis areas, refer to Appendix C on page 298.

Alternative A – No Change (Current Management)

Direct and Indirect Effects

Issue 1 - Effects of Current and Historic Livestock Grazing on Riparian and Aquatic Functions. Restoration of both channel and riparian habitat is needed to provide for the recovery of bull trout, a listed species, and the continued sustainability of the Westslope cutthroat trout, a sensitive species.

Existing stream and riparian habitat conditions are expected to remain at current levels under this alternative and no range improvements would be added, consequently fish populations would continue to be represented primarily by eastern brook and Westslope cutthroat trout throughout the watershed. The lower reaches also support mountain whitefish, brown and rainbow trout. Approximately 38.2 miles of fish bearing streams would be accessible to livestock including 12.9 miles of designated bull trout critical habitat.

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.

There are no developed water sources within this allotment, so cattle are required to 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 may lead to impacts to stream banks and riparian/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, 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. This exclosure would help reduce and possibly eliminate cattle impacts to stream reaches on Lower Middle Branch LeClerc Creek. Reduction in impacts to other streams would not likely occur since upland water developments 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.

This alternative is anticipated to continue to affect the fish population of LeClerc Creek primarily through the contribution of sediment. High instream sediment levels cause embeddedness of the spawning and rearing and overwintering habitat in this watershed. The condition of the riparian habitat along much of the Middle Branch LeClerc Creek is insufficient to filter soil movement or provide adequate overhead shading and large instream wood recruitment.

Alternative B – No Action (No Grazing)

Direct and Indirect Effects

Issue 1 - Effects of Current and Historic Livestock Grazing on Riparian and Aquatic Functions. Restoration of both channel and riparian habitat is needed to provide for the recovery of bull trout, a listed species, and the continued sustainability of the Westslope cutthroat trout, a sensitive species.

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. 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). Alternative B would remove cattle from riparian areas; therefore they would improve for future sources of large woody debris numbers in the analysis area.

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).

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. 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.

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.

Riparian areas of concentrated use would be identified for stream restoration opportunities. Hardened crossing structures would be removed and stream channel restored to a natural condition which mimics the up and down stream conditions adjacent to the site. No new improvements would need to be installed. 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.

Alternative C – Proposed Action

Direct and Indirect Effects

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 on p. ii.

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 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.

Issue 1 - Effects of Current and Historic Livestock Grazing on Riparian and Aquatic Functions. Restoration of both channel and riparian habitat is needed to provide for the recovery of bull trout, a listed species and the continued sustainability of the Westslope cutthroat trout, a sensitive species.

Table 29 indicates the INFISH standards for pool frequency are currently not being met. Data from the PIBO Effectiveness Monitoring indicate the average percentage of pool habitat (37 percent) is near the average of other managed watersheds in the basin (40.9 percent) and reference conditions (43.3 percent) (Table 30). 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 may 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.

Existing stream and riparian habitat conditions are expected to show improvement under this alternative 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. This is a reduction from the current condition of 8 miles of fish bearing stream and 1.7 miles of critical habitat. Fish populations would also be expected to increase as habitat conditions improve. Juvenile bull trout have been observed in both the West and East Branches indicating some level of reproductive success. Westslope cutthroat populations are more populous in the higher gradient stream segments. The trend of these subpopulations is unclear.

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 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 will 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.

Allotment improvements would move cattle away from riparian areas and help prevent drift through allotment and pasture boundary changes, new fencing, new cattle guards, water developments, and improved stream crossings. Alternative C allows for adaptive management for any future resource concerns that may arise. 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 would be applied to avoid or trend away from any negative effects to riparian or aquatic habitats.

Cumulative Effects of Alternative C

Cumulative effects are spatially bounded 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.

Cumulative effects are temporally bounded to the time frame within 5 to 10 years of implementation, which should encompass the maximum temporal extent of any potential effects.

Present and reasonably foreseeable future actions in the West and East Branch LeClerc Creek subwatersheds include the Hanlon Vegetation Management project, Box Canyon dam relicensing stream habitat restoration projects, replacement of at least seven fish passage barrier culverts, rerouting West Branch LeClerc Creek reach to its historic channel, relocating approximately1.8 miles of NFS 1935-000 road, a segment that has high sediment delivery to the West Branch LeClerc stream system, and removing legacy crib dams.

Continued grazing in riparian areas, without range improvements and adaptive management, may increase sediment input to streams and temperatures in areas that cattle can access riparian areas. Allotment improvements such as fencing, cattle guards and the addition of off channel watering sources would move cattle away from riparian areas for gradual improvement in the baseline condition over time.

Federal and private roads and culverts constructed at road/stream crossings in the planning area have affected streams and riparian areas. Past management activities in the planning area that affect baseline water quality, riparian, and aquatic habitat to varying degrees include road construction and maintenance, wildfire and prescribed fire, timber harvest, grazing, mining, and dispersed recreation. Forest and county road systems can adversely affect streams by increasing sediment loads, changing runoff rates, and altering stream channel morphology. Incorrectly installed or undersized culverts may be fish passage barriers that prevent upstream fish passage, which limits the amount of available, suitable fish habitat. Undersized culverts can affect the stream's ability to convey water and sediment, and represent an increased risk of failure and subsequent erosion and deposition of sediment into stream channels. Culverts directly interact with channels and can affect channel morphology and channel migration patterns, and local hydraulics that may influence the stream channel.

Foreseeable timber harvest and prescribed fire activities within the next 10 years in the analysis area on National Forest System land are not likely to substantially affect water quality, RHCAs, or fisheries due to use of buffers and strict adherence to forestry BMPs. Timber-sale road improvements included in the project design would be expected to reduce sediment delivery from project-area roads through implementation of road best management practices (BMPs). The impacts of roads on water quality would not be altered as a direct result.

The types of future nonfederal activities that can result in cumulative effects could include, but are not limited to, new proposals for residential subdivision, timber harvest and log hauling, operation and maintenance of irrigation dams and diversions, livestock grazing, gravel or other small-scale mining, highway construction, construction or maintenance of utility corridors, crop production, pesticide application, and road and highway maintenance. See appendix C for details of known future activities.

Alternative D – Modification of Proposed Action

Direct and Indirect Effects

Direct and indirect effects are the same as for alternative C with the exception of the following.

Proposed changes to the allotment and pasture boundaries in this alternative are expected to have an increase of effects 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. 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 exclosure 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 Tributary Habitat Restoration Project (THRP). The FSC agreed to defer construction of this fence until the LeClerc Range 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 would not be fenced in section 21 which is not in Forest Service ownership (See appendix A for the detailed alternative D map). 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 2000' of sensitive riparian reach of lower Middle Branch LeClerc Creek would be accessible to cattle. The majority of this 2000-ft. 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.

Issue 1 - Effects of Current and Historic Livestock Grazing on Riparian and Aquatic Functions. Restoration of both channel and riparian habitat is needed to provide for the recovery of bull trout, a listed species and the continued sustainability of the Westslope cutthroat trout, a sensitive species.

Although Table 29 indicates the INFISH standards for pool frequency are currently not being met., data from the PIBO Effectiveness Monitoring indicate the average percentage of pool habitat (37 percent) is near the average of other managed watersheds in the basin (40.9 percent) and reference conditions (43.3 percent) (Table 30). 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 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. 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.

Existing stream and riparian habitat conditions are expected to show improvement under this alternative due to the proposed range improvements (fencing, boundary changes, and water developments) that move cattle away from riparian areas and streams. Alternative D would have 27.5 miles of fish bearing streams accessible to livestock including 12.1 miles of designated bull trout critical habitat. This is a reduction from the current condition of 32.8 miles of fish bearing stream and 12.9 miles of critical habitat. Fish populations would continue to be represented primarily by eastern brook and Westslope cutthroat trout throughout the watershed. Juvenile bull trout have been observed in both the West and East Branches indicating some level of reproductive success. Westslope cutthroat populations are more populous in the higher gradient stream segments where the trend of these subpopulations is unclear.

USFWS 2002 says grazing is of particular concern where allotments are located along spawning and rearing streams. While severe site-specific problems may occur, livestock impacts are generally being reduced through better management practices on public and, to a lesser extent, private lands. Livestock grazing does not represent a major threat to bull trout recovery in this recovery unit but where problems exist, they can be severe (USFWS 2002). Grazing has impacted the Middle and East Branches of LeClerc Creek and some of their tributaries where road access within the riparian areas exists, within meadows primarily along roads and transitory range created by past harvest activity (USFS data in project files). As a result, localized areas with livestock impacts can be found within the analysis area. However, as grazing management

improves and with the implementation of range improvements, riparian conditions should improve and livestock impacts would be localized to relatively small areas.

Alternative D with adaptive management is 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.

Cumulative Effects of Alternative D

Same as alternative C with the exception of those listed below.

Timber Harvest

Harvest on NFS lands during the 1980s were primarily stand replacement or overstory removal of mature timber trees (even age management). Stands of timber were clear cut, or left with a small percentage of mature trees for the purpose of natural regeneration (seed tree and shelterwood silvicultural treatments). Most of the harvest areas were planted soon afterwards. This was eventually followed by noncommercial thinning, in these areas, of any overstocked young stands between 13 and 20 years of age. A majority of the existing riparian vegetation along perennial streams was managed under the designation of stream management units during the time period when even age management was the primary silvicultural treatment.

Shelterwood harvest and commercial thinning (uneven age harvest) have been the predominant mode of timber removal from the 1990s to the present. From 1995 to the present, riparian habitat conservation areas (RHCAs) have been established through Forest Plan direction. Since then, most riparian vegetation in the analysis area has been undisturbed by timber harvest.

Past timber harvesting has resulted in changes in forest cover and hydrology. Timber harvest can increase total water yield, increase peak flows and decrease summer low flows. Timber harvest in riparian areas may also increase water temperature through the removal of overhead riparian canopy and change in summer flows. However, as young trees mature and forest cover increases, any effects from past harvest are expected to decline. All even age harvest areas on NFS lands in the analysis area are in some stage of transitioning into fully functioning timber stands.

Recreation

This analysis area contains dispersed recreation campsites. Most of the camping use occurs along West Branch LeClerc Creek, in a former developed recreational area. These recreation sites usually consist of small areas cleared of woody vegetation within the RHCAs and do not have any foreseeable cumulative effects on fisheries.

Fire

Fire has always played an important role in the disturbance regime of the LeClerc watershed. NFS lands have experienced several stand replacement fires. Large fires burned in the analysis area in the late 1920s and early 1930s. This has resulted in the densely stocked stands of small diameter trees currently seen on the landscape. Since large fires have not recently occurred in the analysis area the current forest canopies are dense (where even age timber harvest has not

recently occurred). The Hanlon project, implemented in 2010, reduced fuel loads in the project area. The effect of fire on the present flow regime and background erosion appears to be minor.

Transportation

Forest and county road systems can adversely affect streams by increasing sediment loads, changing runoff rates, and altering stream channel morphology. Incorrectly installed or undersized culverts may be fish passage barriers that prevent upstream fish passage, which limits the amount of available, suitable fish habitat. Undersized culverts can affect the stream's ability to convey water and sediment, and represent an increased risk of failure and subsequent erosion and deposition of sediment into stream channels. Culverts directly interact with channels and can affect channel morphology and channel migration patterns, and local hydraulics that may influence the stream channel.

Compliance with the Forest Plan as amended by INFISH

Implementation of alternative A would not be consistent with the Forest Plan as amended with 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 allotments 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.

Table 32. Effects Determination for Bull Trout and Bull Trout Critical Habitat

	Determination of Effects	Potential for Incidental Take
Bull Trout	NLAA	No
Bull Trout Critical Habitat	LAA	

NE = No Effect
NLAA = May Affect - Not Likely to Adversely Affect
LAA = May Affect - Likely to Adversely Affect

The table below summarizes the measure by alternative.

Table 33. Summary of Measures by Alternative

Significant Issues	Measures between alternatives (approx. values)	Alternative A (No Change)	Alternative B (No Grazing)	Alternative C (Proposed Action)	Alternative D (Mod. of Alt C)
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	32.8	0	24.8	27.5

Significant Issues	Measures between alternatives (approx. values)	Alternative A (No Change)	Alternative B (No Grazing)	Alternative C (Proposed Action)	Alternative D (Mod. of Alt C)
	accessible to livestock				
	Acres of wetlands accessible to livestock	40	N/A	35	35
	Number of hardened stream crossings for livestock	3	0	5	5
	Number of upland water sources needed (water troughs)	0	0	4	4
	Adaptive management strategy in place?	No	N/A	Yes	Yes

Terrestrial Wildlife Species and Habitats *(Issues 1, 2, 3)*

Information provided in this Environmental Impact Statement pertaining to wildlife is excerpted from the LeClerc Creek Grazing Allotment Management Plan: Biological Assessment of Effects to Terrestrial Wildlife (Borysewicz 2015b). The full text of the biological assessment is part of the project record. This section is organized into the following categories: Threatened and Endangered Species; Sensitive Species; Management Indicator Species; and Landbirds.

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 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

A full description of the desired future conditions for the LeClerc Creek allotment analysis area are listed on page 7.

The management framework for threatened, endangered, and sensitive (TES) wildlife species is provided in existing recovery plans, critical habitat designations, and standards and guidelines in

the Forest Plan (as amended). Management recommendations are also provided in any existing species-specific conservation assessments, interagency guidelines, and related documents. The management framework for management indicator species (MIS) listed for the Forest is provided by standards and guidelines in the Forest Plan (as amended). Management recommendations for MIS are also provided in any 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 direction, by species.

Effects Analysis

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 data collected during field reconnaissance,

Review of timber stand examination data,

Aerial photo interpretation,

Spatial habitat analysis using a geographic information system (GIS).

He 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 on page 298.

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.

Threatened and Endangered Wildlife Species

The LeClerc Creek Grazing 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 wildlife species as threatened or endangered under the Endangered Species Act of 1973 (http: / / www.fws.gov / wafwo / species_new.html). The following table displays information for threatened and endangered wildlife species relative to the allotment. Project effects to those species in shaded blocks in the table will be addressed here.

Table 34. LeClerc Creek Grazing Allotment - habitats for threatened (T), endangered (E), and candidate (C) species listed for the CNF (species in shaded blocks are addressed in this section)

T&E Species	Status	Habitat present?	Documented in area?	Habitat description/other comments
bull trout *(Salvelinus confluentus)*	T	Yes	Yes	This species is addressed in the Fish and Aquatic Habitat section.
Canada lynx *(Lynx canadensis)*	T	Yes	Yes	A portion of the allotment is located on lynx primary range. Lynx occupy higher elevation forests. Foraging habitat is in extremely dense young stands of lodgepole pine, other conifers, or mixed conifer / hardwoods (snowshoe hare habitat). Lynx den in stands having late and old structure with jackpots of down logs (also habitat for red squirrels, an important alternate prey species). Other considerations include habitat connectivity and seclusion from human disturbance (Ruediger et al. 2000).
grizzly bear *(Ursus arctos)*	T	Yes	Yes	The entire allotment is located within the Selkirk Mountains Grizzly Bear Recovery Area. Spring forage habitats for bears include low to mid-elevation riparian areas, meadows, parklands, etc. Summer / fall foraging sites include mid - high elevation, berry producing shrub fields. Grizzlies often den in alpine / subalpine areas with deep soils and where snow tends to linger into the spring. Seclusion from human disturbance is a primary management objective (USDI et al. 1986 and USDI 1993).
woodland caribou *(Rangifer tarandus caribou)*	E	Yes	Yes	The higher elevations of the allotment (above 4,000 feet) are within the Selkirk Mountains Woodland Caribou Recovery Area. 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). Forage during the warm months includes grasses, sedges, forbs, mushrooms, and the leaves of shrubs such as pachistima, prince's pine, huckleberries, and others. Winter diet is mainly confined to arboreal (tree) lichens.
whitebark pine *(P. albicaulus)*	C	No	Yes	This species is addressed in the sensitive plant section.
yellow-billed cuckoo *(Coccyzus americanus)*	T	No	No	The normal range of yellow-billed cuckoo does not include Washington. A single bird was sighted on the Little Pend Oreille NWR in 2012. Two years of follow-up surveys failed to find the bird, which is considered a vagrant. This species requires river floodplains that support dense willow and cottonwood stands (WDFW 1991). This habitat does not occur in the project area but could potentially be found along the Pend Oreille River, about 2 miles west of the allotment.

T&E Species	Status	Habitat present?	Documented in area?	Habitat description/other comments

Effects to Threatened and Endangered Wildlife Species

Canada lynx (threatened)

East of the Pend Oreille River, lands lying roughly above the 3,500-foot contour are within the primary range of lynx. 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. No lynx observations or sign are on record from the LeClerc LAU.

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 (personal comm. with B. Holt 2012). Lodgepole pine and subalpine fir / spruce stands exist in the higher elevation portions of the allotment. Cedar / hemlock stands are common in the allotment, particularly on sheltered aspects and in draw bottoms.

Effects to Foraging Habitats

Alternative A (no change) - Dense plantations and other young, overstocked forest stands would continue to be effectively impenetrable to livestock on the lynx range. Impacts to these snowshoe hare (primary prey) habitats would be insignificant or discountable. Livestock grazing would have no impact on mature conifer trees and cone production; essential resources for alternate prey tree squirrels (alternate prey). Livestock grazing would continue to reduce the biomass and vigor of green forage plants and riparian shrubs on certain stream reaches, as well as on aspen reproduction. These effects to snowshoe hare forage plants/low cover would be of relatively small scale, and mostly occur on gentle topography within the vicinity of key grazable areas such as old homestead meadows.

Alternative B (no grazing) - Livestock utilization of riparian vegetation and aspen reproduction on the lynx range would cease. Low cover for snowshoe hares should quickly improve in density on locally impacted sites. Browse and green forage values could be enhanced on these sites.

Alternatives C and D - Young conifer stands that provide quality habitat for snowshoe hares would continue to remain essentially inaccessible to cattle. Livestock grazing would have no effect to habitat components important to red squirrels such as mature conifer trees, conifer cone production, and overhead forest canopy.

The Fourth of July Pasture and higher elevation areas south of Molybdenite Ridge would be removed from the allotment with these alternatives. The bulk of these areas are on the lynx primary range. Any trails that livestock could use to drift into these areas (and off the allotment) would be effectively blocked with sections of fence, jackpots of felled trees, or other means.

Local impacts from livestock grazing to lynx prey habitats should cease in those areas removed from the allotment. The Dry Canyon Pasture would be expanded with these alternatives, in order to make this pasture contiguous with the rest of the allotment. With alternative D, the Mineral Creek Pasture would be expanded in the southwest corner of the Paupac LAU, in order to include some grazable areas on the shoulders of NFS road 1936. Livestock access to the majority of the acres added to the allotment would likely be precluded by natural barriers such as steep, broken ground, or dense forest stands. Moreover, the net acres of lynx range on the allotment would be reduced by approximately 2,550 acres with alternative C and 280 acres with alternative D, from the present condition.

With alternatives C and D, new cattle guards and allotment / pasture fencing would be installed in strategic locations in order to block animals from drifting between pastures or off the allotment. Cattle distribution in the Lower Bunchgrass Pasture would be improved with the installation of water troughs in upland areas. These new watering sites should enable cows to more efficiently utilize upland forage resources, potentially reducing the amount of time they spend in lowlands and riparian habitats.

Adaptive Management - With alternatives C and D, key riparian areas would be monitored for green forage and riparian shrub utilization by livestock. If the habitat parameters provided in the monitoring and adaptive management plan are not being met, the Forest Service would take steps to reduce grazing impacts to these resources. These could include installing additional range improvements such as pasture fencing, reducing livestock numbers, or reducing the length of the grazing season. The intent would be to initiate and sustain an upward trend in riparian habitat conditions, which should benefit snowshoe hares utilizing these habitats.

Effects to Den Habitat

Alternative A (no change) - Livestock would normally have access to the lynx range well after the initiation of lynx denning. Cattle movement within potential den stands would normally be impeded by dense understory vegetation and coarse woody debris. Thus, the risk of cattle disturbing adults or kittens during this critical life stage would continue to be slight or questionable.

Alternative B (no grazing) - There would be no potential for livestock to disturb lynx den activities.

Alternative C - Cattle movement within potential lynx den stands would continue to be hindered by dense understory vegetation and woody debris. The turn-on date for the allotment would be pushed back from June 1 to June 15, postponing livestock access to the higher elevations. Areas above about 5,000 feet south of Molybdenite Ridge would be removed from the allotment. Thus, cattle use of potential lynx den stands would be reduced in both time and space from the existing condition. The risk of cattle disturbing lynx denning activities should be reduced from the present condition.

Alternative D - Effects to potential lynx den habitat would be the same as for alternative C with one exception; the Mineral Creek Pasture would be expanded by approximately 822 acres in the southwest corner of the Paupac LAU. Several late and old structural stage stands exist in this area that could provide denning opportunities for lynx. However, these stands are characterized by coarse woody debris, dense timber, and scant forage resources on the shaded forest floor. For these reasons, cattle are unlikely to make more than incidental use of these stands.

Cumulative Effects

We must evaluate the cumulative effects of forest management practices within each lynx analysis unit (USDI 2001). The LeClerc Creek Grazing Allotment is the only livestock allotment within the Harvey, Paupac, and LeClerc LAUs. For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek allotment analysis areas, refer to Appendix C on page 298.

In the last two decades, timber sales and road construction on Stimson Lumber Company lands opened up many dense stands and created new pathways for livestock to move through portions of the lynx range. Transitory range for cattle was created in a number of harvest units and on many of the roads, which were all closed to motorized vehicles with gates or earthen berms. Many of these grazable areas persist to this day. Over the same time frame, Whiteman Timber Sale was completed on NFS in the affected LAUs. Harvest units associated with this sale have mostly regenerated to the point where they are no longer providing transitory range for cattle. No new permanent road construction occurred on NFS lands on the lynx range with the Whiteman project.

It is possible that livestock access to some riparian areas and aspen stands was improved due to past timber harvest and road construction. However, streams were given no-cut buffers with all timber sales on all ownerships. In most cases, regenerating conifers and shrubs in timber harvest units reduced the permeability of these stands to livestock within roughly ten years. Dense plantations often became more effective barriers to cattle movement than the forest stands they replaced.

No Forest Service timber sales are presently active or planned in the affected LAUs. Stimson Lumber Company has several active or planned sales in the LeClerc LAU. All of these sales would be located outside the LeClerc Creek Range Allotment. Stimson plans to employ no-cut buffers along streams with these projects (pers. comm. with W. Pierce 2013).

There are a number of on-going or planned habitat improvement projects in the LAUs such as culvert replacements and large wood installation in streams. These projects could remove or damage some riparian vegetation. However, any impacts would be small scale, and the affected sites should quickly re-vegetate. These and other projects (ex. Middle Branch LeClerc Creek Road Relocation Project), are intended to protect or restore riparian habitats. Ongoing activities such as road easements, dispersed recreation, and forest survey / monitoring should have insignificant or discountable impacts to lynx and their prey.

Based on this discussion, we expect continued livestock grazing on the lynx range would have slight or questionable cumulative effects to riparian areas and aspen stands, when coupled with other forest management activities.

Effects Determination

With alternative B (no grazing), any potential impacts of livestock grazing to green forage and low cover required by 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 grazing 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 green forage and low cover for hares within local streamside riparian areas. Aspen regeneration could be locally suppressed. With alternatives C and D, the overlap in livestock and lynx use of the allotment would be reduced in both time and space from the existing condition. Monitoring and adaptive management proposed with these alternatives should lead to improvements in deciduous shrub density and green forage values in locally impacted riparian areas.

The alternatives as proposed would be consistent with existing management recommendations 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 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 sow with cubs. The LeClerc Creek Grazing Allotment lies entirely within the LeClerc BMU.

District records include more than two dozen potential and documented observations of grizzly bears or their sign in the allotment, dating back to 1976.

Livestock/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 herds with food and begin preying on livestock (USDI et al. 1986). This could cause the bear to be relocated or controlled by state or federal wildlife officers.

There have never been any depredations of cattle by grizzly bears documented on the forest. The cattle grazed on the LeClerc Creek Range Allotment give birth off-forest in the winter. Therefore, bears on the allotment do not have access to afterbirth or very young, highly vulnerable calves.

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 (pers. comm. with M. Madel 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. 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 allotment permittee for a number of restricted roads in 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 tallies a small number of entries (typically 0-5) on a given closed road.

Spring Forage - Grizzly bears emerge from the den in late March or April. At this time they are under-weight 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 range 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 Grazing 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 allotment tends to be under-utilized by cattle. Most utilization tends to occur on certain key meadows and riparian sites. In part this is due to poor existing controls over stock movement across the allotment. The key livestock grazing areas in the allotment are potentially among the most productive foraging sites for bears. However, the habitat value of most of these sites is compromised to a great extent by nearby open roads and the associated disturbance from vehicles and human presence. Bears are more likely to access relatively remote, forested wetlands than are cattle. Bears are also more likely to tolerate foraging in inundated wetlands.

In the late 1990s and early 2000s, the Forest Service, Kalispel Tribe, and volunteer groups partnered together to construct several livestock exclosures in the allotment. These fenced exclosures protect some key riparian areas, including a large (15+ acre) wet meadow / riparian shrub complex along Whiteman Creek in T. 37N, R. 44E, Section 32, SW ¼.

Noxious weeds exist in all of the grazable areas of the allotment. These exotic plants are usually not very palatable to wildlife, and can successfully out-compete native forage plants for sunlight, water, and soil nutrients. Certain weeds (ex. 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 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.

Summer/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 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. 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.

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 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 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 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.

Effects to Livestock/Grizzly Bear Conflicts

Alternative B (no grazing) - There would be no opportunity for grizzly bears to predate or scavenge domestic stock in the LeClerc BMU.

Alternatives A, C and D - The allotment management plan (AMP) for the allotment 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. This 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 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 the cows would be in October. Thus, the potential for grizzly bear livestock conflicts could be temporally reduced by two weeks with these alternatives.

Effects to Seclusion

All alternatives - There would be no change in core habitat levels or road densities in the LeClerc BMU resulting from any of the allotment management alternatives.

Alternative A - 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 - 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 allotment would be pushed back by two weeks. Thus, the potential for livestock to disturb bears on their day beds during the critical spring period would be reduced from the existing condition.

With the removal of the Fourth of July Pasture from the 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.

Effects to Den Habitat

All alternatives - Cattle are off the forest during the winter denning period. Livestock grazing on the allotment would not conflict with grizzly bear denning, or with the suitability of potential den sites for bears.

Effects to Forage Resources

The following table displays the acres of habitats that could provide foraging opportunities for bears, by alternative.

Table 35. Foraging Habitats for Grizzly Bears included in the Allotment by Alternative

Grizzly bear foraging habitat	Approximate acres within the allotment			
	Alternative A (no change)	Alternative B (no grazing)	Alternative C	Alternative D
berry shrubs	2,642	0	975	984
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

Grizzly bear foraging habitat	Approximate acres within the allotment			
	Alternative A (no change)	Alternative B (no grazing)	Alternative C	Alternative D
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.

Alternative A - Cattle distribution across the 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 under-utilized 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. The Forest Service would continue to monitor and control weed infestations across the BMU, as is standard practice.

Alternative B - 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 could be fewer areas of bare ground on these sites over time. 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 (pers. comm. with S. 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 (pers. comm. with T. Catlin 2005). The fence line contrast is abrupt at these sites. Of the four 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.

Alternative C - The annual turn-on date for the allotment would be pushed back from June 1 to June 15. Grizzly bears would be able to access green forage in the area for the entire spring period, free from competition with domestic stock. With changes to the allotment boundaries, the allotment would include approximately 501 fewer acres of habitats that could provide green forage for bears (grasslands, forb fields, riparian forest / shrublands, wetlands) within the allotment.

Cattle distribution across the Lower Bunchgrass Pasture 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 / 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.

The Fourth of July Pasture would be removed from the 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. Towards 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.

With the boundary adjustment of the Lower Bunchgrass Pasture, approximately 2.6 miles of the Middle Branch LeClerc Creek would be fenced off and located outside the allotment. This segment of streamside riparian habitat presently receives the most concentrated use 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.

The proposed shifts in boundaries of the Upper Bunchgrass and Mineral Pastures would 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.

Adaptive Management - The Forest Service would monitor key grazing areas (including riparian habitats) in the allotment to assess utilization and vegetation trends. If green forage utilization and other parameters exceed the standards proposed in the monitoring and adaptive management plan, the CNF would take management actions to reverse this trend. These could include additional pasture controls, additional upland watering sites, or changing the grazing period in a given pasture.

The Forest Service would continue to monitor and control noxious weed populations on National Forest System lands in the BMU, as is standard practice. Alternative C would reduce the acres grazed by livestock in the BMU. Alternative C would incorporate new fencing and watering sites to promote better livestock control and distribution across the allotment. This should lead to fewer areas of soils exposed due to prolonged and concentrated livestock use. For these reasons, we anticipate that this alternative would reduce the risk of noxious weed spread in the BMU, over the long term.

Alternative D - This alternative would incorporate the design elements described for alternative C, including the June 15 allotment turn-on date, removing the Fourth of July Pasture, installing upland watering sites, installing new pasture controls, adaptive management, etc. The main difference would be the expansion of the allotment boundary to the east, following the existing drift fence along the East Branch LeClerc Creek Road (NFS road 1934). Most of the lower Middle Branch LeClerc Creek would lie within the allotment, as is presently the case. Segments of this stream north of the holding pen in T. 36N, R.44E, Sections 16 and 20 would be completely included in new livestock exclosures (fenced). The stream segment running through Stimson Lumber Company’s 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 essentially the same amount of habitats that could provide green forage for bears as the existing condition (alternative A).

Effects to Hiding Cover

Alternative A (no change) - Cattle would continue to concentrate in lowlands and streamside riparian areas, 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.

Alternative B (no grazing) - 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.

Alternative C - New water troughs installed in upland areas of the Lower Bunchgrass Pasture should draw livestock away from lowland riparian areas to some extent, potentially leading to an upward trend in riparian shrub density. With the boundary adjustment of the Lower Bunchgrass Pasture, approximately 2.6 miles of the Middle Branch LeClerc Creek would be located outside the allotment. Hiding cover along this segment of streamside riparian habitat 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. Within other areas dropped from the allotment (ex. Fourth of July Pasture), any impacts to hiding cover from livestock grazing should cease.

Alternative D - Effects would be the same as with alternative C, with the exception that the segment of the Middle Branch of LeClerc Creek in T. 36N, R. 44E, Section 21 (owned by Stimson Lumber Company) would remain accessible to cattle. There could be more concentrated livestock use of this stream segment, leading to a reduction in riparian shrub density over time.

Cumulative Effects

We must evaluate the cumulative effects of forest management activities over individual bear management units (USDI 2001). No other livestock are grazed in the LeClerc BMU besides those associated with the LeClerc Creek Grazing Allotment. For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek allotment analysis areas, refer to Appendix C on page 298.

In the last two decades, timber sales and road construction on Stimson Lumber Company lands opened up many dense stands and created new pathways for livestock to move through large portions of the LeClerc BMU. Transitory range for cattle was created in many harvest units and on new roadsides. Growing conditions for existing grizzly bear food plants such as grasses, forbs, and berry-producing shrubs was often improved. Many created openings persist to this day on Stimson lands. Over the same time frame there was one timber sale on NFS lands in the BMU; Whiteman Timber Sale. Harvest units associated with this sale have mostly regenerated to the point where they are no longer providing transitory range for cattle. No new permanent road construction occurred on NFS lands in the BMU. The Forest Service increased the effectiveness of many existing road closures by replacing gates with permanent closures such as earthen berms or boulders. All new roads on Stimson lands were closed to public use, usually with gates (pers. comm. with W. Pierce).

It is possible that livestock access to some riparian areas and aspen stands was improved due to past timber harvest and road construction. However, streams were given no-cut buffers with all timber sales on Stimson and NFS lands. In many cases, regenerating conifers and shrubs in timber harvest units reduced the permeability of these stands to livestock within roughly ten years. Dense plantations often became more effective barriers to cattle movement in the allotment than the forest stands they replaced.

Active or planned timber sales will create openings on almost 1,400 acres of forest stands in the BMU. Any grasses and other green forage plants within these new openings will have improved access to sunlight, water, and soil nutrients. The plants should become more robust and palatable within one or two growing seasons. Additional forage for both livestock and wildlife could be provided on some of these sites for ten or more years following harvest. Improvements in forage production are likely to be best realized where prescribed burning is used to treat logging slash (mainly NFS lands). Livestock could spend more time foraging in openings created by logging, and less time in lowland riparian habitats. These effects would be additive to the improvements

in livestock distribution we expect to occur with alternatives C and D, as described earlier. Riparian areas within timber sale units would receive no-cut buffers or selective harvest prescriptions, depending on the stream class and other site conditions.

In 2015 or 2016, the Forest Service will complete a prescribed burn in the Fourth of July Creek area to improve elk forage habitat. This project will increase forage palatability and vigor on more than 200 acres of shrublands, dry parklands, and grasslands. Spring forage production for grizzly bears should be enhanced where it exists on these sites; particularly in Fourth of July Meadow. Other proposed habitat improvements on the allotment such as meadow maintenance and aspen protection could also improve green forage resources.

Livestock grazing would contribute to the spread of noxious weeds in the BMU. These effects could be cumulative to those resulting from timber sales and other forest management projects that expose soils. The Forest Service would implement noxious weed prevention, pre-treatment and monitoring actions with each active and proposed forest management project, as is standard procedure. Noxious weed management does not appear to be a consideration on state and private forest lands in the BMU. 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 BMU.

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 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.

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 small. It is our standard practice to limit the number of 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. Most closed roads in the LeClerc BMU receive well under this number of trips in a given year (or no trips at all).

Effects Determination

With alternative A, close administration of the allotment would be required to prevent cattle grazing from causing local impacts to riparian forage resources. Livestock and grizzly bears could be directly competing for green forage resources for the last two weeks of the critical spring period for bears. The present low risk of livestock predation by grizzly bears would remain unchanged. This alternative “may affect, but would not be likely to adversely affect,” grizzly bears.

With alternative B, all effects from livestock grazing to spring forage habitats would cease. In the absence of grazing, meadows would need to be periodically maintained through burning, mechanical conifer removal, etc. These activities would be subject to available funding sources.

There would be no opportunities for grizzly bears to predate stock animals. Thus, the effects determination for Alternative B would be “not likely to adversely affect – beneficial effect.”

With alternatives C and D, the overlap in livestock and grizzly bear use of the allotment would be effectively reduced by two weeks. Livestock distribution should be improved from the present condition, potentially reducing grazing pressure on important lowland 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 would not be likely to adversely affect,” grizzly bears.

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 the Monumental Mountain area. 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 the northwestern Idaho. The allotment is located more than 12 miles south (outside) of designated critical habitat for the Selkirk Mountains caribou herd (USDI 2012).

The Selkirk Mountains Woodland 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 Grazing Allotment is within the Molybdenite CMU.

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 Grazing Allotment (personal comm. with W. Wakinnen 2013).

Seasonal Habitat Components - The forest plans for the Colville National Forest (USDA 1988) and Idaho Panhandle National Forests (USDA 1990b) described six seasonal habitats important to caribou and provided silvicultural prescriptions for maintaining/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+ years) western hemlock/western red cedar and subalpine fir/Engelmann spruce forests. Seasonal habitats used by caribou are characterized in the following table.

Table 36. Woodland Caribou Seasonal Habitat Components (Allen 2013)

Caribou Seasonal zone	Approx. season of use	Stand description	Slope position
early winter	Nov. – Jan. 18	Mature and old spruce / subalpine fir with 26-50 percent canopy cover, old growth cedar / hemlock with	mid-lower elevations

Caribou Seasonal zone	Approx. season of use	Stand description	Slope position
		76-100 percent canopy cover with large, lichen-bearing branches.	
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 – Oct. 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 Grazing 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/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 Grazing Allotment that overlap with the caribou recovery area, these plants are mostly found within small meadows and streamside riparian zones. Stream reaches in the caribou recovery area tend to be headwaters that are steep and incised. They are often not easily accessible to either cattle or caribou. We have not documented any sites within the caribou recovery area where cattle are over-utilizing green forage resources.

The following table displays the existing acres of suitable (“target”) timber stands for caribou, by allotment pasture.

Table 37. Molybdenite Caribou Management Unit (CMU) Habitat Data

Allotment pasture	Approx. acres in CMU	Approximate livestock grazing period	Approximate acres of caribou “target” stands	
			spring season (April 20 - July 7)	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		34	476
Dry Canyon	12	Sept. 16 - 30	0	0

Allotment pasture	Approx. acres in CMU	Approximate livestock grazing period	Approximate acres of caribou "target" stands	
			spring season (April 20 - July 7)	summer season (July 7 – Oct. 16)
Fourth of July	0		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 range allotment permittee does not require vehicle access on any restricted road within the caribou recovery area.

Effects to Forage

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. This discussion will focus on green forage plants such as grasses, sedges, and forbs, which may be utilized by both caribou and cattle during the spring and summer months.

The following table displays the acres of target stands for caribou in the spring and summer seasonal zones, by allotment management alternative.

Table 38. Acres of Spring/Summer Stands for Caribou in the Allotment, by Alternative

Caribou seasonal zone by allotment pasture	Approximate acres of target stands for caribou			
	Alternative A (no change)	Alternative B (no grazing)	Alternative C	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 spring & summer stands in the allotment	1,180	0	402	428
Total allotment acres in CMU	8,244	0	6,114	7,749

Alternative A (no change) - The grazing allotment would contain approximately 1,180 acres of caribou target stands in the spring and summer seasonal zones. Cattle would be off the allotment during the months of April and May. Livestock grazing would not affect green forage resources for caribou during that time. Cattle could be sharing green forage resources with caribou during the latter part of the spring, and 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 over-utilizing 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 could accelerate in small meadows. Sedges and succulent forbs could increase in vigor and diversity in some local areas.

Alternatives C and D - The turn-on date for the allotment would be pushed back by two weeks each year. Thus, there would be no potential for livestock to utilize green forage plants eaten by caribou through June 15.

Areas above about 5,000 feet 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 appear to have poor access to most of these acres, due to intervening, dense stands of trees and steep topography. The grazing allotment would contain at least 750 fewer acres of target stands for caribou in the spring and summer seasonal zones, compared with the existing condition. Thus, the potential overlap in green forage utilization by livestock and caribou could be reduced in both time and space, from the existing condition.

Effects to 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.

Alternative C (proposed action) - 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 practices within each caribou management unit (USDI 2001). No other livestock are grazed in the Molybdenite CMU besides those associated with the LeClerc Creek Grazing Allotment. For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek allotment analysis areas, refer to Appendix C on page 298.

No timber sales are active or proposed on NFS lands in the Molybdenite CMU. The only active or proposed projects in the CMU include fish habitat improvements (culvert replacements, in-stream structures), and ongoing activities such as routine road maintenance, noxious weed control, and public recreation. The majority of these activities and uses would occur within a quarter mile of open roads. The potential for cumulative effects to caribou forage resources and seclusion should be insignificant or discountable.

Effects Determination - Livestock make only incidental use of the arboreal lichens and shrubs that provide important forage 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 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 the preceding 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” 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 under certain conditions to reduce potential impacts of the allotment management alternatives to large carnivores.

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 information for sensitive wildlife species relative to the LeClerc Creek Grazing Allotment. The predicted effects of the project to those terrestrial wildlife species with potential habitat in the project area (shaded blocks) will be addressed here.

Table 39. LeClerc Creek Grazing Allotment - Habitats for Sensitive Terrestrial Vertebrates listed for the CNF (Species in shaded blocks are addressed in this section)

Sensitive vertebrates	Habitat present?	Documented in the area?	Habitat description / other comments
American peregrine falcon (*Falco peregrinus*)	No	No	This species requires tall cliff faces for nesting (Hayes and Buchanan 2001). Suitable habitat does not exist on the allotment. Good quality potential foraging habitats are located one mile west of the allotment on the Pend Oreille River and adjacent private lands.
bald eagle (*Haliaeetus leucocephalus*)	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).
common loon (*Gavia imner*)	No	No	This species requires large lakes or rivers with abundant fish and adequate shoreline vegetation to conceal a nest (Richardson et al. 2000). Suitable habitat does not occur within the allotment.
gray wolf (*Canis lupus*)	Yes	Yes	The territory of the Diamond Wolf Pack overlaps the allotment. Wolves are closely tied to habitats that support abundant big game populations. Limiting livestock depredations and human-caused wolf

Sensitive vertebrates	Habitat present?	Documented in the area?	Habitat description / other comments
			mortality are primary management concerns (Mech 1991).
great gray owl (*Strix nebulosa*)	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 (*Histrionicus histrionicus*)	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 and Krage 2003).
Lewis' woodpecker *(Melanerpres lewis)*	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).
moose *(Alces americanus)*	Yes	Yes	In the summer, moose feed on submergent and emergent aquatic plants in areas of slow moving water, ponds and wetlands. They forage on shrubs year-round including willows, dogwoods, maples, evergreen ceanothus and serviceberry. Forest clearings, including burned or logged areas, in 15-30-year old successional stages are heavily used (WDFW 1991).
mountain goat *(Oreamnos americanus)*	Yes	Yes	Winter range is on steep, rocky sites close to diverse forage and cover. Exposed aspects with low snow accumulations are preferred. Summer ranges are larger and usually not a limiting factor. Escape terrain (rock-cliff habitats) is critical to avoid predators (WDFW 1991).
pygmy shrew (*Sorex hoyi*)	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 (*Tamias ruficaudus*)	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).
sandhill crane (*Grus canadensis*)	No	No	This species requires isolated, large tracts of marshes or wet meadows that are more than ¼ mile from open roads (Littlefield and Ivey 2001). Suitable habitat does not occur within the allotment.
Townsend's big-eared bat (*Corynorhinus townsendii*)	No	No	This bat uses caves or mines for roosting or hibernation. Abandoned buildings are sometimes used by nursery colonies (WDFW 1991). No usable structures occur within the allotment.
white-headed woodpecker (*Picoides albolarvatus*)	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).
North American wolverine	Yes	Yes	Wolverines typically den in higher elevation rock slides, caves, and crevices; often in glacial cirque

Sensitive vertebrates	Habitat present?	Documented in the area?	Habitat description / other comments
(*Gulo gulo luteus*)			basins. They forage in all higher elevation habitats but particularly those where carrion can be found. They require seclusion from human disturbance (Copeland 1996).

Table 40. Habitats for Sensitive Invertebrates (Butterflies) listed for the CNF (Species in shaded blocks are addressed in this section)

Sensitive butterflies	Habitat present?	Documented in area?	Habitat description / other comments (James and Nunalee 2011)
eastern tailed blue *(Cupido comyntas)*	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 (*Speyeria egleis*)	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 *(Boloria bellona)*	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 *(Polites peckius)*	Yes	No	Habitats include mountain meadows, marshy edges of potholes and roadsides. Wet, grassy meadows are preferred.
Tawny-edged skipper (*Polites themistocles*)	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 (*Callophyrus nelsoni rosneri*)	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.

Table 41. Habitats for Sensitive Invertebrates (Dragonflies and Damselflies) listed for the CNF (Species in shaded blocks are addressed in this section)

Sensitive dragonflies and damselflies	Habitat present?	Documented in area?	Habitat description / other comments (Foltz Jordan 2008, Paulson 1999)
subarctic bluet *(Coenagrion interrogatum)*	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).
subarctic darner *(Aeshna subarctica)*	No	Yes	
zigzag darner *(A. sitchensis)*	No	Yes	
delicate emerald *(Somatochlora franklini)*	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

Sensitive dragonflies and damselflies	Habitat present?	Documented in area?	Habitat description / other comments (Foltz Jordan 2008, Paulson 1999)
whitehouse emerald *(S. whitehousei)*	No	Yes	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.

Table 42. Habitats for Sensitive Invertebrates (Mollusks) listed for the CNF (Species in shaded blocks are addressed in this section)

Sensitive mollusks	Habitat present?	Documented in area?	Habitat description / other comments
fir pinwheel (*Radiodiscus abietum*)	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 (*Magnipelta mycophaga*)	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).

Effects to Sensitive Terrestrial Wildlife Species

The following tables display the direct and indirect effects of the allotment management alternatives to each sensitive species, and a brief summary of the rationale for each determination. See the biological assessment for this project (Borysewicz 2015b) for a detailed description of predicted project effects to individual sensitive species.

Table 43. Gray Wolf Effects Summary

Habitat parameter		Alternative A (no change)	Alternative B (no grazing)	Alternatives C and D (modified grazing with adaptive mgt.)
wolf/livestock conflicts		Mitigation intended to reduce the risk of wolves learning to depredate livestock.	No potential for livestock depredation by wolves.	Mitigation intended to reduce the risk of livestock depredations, as with alternative A.
Wolf prey (big game) habitats	*riparian shrubs/ aspen*	Livestock would continue to loiter in riparian lowlands particularly later in the year. Livestock browsing of riparian shrubs/aspen sprouts would continue to reduce browse and hiding cover values for big game at certain local sites. The suitability of these areas as wolf rendezvous sites could be diminished.	Livestock browsing of shrubs/deciduous tree regeneration would cease. The density and diversity of these woody plants should be enhanced over time at locally impacted sites.	Acres of riparian shrublands reduced on the allotment with changes in the allotment boundaries. New range improvements intended to reduce pasture re-grazing and better distribute cows across the allotment. Riparian habitat values monitored over time. If standards are exceeded, adaptive management utilized to initiate improvements in riparian conditions.
	green forage	Livestock would continue to re-graze preferred sites, reducing green forage biomass and vigor on some sites. Continued grazing of meadows would tend to maintain grass vigor and keep these sites in an open, productive condition. Livestock would continue to be a vector for noxious weed spread.	Recovery of any locally degraded sedges, forbs, grasses. Potential long-term reduction in grass vigor/palatability across the allotment in the absence of grazing. This alternative would require active meadow maintenance (burning, conifer tree removal, etc.). Livestock would no longer be a factor in the spread of noxious weeds.	Acres of wetlands reduced on the allotment with changes in the allotment boundaries. New range improvements intended to reduce pasture re-grazing and better distribute cows across the allotment. Periodic maintenance of meadows required to maintain grass vigor and forestall conversion of these sites to forestland. Somewhat reduced risk of noxious weed spread.
	upland shrubs	Insignificant or discountable use of these plants by livestock.	No effects	Insignificant or discountable use of these plants by livestock.

Table 44. Summary of Direct and Indirect Effects to Sensitive Species

Sensitive species	Alternative	Effects determination	Rationale for determination
bald eagle	All	No impact	No known active or historic nests on the allotment. No impacts to large trees or potential forage base from continued grazing.

Sensitive species	Alternative	Effects determination	Rationale for determination
gray wolf	A (no change)	Not likely to cause a trend to federal listing	Required mitigation for dealing with sick and injured livestock and livestock carcasses. This could reduce the potential for wolves to associate domestic stock with food. Inadequate pasture controls 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.
	B (no grazing)	May beneficially impact	No need for wolf control actions related to livestock depredations. Improvements in cover and forage 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 projects would occur subject to available funding.
	C and D (modified grazing)	Not likely to cause a trend to federal listing	Required mitigation for dealing with sick and injured livestock and livestock carcasses. Better distribution of livestock due to new range improvements and adaptive management based on permanent monitoring sites. This could lead to improved habitat suitability for wolf prey species. Periodic maintenance of meadows required; particularly those that are no longer grazed.
great gray owl, pygmy shrew	A	Not likely to cause a trend to federal listing	Inadequate controls of livestock movements would continue to result in re-grazing of preferred meadows and other openings (owl foraging habitats). This could lead to a reduction in low cover and forage biomass, making the sites less suitable for small mammal prey species. Conversely, livestock grazing would tend to retard forest succession and maintain meadows in an open, productive condition.
	B		Short-term improvements in low cover and forage for small mammal populations in meadows and wetlands. 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.
	C and D		Better distribution of livestock due to new range improvements and adaptive management based on permanent monitoring sites. This could lead to improved habitat suitability for small mammal prey species. Fourth of July Meadow dropped from the allotment. This is perhaps the best quality foraging site for great gray owls on the allotment. Periodic maintenance of meadows required; particularly those that are no longer grazed.
harlequin duck	All	No impact	Low habitat suitability on the allotment. Potential nesting habitat on the West Branch LeClerc Creek appears to be inaccessible to livestock.
moose	A	Not likely to cause a trend to federal listing	Livestock would continue to utilize riparian shrubs and aspen, reducing browse for moose to some extent. These impacts would continue to be site-specific in nature. There is relatively abundant browse for moose available across the allotment. Moose are increasing in northeast WA in concert with continued livestock grazing across the forest.

Sensitive species	Alternative	Effects determination	Rationale for determination
	B	May beneficially impact	Riparian shrub and hardwood tree utilization by livestock would cease on the allotment.
	C and D	Not likely to cause a trend to federal listing	Better distribution of livestock due to new range improvements, and adaptive management based on permanent monitoring sites. This should lead to improvements in riparian browse density, diversity, and regeneration over time. With allotment boundary changes, acreage of riparian shrublands and wetlands accessible to cows reduced.
mountain goat	All	No impact	Low habitat suitability for this species on the allotment. Preferred habitats (steep terrain with rock features) essentially inaccessible to cattle.
red-tailed chipmunk	All	No impact	Livestock are making little use of dense, mixed forest habitats and subalpine fir/spruce stands. Insignificant or discountable impacts to overhead canopy or mature trees. No or questionable overlap in the forage base for livestock and red-tailed chipmunks.
Lewis', white-headed woodpeckers	All	No impact	Low habitat suitability. Grazing would not impact essential habitats (large trees, burns, etc.) utilized by these species.
North American wolverine	A	Not likely to cause a trend to federal listing	Livestock appear to have poor access to the high-elevation habitats important to wolverines. Continuing local impacts to riparian foraging / parturition habitats for big game (primary source of carrion). Livestock grazing would tend to maintain meadows in an open, productive condition, benefitting elk and deer.
	B		Recovery of all local, well-used riparian sites and aspen, potentially benefitting prey animals. Short term improvements in meadow conditions (percent bare ground, green forage). However, active management required to rejuvenate grasses and keep meadows in an open condition over time.
	C and D		Most high elevation habitats removed from the allotment. Better distribution of livestock due to new range improvements and adaptive management based on permanent monitoring sites. This should lead to improvements in foraging and parturition habitats for big game. Periodic meadow maintenance required, particularly on those sites no longer accessible to livestock..
sensitive invertebrates	A, C, and D	Not likely to cause a trend to federal listing	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. Livestock grazing would tend to maintain grass vigor and keep meadows in an open, productive condition.

Sensitive species	Alternative	Effects determination	Rationale for determination
			With alternatives C and D, better distribution of livestock due to new range improvements and adaptive management based on permanent monitoring sites. This should lead to improvements in low cover for certain species. Periodic meadow maintenance required.
	B		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.

Cumulative Effects

As described in the preceding table, the allotment management alternatives would not impact bald eagles, harlequin ducks, mountain goats, red-tailed chipmunks, Lewis' and white-headed woodpeckers or their essential habitats. Therefore, we expect there would be no cumulative effects to these species. For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek allotment analysis areas, refer to Appendix C on page 298.

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 increased light levels following timber harvest. Planned habitat improvement projects would be designed to maintain meadows, montane and riparian shrubfields, and aspen, on the landscape. Taken together, these projects have the potential to improve habitat conditions for big game animals (including moose), great gray owls, and sensitive invertebrates. These beneficial effects would be additive to similar effects described in the preceding table.

Continued livestock grazing (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. See the section on grizzly bears for a more detailed description of these effects.

Continued livestock grazing on the LeClerc Creek Range Allotment 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 employed on each allotment. 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.

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 forest, 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 Forest 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 the MIS listed for the CNF. The effects of the project to species with potential habitat in the LeClerc Creek Grazing Allotment (shaded blocks) will be addressed here.

Table 45. LeClerc Creek Grazing Allotment - Habitats for MIS and Landbirds (species in shaded blocks are addressed in this section)

MIS Species	Habitat present?	Documented in the area?	Representative habitats (USDA 1988)	Habitat modeling / other comments (Youkey 2012, USDA 1988)
grizzly bear *(Ursus arctos)*	yes	yes	"seclusion" habitat within the recovery area	Acres of core habitat (lands lying further than 500 meters from open or restricted roads) Total and open road densities
woodland caribou *(Rangifer tarandus)*	yes	yes	mature and old growth stands in the cedar / hemlock and subalpine fir / spruce cover types within the recovery area	The overall quantity of habitat within the recovery area is not currently considered to be limiting to caribou.
Rocky Mtn. elk *(Cervus canadensis)* deer *(Odocoileus spp.)*	yes	yes	low elevation winter ranges	Approximately 201,527 acres of the Forest is designated big game winter range. Habitat objective is to provide a 50:50 cover to forage ratio with no point further than 600 feet from forested cover.
trout (*Mykiss spp.)*	yes	yes	Addressed in the fisheries section of this document.	
beaver *(Castor canadensis)*	yes	yes	aquatic, riparian habitats, aspen and willows	Approximately 177,118 acres of habitat is well distributed across the Forest.
northern bog lemming *(Synaptomys borealis)*	yes	yes	high elevation bogs	In Pend Oreille County, this species is only known to occur in Bunchgrass Meadows, a large boreal fen located just outside the northeast corner of the range 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 from historic levels across the Forest.
pine marten *(Martes americana)*	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 *(Strix varia)*	yes	yes	lower elevation mature and old-growth forest	Approximately 93,081 acres of habitat is well distributed across the Forest.

MIS Species	Habitat present?	Documented in the area?	Representative habitats (USDA 1988)	Habitat modeling / other comments (Youkey 2012, USDA 1988)
pileated woodpecker *(Dryocopus pileatus)*	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 *(Picoides tridactylus)*	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 *(Dendragapus obscurus)*	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 *(Dendragapus. canadensis)*	yes	yes	young lodgepole pine stands with interspersed mature spruce	Approximately 604,187 acres of habitat distributed across 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 northern goshawk - forest mosaic (all forest communities), medium and large tree family group	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. 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.

Effects to MIS

The allotment management alternatives would be consistent with management direction in the Forest Plan (as amended) for MIS and waterfowl. The following table summarizes the direct and indirect effects to each species or species group, by alternative. See the biological assessment for this project (Borysewicz 2015a) for a more detailed description of predicted project effects to individual MIS.

Table 46. Summary of Effects to MIS

MIS Species	Alternative	Summary of effects
grizzly bear	All	No impacts to core habitat or road densities from allotment management operations.
woodland caribou	All	Insignificant or discountable impacts to mature and old growth stands from continued grazing.
big game	All	Continued livestock grazing would have insignificant or discountable impacts to cover stands on winter ranges. See the previous section on affects to sensitive species (gray wolves) for a discussion of effects to forage habitats on winter ranges.
beaver	A (no change)	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. This could retard the growth of these beaver food plants at local sites where there is concentrated use. Deciduous trees are uncommon on this allotment. Selected aspen stands protected with fencing or other means.
	B (no grazing)	Recovery of all deciduous shrubs and trees browsed by cattle over time, leading to improvements in local forage resources for beavers.
	C , D	With Alt. C, the allotment would contain approximately 100 fewer acres of riparian forest, 40 fewer acres of riparian shrub habitats, 93 fewer acres of wetlands. With Alt. D, the allotment would contain approximately 28 additional acres of riparian forest, but 8 fewer acres of riparian shrubs and 43 fewer acres of wetlands. 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. Selected aspen stands protected with fencing or other means.
northern bog lemming	A, C, and D	Bunchgrass Meadows is the only site known to support this species in the LeClerc Creek Watershed. Livestock have not accessed this wetland for more than 20 years. Livestock do not appear to be accessing other high elevation wetlands in the area.
	B	No potential for livestock to utilize suitable bog lemming habitats.
pine marten, barred owl, pileated woodpecker	A	Livestock grazing would continue to have insignificant or discountable impacts to existing large live trees, snags, down logs, root wads, or overhead canopy closure. Livestock browsing of riparian shrubs would continue to reduce hiding cover on certain stream segments, decreasing their utility as travel corridors for pine marten. See the section on primary cavity excavators for a discussion on hardwood trees.

MIS Species	Alternative	Summary of effects
	B	Livestock browsing on hardwood tree regeneration and riparian shrubs would cease. Over time there would be more concealing cover within streamside riparian areas presently impacted by cattle. The ability of marten to use these natural travel / dispersal routes could improve.
	C and D	Livestock grazing would have insignificant or discountable impacts to existing large trees, snags, down logs, root wads, or overhead canopy closure. Better distribution of livestock due to new range improvements and adaptive management tied to the condition of riparian vegetation. This should lead to improved hiding cover on impacted stream segments.
primary cavity excavators, three-toed woodpecker	A, C, and D	Livestock grazing would continue to have insignificant or discountable impacts to defective live trees, standing dead trees, stumps, or down logs. Livestock browsing of hardwood tree regeneration would continue to 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 small conifers. Livestock would no longer be a factor in the spread of noxious weeds.
	C, 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 very limited on the allotment. Nesting by waterfowl has not been documented on the allotment. Livestock grazing would continue to reduce cover and forage resources on some local, open wetlands.

MIS Species	Alternative	Summary of effects
	B	No potential for livestock to impact suitable waterfowl habitats. Recovery of locally impacted sites.
	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. For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek allotment analysis areas, refer to Appendix C on page 298.

The potential effects of livestock browsing on deciduous shrubs and trees on the LeClerc Creek Range 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 over-used sites. Decades of active fire suppression across the Forest has favored the growth of conifer trees which are over-topping 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 LeClerc Creek Range 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.

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 / 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.

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.

Landbirds

Birds of Conservation Concern

In December of 2008, the FWS released “The Birds of Conservation Concern Report” (USDI 2008) which identifies species, subspecies, and populations of migratory and nonmigratory birds in need of conservation actions. The intent was to prevent or remove the need for additional Endangered Species Act bird listings by implementing proactive management and conservation actions.

Bird Conservation Regions (BCRs) are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues. The LeClerc Creek Grazing Allotment is located in the Northern Rocky Mountains BCR (BCR 10). The following table displays the birds of conservation concern for this BCR. Effects of livestock grazing on bird species with suitable habitat in the allotment (shaded blocks in the table) will be addressed here.

Table 47. LeClerc Creek Grazing Allotment - Migratory Birds of Conservation Concern (those species in shaded blocks are addressed in this EIS)

Landbird species	Habitat Present?	Documented in the area?	Preferred habitats
bald eagle (*Haliaeetus leucocephalus*)	yes	yes	These species were addressed earlier in the DEIS.

Landbird species	Habitat Present?	Documented in the area?	Preferred habitats
American peregrine falcon *(Falco peregrinus)*	no	no	
yellow-billed cuckoo *(Coccyzus americanus)*	no	no	
Lewis' woodpecker *(Melanerpres lewis)*	yes	no	
white-headed woodpecker (*Picoides albolarvatus*)	yes	no	
Swainson's hawk *(Buteo swainsoni)*	no	no	Open country including shrub steppe, prairies and irrigated farmland with high prey densities.
ferruginous hawk *(Buteo regalis)*	no	no	Habitats with low tree densities and topographic relief in sagebrush plains of the high desert and bunchgrass prairies.
upland sandpiper *(Bartramia longicauda)*	no	no	Found in Oregon only.
long-billed curlew *(Numenius americanus)*	no	no	Open grassland areas east of the Cascade Mountains. Found in small numbers in estuaries along the coast.
flammulated owl *(Otus flammeolus)*	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 *(Cypseloides niger)*	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 *(Stellula calliope)*	yes	yes	Open shrub / sapling seral stages (8-15 years), meadows, burned areas, and riparian thickets at higher elevations.
Williamson's sapsucker *(Sphyapicus thryroideus)*	yes	yes	Mid to high elevation, mature open and mixed coniferous / deciduous forests. Snags are a critical component.
olive-sided flycatcher *(Contopus cooperi)*	yes	yes	Open conifer forests (< 40 % canopy cover) and edge habitats where standing snags and scattered tall trees remain after a disturbance.
willow flycatcher *(Empidonax trailii)*	yes	no	Associated with riparian shrub dominated habitats, especially brushy / willow thickets.
loggerhead shrike *(Lanius ludovicianus)*	yes	no	Inhabits grasslands, pastures with fence rows, agricultural fields, sagebrush with scattered juniper and open woodlands. Requires elevated perches throughout for hunting and nesting.

Landbird species	Habitat Present?	Documented in the area?	Preferred habitats
sage thrasher *(Oreoscoptes montanus)*	no	no	A sagebrush obligate dependent on large patches and expanses of sagebrush steppe and bitterbrush with shrub heights in the 30 - 60 cm height. Prefers bare ground over grassy understories.
Brewer's sparrow *(Spizella breweri)*	no	no	A sagebrush obligate found in shrublands of contiguous big sagebrush, greasewood, rabbitbrush, and shadescale habitats.
sage sparrow *(Amphispiza belli)*	no	no	Associated with semi-open evenly spaced shrubs 1-2 m high in big sage up to 6,800 ft.
McCown's longspur *(Calcarius mccownii)*	no	no	Rare in OR & WA, prefers dry sparse prairies.
gray crowned rosy-finch *(Leucosticte tephrocotis)*	yes	no	Found above timberline among bare rock outcroppings, cirques, cliffs, and hanging snowfields.
Cassin's finch *(Carpodacus cassinii)*	yes	yes	Open, mature coniferous forests of lodgepole and ponderosa pine, aspen, alpine fir, grand fir and juniper steppe woodlands.

Effects to Landbirds

Effects to Active Nests

Alternative B - There would be no risk of active nests being mechanically destroyed by livestock.

Alternatives A, 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 of such small scale as to be 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, or stock travel-ways.

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.

Effects to 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. See the biological assessment for this project (Borysewicz 2015a) for a more detailed description of predicted project effects to individual priority landbird habitats.

Table 48. Summary of Effects to Priority Landbird Habitats

Landbird Species	Priority Habitats	Alternative	Summary of Effects
flammulated 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	Subalpine forests would remain relatively inaccessible to cattle on this allotment. Continued livestock grazing would have insignificant or discountable impacts to existing conifer trees, snags or overhead tree canopy closure. Livestock impacts to small trees and shrubs in stand understories would continue to be insignificant or discountable. Continued grazing should not impair the development of plantations into fully stocked stands (pers. comm. with P. Haas 2013).
black swift, gray-crowned rosy finch	alpine areas, rock features, waterfalls	All	Livestock do not appear to be accessing alpine areas on the allotment. Livestock avoid rock features. No known waterfalls on the allotment.
Williamson's sapsucker, Cassin's finch	hardwood trees	A (no change)	Hardwood trees are uncommon to rare on this allotment. Livestock browsing would continue to suppress hardwood regeneration on some sites; particularly adjacent to key grazing areas. Selected aspen stands would be protected with fencing or other means.
		B (no grazing)	Hardwood trees would no longer be impacted by livestock browsing. Hardwood regeneration at locally impacted sites would likely release.
		C	Allotment reduced in size by approximately 2,775 acres. Hardwood regeneration on those acres would no longer be impacted by livestock browsing. Selected aspen stands protected with fencing or other means.
		D	Allotment increased in size by approximately 2,453 acres. Most of those acres are inaccessible to livestock due to steep topography or dense forest stands. Selected aspen stands protected with fencing or other means.
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 could be mechanically damaged or over-utilized in some locations.
		B	Livestock use of riparian areas would cease. Vegetation in local affected areas would become more dense, complex and diverse.
		C	Allotment boundary changes would result in approximately 140 fewer acres of streamside riparian habitats and approximately 93 fewer acres of wetlands accessible to cattle. Better distribution of livestock due to new range improvements. Monitoring / adaptive management keyed to the condition of riparian vegetation. This should lead to increased

Landbird Species	Priority Habitats	Alternative	Summary of Effects
			livestock use of upland forage and less time spent in lowland riparian areas.
		D	Same as alternative C except that there would be approximately 20 additional acres of streamside riparian habitats and approximately 43 fewer acres of wetlands accessible to livestock.
calliope hummingbird, loggerhead shrike, flammulated owl	meadows, parklands	A	Allotment contains very few acres of dry parklands. Livestock grazing of meadows 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	Meadows 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. This alternative would require the most frequent meadow maintenance (burning, conifer tree removal, etc.). Livestock would no longer be a factor in the spread of noxious weeds.
		C	Approximately 268 fewer acres of meadow habitats on the allotment. Periodic maintenance of meadows required to maintain grass vigor and forestall conversion of these sites to forestland. Better distribution of livestock due to new range improvements and adaptive management should reduce the potential for meadows to be re-grazed in the same growing season. Somewhat reduced risk of noxious weed spread.
		D	Same as Alt. C except the acreage of meadow habitats on the allotment would be similar to the existing condition.

Cumulative Effects

As described in the preceding table, the livestock management alternatives would have no, or insignificant / discountable effects to; dry conifer forests, mixed mesic conifer forests, subalpine forests, snags, burned areas, alpine areas, rock features, or waterfalls. Thus, we expect there would be no cumulative effects to these priority landbird habitats on the Forest. See the previous section on MIS for a discussion of cumulative effects to deciduous tree and shrub habitats utilized by landbirds. Cumulative effects to meadows/parklands, and wetland habitats would be similar to those described in the previous section on grizzly bears. For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek allotment analysis areas, refer to Appendix C on page 298.

Conclusion - In some locations on the LeClerc Creek Grazing Allotment, livestock grazing is suppressing hardwood tree recruitment, and reducing the density and complexity of riparian vegetation. None of these sites are so badly degraded that they could not recover if livestock use was removed or decreased in intensity. Effects to these priority landbird habitats are being reduced or mitigated with other projects that promote hardwoods (timber sales, fencing of aspen stands, etc.), or impede livestock access to riparian areas (livestock exclosures, road relocations, large wood installation in stream channels, etc.). These and similar projects we are completing across the Forest are in step with the conservation strategies for priority landbird habitats identified by Altman (2000).

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 that have been impacted by livestock. Meadows removed from the allotment due to shifts in the allotment boundaries, would require active maintenance to keep them in an open and productive condition over time.

Alternative B (no grazing) would best meet the conservation strategies for deciduous trees and 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.

Sensitive Plants

Information provided in this Environmental Impact Statement about Sensitive Plants is excerpted from the LeClerc Creek Grazing Allotment Sensitive Plant Species Biological Evaluation by Kathy Ahlenslager, Forest Botanist (2015). The full text of this report is incorporated by reference and is part of the project record.

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 2014b)

Region 6 Regional Forester Special Status Species List (USDA FS 2011a)

Washington Natural Heritage Program (WNHP 2014, WNHP and USDI BLM 2014)

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 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). During these surveys one new sensitive plant subpopulation of poor sedge was found.

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 proposed project action should comply with Forest Service regulations included in the Forest Service Manual and Handbook, Threatened, Endangered and Sensitive Plants and Animals – Pacific Northwest Region (2005). These regulations direct the agency to ensure that management activities do not contribute towards 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 FS 2005).

The Forest Service Manual (USDA FS 2005) 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 proposed action should also comply with the standards and guidelines described in the Colville National Forest – Land and Resource Management Plan (1988), "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 lists Ute ladies-tresses (*Spiranthes diluvialis*) as threatened under the Endangered Species Act of 1973. It is not documented from the project area. Whitebark pine *(Pinus albicaulis*) is a Candidate species for listing (USDI FWS 2014b). It is documented from the project area and is a sensitive species.

Fifty vascular and nonvascular plant species listed as sensitive on the Regional Forester's Special Status Species List (2011a) are documented or suspected for the Colville National Forest.

In addition to whitebark pine, four other sensitive species are known from the analysis area: western moonwort (*Botrychium hesperium*), poor sedge (*Carex magellanica ssp. irrigua*), beaked sedge (*Carex rostrata*) and crested shield fern (*Dryopteris cristata*). Each is known from one Element Occurrence (population) in the project area. They occur in the pastures shown in Table 49.

Within 2 miles of the project area, five other sensitive species are documented: meadow pussy-toes (*Antennaria corymbosa*), least bladdery milk vetch (*Astragalus microcystis*), green keeled

cotton-grass (*Eriophorum, viridicarinatum*), black snake-root (*Sanicula marilandica*), and prairie cordgrass (*Spartina pectinata*). Potential habitat exists in the analysis area for an additional 61 suspected sensitive or strategic plant species.

The intuitive controlled survey 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. One new subpopulation of poor sedge was found through these surveys. A map showing areas surveyed is on file at the Colville National Forest Supervisor's Office.

Table 49. Sensitive plants with threats and trends by pasture.

Pastures	Sensitive Plants	Population Threats	Plant Population Health, Vigor, and Trends - Note: There is not enough information to establish population trends for any of the sensitive plants in the project area.
4th of July	Western moonwort	Yellow hawkweed (*Heracium caespitosum*)	Three very small subpopulations are known.
Mineral	Whitebark pine		Whitebark pines were surveyed through a white pine blister rust project.
Upper Bunchgrass	Beaked sedge	Reed canarygrass (*Phalaris arundinacea*), Canada thistle (*Cirsium arvense*)	The population has been visited once.
	Poor sedge (two populations present)		One poor sedge population has been visited once.
			The other poor sedge population has documented impacts from cattle trampling and grazing, as well as the presence of a beaver dam.
	Whitebark pine		Whitebark pines were surveyed through a white pine blister rust project.
Lower Bunchgrass	Crested shield-fern	Cattle trampling and grazing.	Recorded population numbers fluctuate, depending on timing of the surveys (before or after cattle in the area) and size of area surveyed.

Effects

Direct and Indirect Effects

Alternative A – No Change (Current Management)

This alternative would authorize grazing under the existing management plan. There would be no change to existing allotment or pasture boundaries, season of use, and permitted numbers of livestock. 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 (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, so the allotment would 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.

Alternative C – Proposed Action

This alternative would continue to reauthorize grazing in the allotment with modifications to the existing permit to address management and resource concerns with changes to the boundaries, administration, and management of the allotment.

The proposed changes to the boundaries, administration, and management of the allotment under alternative C 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. The proposed action 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. If the design criteria and mitigation measures proposed for noxious weed control for this project area are implemented, then the proposed activities should not increase noxious weed distribution and so not affect sensitive plant populations and habitat.

The effects of the proposed action 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.

Alternative D – Modification of Proposed Action

This alternative is a modification of alternative C. Alternative D incorporates all of the elements of alternative C with changes described in chapter 2 of the DEIS. The effects of alternative D on sensitive plants are the same as those for alternative C.

Direct and Indirect Effects of Alternatives C and D Adaptive Management Strategies

If any of the strategies in the adaptive management plan are implemented they would likely have beneficial effects or no effects to sensitive plants. The actual implementation of these strategies (listed below), would most likely not have any adverse effect on sensitive plants as long as all BMPs and mitigation measures are followed during implementation. 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.

Implement strategies for reducing re-grazing of pastures;

1. Install additional pasture fencing, cattle guards, or other structures to reduce livestock drift between pastures,
2. Alter pasture rotation,
3. Alter use periods for pastures,
4. Increase pasture fence maintenance frequency,
5. Increase range riding.

Implement strategies for reducing livestock use of riparian habitats:

1. Install additional upland water developments,
2. Increase range riding.

Implement strategies for reducing site-specific impacts to riparian habitats/function:

1. Re-build / armor livestock crossing / watering structures,
2. Install exclosure fencing around impacted riparian areas,
3. Plant native vegetation to shade stream and stabilize banks.
4. Reduce livestock numbers and/or grazing season.

Cumulative Effects

Area - 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 treatment unit or activity area. 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 on page 298.

Time - 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 proposed action, would have large scale, detrimental effects to sensitive plants and sensitive plant habitats are anticipated 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, as well as recommending design elements and mitigation. They included 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).

The combined effects of these projects, cattle grazing and noxious weeds could negatively affect sensitive plant species over their ranges. With the addition of the design elements noted in chapter 2 of the DEIS, and those included to protect Riparian Habitat Conservation Areas, no effects to sensitive plant population viability are anticipated from this project and therefore no cumulative effects are anticipated.

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. Alternative D would affect fewer weed sites than what has occurred in the past (Bolyard 2015b).

Table 50. Summary of the effects of the alternatives on sensitive plants and compliance with the Forest Plan.

Pastures – Sensitive Plants	Alternative A – Current Management	Alternative B – No Grazing	Alternative C – and Alternative D
4th of July - western moonwort	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.	Since 4th of July Pasture would not be grazed, the western moonwort would not be impacted by cattle.
Mineral Creek- whitebark pine			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 them.
Upper Bunchgrass - beaked sedge, poor sedge (2 populations), whitebark pine			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.
Lower Bunchgrass - crested shield-fern			Proposed fencing would protect these plants.
Forest Plan Compliance (page 4-42)	Is not compliant with the Forest Plan by negatively impacting sensitive plant viability.	Is compliant with the Forest Plan by positively impacting sensitive plant viability.	Is compliant with the Forest Plan by positively impacting sensitive plant viability.

Note: There are no known sensitive plants in Dry Canyon Pasture

Forest Plan Compliance

If the mitigation measures, allotment improvements, or adaptive management strategies are implemented, the project may have an impact on individuals, but is not likely to cause a trend to federal listing or loss of viability, and will adhere to Forest Plan standards and guidelines for sensitive plants.

Soils

Information provided in this Environmental Impact Statement about Soil is excerpted from the LeClerc Creek Grazing Allotment Soil Report by Jason Jimenez, Forest Soil Scientist (2015). The full text of this report is incorporated by reference and is part of the project record.

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). 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). 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. Visual disturbance classes used are described in Napper et al. 2009. 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 proposed action allotment boundary. Wetlands were also surveyed to determine if they meet criteria to 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 end 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 9 detailed above (3 not in the project area, 1 with poor access, and 5 determined not to be wetland). Wetlands on private lands within the project boundary were not surveyed.

Current and past scientific literature was used to analyze effects of cattle grazing to the soil resource. Personal knowledge of this area, discussions with other resource specialists, qualitative and quantitative field survey, and professional experience was used to analyze the alternatives and determine effects to soils.

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 grazing 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

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 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.

Compaction: Due to fine textures, silts and silt loams in the surface horizons, ash-capped soils have a high potential for compaction.

Erosion: Soils with ash-caps are not highly erodible because the ash forms water stable aggregates and develops very high infiltration rates. When dry, these soils are very dusty and noncohesive and can be susceptible to wind erosion if large areas of bare soil are exposed. The soil erosion potential for volcanic ash soils is moderate.

Soils with an Admixture of Volcanic Ash and Other Parent Materials

About 10percent of the project area has soils that have an admixture of volcanic ash in the surface horizon. Admixture soils have a high bulk density and greater soil strength than volcanic ash-capped soils. Admixture soils are typically loam or sandy loam surface textures. The coarse fragments in the surface horizons vary considerably among these soils.

Compaction: Because of the higher initial bulk density and the greater soil strength, admixture soils do not compact as easily as ash-cap soils. Compaction potential is typically moderate.

Erosion: These soils do not form the water stable aggregates seen in volcanic ash soils and the erosion potential is high.

Soils with No Appreciable Volcanic Ash

About 15 percent of the project area has soils that have no appreciable volcanic ash in the surface horizon. These are typically soils with alluvial, glacial outwash, or glacier lake deposits parent materials.

Compaction: Because of the higher initial bulk density, high rock fragment content, and the greater soil strength, these soils do not compact as easily as volcanic ash-capped soils. Compaction potential is typically low to moderate.

Erosion: On the soils formed in glacier outwash, erosion potential is high due to soils being loose and friable and slope stability can be moderate or low.

Wetland Soils

Approximately 200 acres or 1 percent of the 23,412 acre project area consist of mapped hydric soils. The project area has approximately 250 acres of mapped wetlands (including wetlands on private land). There are also small-unmapped wetlands and seeps scattered throughout the project area. Wetlands are universally sensitive to traffic due to saturation throughout the growing season and high organic matter content. Wetlands are at high risk for detrimental soil conditions. Most wetland soils are mapped as borosaprists, a dark black, saturated soil composed mostly of moderately decomposed organic matter. The depth of the organic layer varies depending on the wetland, but may be as deep as 60 inches.

Compaction: Due to high moisture content across the growing season, wetlands have a very high soil compaction potential. Compaction creates drying conditions and loss of organic matter through oxidation.

Erosion: Wetlands are generally in low gradient and low landform positions and have a low soil erosion potential.

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 modified from ground survey, concentrated use areas are typically low canopy cover areas and 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.

Table 51. Summary of Soil Disturbance Monitoring Protocol

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: [1]Regional 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 project area includes approximately 250 acres of mapped wetlands within the allotment boundary, with many present on private land that were not surveyed. The Colville National Forest wetland layer based on the National Wetland Inventory was used, the wetland layer was cut to the proposed allotment boundary and to Colville National Forest ownership. 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 with no anticipated detrimental effects. 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. However, cattle grazing along roads can be problematic where cattle trail up and down road cuts that are either unstable or wet from seeps. This was not extensively observed on the LeClerc Creek Allotment.

Dispersed Camping and Off-Highway Vehicle Recreation

Dispersed camping and OHV travel occur sporadically throughout the project area. Frequently used dispersed campsites and unauthorized roads/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

Slope stability and potentials for landslides would not be measurably affected by either the presence or absence of cattle grazing in the Le Clerc allotment due to lack of cattle grazing on steep slopes, lack of utilization of large woody vegetation, and the geology/parent materials in the allotment. Slope stability will not be addressed further in the analysis.

Alternative A and alternative C will have effects that are very similar except for the changes to management detailed in alternative C. Effects for these two alternatives are described below. With adaptive management practices, the detrimental effects to soils and wetlands can be lessened through management that disperses and reduces cattle impacts to soils and wetlands.

Direct and Indirect Effects Common for Alternative A, Alternative C, and Alternative D

Soil Hydrologic Function

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/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/displacement in meadow, wetland, and riparian areas will affect soil productivity (Donkor et al. 2002).

Cattle use of forested upland areas is generally very light. Continued grazing would have little impact in these areas. If cattle are successfully drawn into the more open uplands by improved water developments and management, as proposed, 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. Protection of riparian and wetlands would be beneficial from directing grazing to upland 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.

Nutrient Cycling, Filtering and Buffering, and Carbon Storage

Many studies have found that cattle grazing reduce 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).

Wetlands

Increasing cattle use of uplands should decrease the intensity of impacts along streams, wetlands, and Concentrated Use areas. However, with continued grazing, impacts such as punching and chiseling of wetland soil and compaction will continue. From field surveys and site specific data collection, approximately 40 percent of wetlands will continue to degrade until wetlands that are functioning at risk are excluded from cattle use or cattle use is limited from a reduction in stocking rates.

Effects of Alternative C

This section covers the effects of adaptive management and changes in grazing management from alternative C to soil resources.

1) Implement Adaptive Management including a Monitoring Plan – implementation 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.

2) Cattle Numbers – 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.

3) Timing of Grazing – 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.

4) Allotment/Pasture Boundary Changes - Removing the Fourth of July Pasture would be beneficial. Detrimental soil conditions in the pasture would slowly recover with freeze/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 will improve soil and vegetation conditions in areas excluded. Additions to the allotment lack any sensitive soil or wetland features and will assist in the overall management of the allotment which will 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.

5) Range Improvements – 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

6) Access Road - 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.

Effects of Alternative D – Modification of Proposed Action

This alternative would be a modification of alternative C. Alternative D would incorporate all of the elements of alternative C with changes as described in chapter 2 of the DEIS.

Alternative B – No Action (No Grazing)

Direct and Indirect Effects

Soil Hydrologic Function

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.

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 (Talbott-Williams, 2005).

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.

Nutrient Cycling, Filtering and Buffering, and Carbon Storage

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 (Talbott-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

Wetlands that were surveyed as functional – at risk with a nonapparent or downward trend would slowly recover and become functional with the exception of wetlands where 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.

Other Soil Resource Issues

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

Bounding of the Cumulative Effects

Area - 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

does 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.

Time - 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 proposed action would have large scale, detrimental effects of 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, refer to Appendix C on page 298. The list includes various road restoration, culvert replacements, reforestation, pre-commercial thinning, commercial thinning, and prescribed fire.

Vegetation Management Projects - Le Clerc 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 would continue to cause maintenance problems where culverts are plugged or damaged by trampling and wallowing.

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.

Cumulative Effects of Alternative A – No Change, Alternative C – Proposed Action, and Alternative D

There are no adverse cumulative effects to soil resources if alternative A, C or D is selected.

Cumulative Effects of Alterative B – No Action

The removal of cattle from the allotment is not expected to contribute to cumulative effects to the soil when combined with past, on-going, or reasonably foreseeable actions. Effects of cattle grazing on soils would slowly be remediated over time by freeze-thaw and soil biological activity.

Forest Plan Compliance

The proposed project action should comply with the standards and guidelines described in the Forest Service Manual and Handbook, General Water Quality - Best Management Practices – Pacific Northwest Region (1988c), Region 6 Soil Quality Standards (1998c), and Colville National Forest – Land and Resource Management Plan (1988).

Alternative A – no change, alternative C - proposed action, and alternative D would continue to degrade soils within concentrated-use areas and wetlands rated as functional at risk within the allotment boundary. There are nine concentrated-use areas (a total of 53 acres) of the 14 concentrated-use areas identified that would continue to exceed 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 for becoming nonfunctional without cattle exclusion or restoration of some kind. The forest plan on page 4-50 states that the total acreage of all detrimental soil conditions should not exceed 20 percent of the total acreage within the activity area; to consider restoration treatments if detrimental conditions are about 20 percent or more of the activity area; and detrimental soil conditions include compaction, puddling, displacement and severely burned soil. Alternative C and alternative 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.

For the protection of soil resources and wetland function alternative B – no action would provide the most protection of soil function in concentrated-use areas and the protection of wetland function. Without cattle use and impacts, concentrated-use areas and wetlands would recover detrimental soil conditions and wetland function would improve.

This analysis and report represents best professional judgment based on data collection and observations of the project area, consultation with other soil scientists and resource professionals, and a review of the best available scientific information.

Heritage Resources *(Issue 5)*

Information provided in this Environmental Impact Statement about Heritage Resources is excerpted from the LeClerc Creek Grazing Allotment Cultural Report by Alicia Beat, Forest Archaeologist (2015). The full text of this report is incorporated by reference and is part of the project record.

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 (DAHP) and in the Colville National Forest’s Heritage Program reference library.

Framework and Desired Future Conditions

The current condition will be 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. A full description of the desired future conditions for the LeClerc Creek allotment analysis area are listed on page 7.

Management Class Recommendations for Historic Properties

A National Register for Historic Places (NRHP) 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. Following this, management prescriptions are provided for project analysis. The following list of management prescriptions was developed for historic properties on National Forest System lands. These prescriptions are based on National Register eligibility determinations for historic properties. See Table 52 for an overview.

Management Class 1 Sites have been evaluated and determined not eligible for the National Register of Historic Places. Before any activity occurs at the sites, State Historic Preservation office (SHPO) will review and need to concur with determinations. Management Class 1 sites will then not need to be actively managed.

Management Class 2 sites must be protected and preserved as if they were eligible for the NRHP. There are two protection options available. Either provisions must be made to avoid direct impacts to the site during the planned activities (e.g. delete or buffer entire unit or a sufficient amount of the unit to avoid impacts to the site) 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.

Table 52. Management Class Prescriptions

Management Class	Prescription
1	Evaluated as Not Eligible. No further need to actively manage.
2	Not Evaluated. Property must be protected and preserved as if eligible. Protect historic property through avoidance.
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.
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.

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 free–lance trappers. Under the influence/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 (knifes, 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 historic properties within the proposed planning area. 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. Because past management practices have not evaluated these properties for eligibility to the NRHP; unevaluated historic properties are managed as if eligible and mitigations for these properties will follow management prescriptions as specified in the next section. Currently the Heritage Program management attempts to relocate sites, monitor the sites for damage/deterioration, evaluate the sites for NRHP eligibility, and preserve/protect the sites.

TRIBAL CONCERNS

In 1993, the Kalispel Tribe of Indians notified the Colville National Forest via written correspondence of traditional cultural properties (TCPs) that were located in the LeClerc drainage (482 acres located in the northernmost portion of the allotment). 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 identified parcels.

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 meetings with the Forest (February 19, 2013).

Effects

Direct and Indirect Effects

Alternative A - No Change (Current Management)

Heritage Properties: NO EFFECT

The following heritage sites have the potential to be impacted under alternative A:

Table 53. Heritage Properties, Alternative A

Site Number	Eligibility Determination	Site Number	Eligibility Determination
6201300369	Management Class 2	6210500149	Management Class 2
6210500025	Management Class 2	6210500150	Management Class 2
6210500061	Management Class 2	6210500151	Management Class 2
6210500062	Management Class 2	6210500152	Management Class 2
6210500105	Management Class 2	6210500153	Management Class 2
6210500106	Management Class 2	6210500178	Management Class 2
6210500107	Management Class 2	6210500179	Management Class 2
6210500108	Management Class 2	6210500180	Management Class 2
6210500109	Management Class 2	6210500215	Management Class 2
6210500110	Management Class 2	6210500219	Management Class 2
6210500111	Management Class 2	6210500243	Management Class 2
6210500012	Management Class 2	6210500244	Management Class 2

Site Number	Eligibility Determination	Site Number	Eligibility Determination
6210500113	Management Class 2	6210500261	Management Class 2
6210500114	Management Class 2	6210500283	Management Class 2
6210500115	Management Class 2	6210500286	Management Class 2
6210500116	Management Class 2	6210500292	Management Class 2
6210500117	Management Class 2	6210500294	Management Class 2
6210500118	Management Class 2	6210500295	Management Class 2
6210500119	Management Class 2	6210500296	Management Class 1
6210500120	Management Class 2	6210500297	Management Class 2
6210500121	Management Class 2	6210500300	Management Class 1
6210500129	Management Class 2	6210500332	Management Class 2
6210500130	Management Class 2	6210500366	Management Class 2

Grazing 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 are proposed heritage program personnel will identify sites on the ground and will coordinate with appropriate project personnel to provide location information and additional protection mitigations as needed.

By following the prescribed design criteria stated in chapter 2, alternative A will have no effect on heritage resources.

Tribal Concerns: NEGATIVE EFFECT

The concerns raised by the tribe would continue to be unresolved with regard to grazing permitted within the parcels identified as potentially NRHP eligible TCPs.

Alternative B - No Action (No Grazing)

Heritage Properties: NO EFFECT

There would be little to no change from the current condition. Heritage sites would continue to 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.

The effects from cattle grazing would be eliminated which could slow the rate of deterioration in sites that have been affected by cattle.

Alternative B would have no effect on heritage resources.

Tribal Concerns: BENEFICIAL EFFECT

The concerns raised by the tribe with regard to TCPs would be resolved with grazing not being permitted within the parcels identified as potentially NRHP eligible TCPs.

Alternative C - Proposed Action

Heritage Properties: NO EFFECT

The following heritage sites have the potential to be impacted under alternative C:

Table 54. Heritage Properties, Alternative C

Site Number	Eligibility Determination	Site Number	Eligibility Determination
6201300369	Management Class 2	6210500149	Management Class 2
6210500025	Management Class 2	6210500150	Management Class 2
6210500061	Management Class 2	6210500151	Management Class 2
6210500062	Management Class 2	6210500152	Management Class 2
6210500105	Management Class 2	6210500153	Management Class 2
6210500106	Management Class 2	6210500178	Management Class 2
6210500107	Management Class 2	6210500179	Management Class 2
6210500108	Management Class 2	6210500180	Management Class 2
6210500109	Management Class 2	6210500215	Management Class 2
6210500110	Management Class 2	6210500219	Management Class 2
6210500111	Management Class 2	6210500243	Management Class 2
6210500012	Management Class 2	6210500244	Management Class 2
6210500113	Management Class 2	6210500261	Management Class 2
6210500114	Management Class 2	6210500283	Management Class 2
6210500115	Management Class 2	6210500286	Management Class 2
6210500116	Management Class 2	6210500292	Management Class 2
6210500117	Management Class 2	6210500294	Management Class 2
6210500118	Management Class 2	6210500295	Management Class 2
6210500119	Management Class 2	6210500296	Management Class 1
6210500120	Management Class 2	6210500297	Management Class 2
6210500121	Management Class 2	6210500300	Management Class 1
6210500129	Management Class 2	6210500332	Management Class 2
6210500130	Management Class 2	6210500366	Management Class 2

Grazing 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/improvement, and wildlife/fisheries habitat protection/improvement) are proposed heritage program personnel would identify sites on the ground and would coordinate with appropriate project personnel to provide location information and additional protection mitigations as needed.

Cattle trailing between pastures would occur on pre-existing roadways. The permittee is reasonably required to keep the cattle within the disturbed road prism to avoid potential damage to heritage resources (particularly when trailing through Diamond City).

An Adaptive Management Strategy (AMS) is proposed under alternative C, any project/treatment that results from the AMS would be subject to and comply with the NHPA Section 106 to ensure the protection of historic properties and traditional cultural resources.

By following the prescribed design criteria stated in chapter 2, alternative C will have no effect on heritage resources.

Tribal Concerns: BENEFICIAL AFFECT

Boundary modifications were proposed in alternative C to specifically address tribal concerns for areas they had previously identified as Traditional Cultural Properties. Under this alternative, grazing would be excluded from the parcels identified as potentially NRHP eligible TCPs. Tribal concerns regarding potentially eligible TCP's would be resolved with under alternative C and could have a beneficial effect on culturally significant resources that had previously been affected by cattle grazing activities.

Alternative D – Modification of Proposed Action

Heritage Properties: NO EFFECT

The following heritage sites have the potential to be impacted under alternative D:

Table 55. Heritage Properties, Alternative D

Site Number	Eligibility Determination	Site Number	Eligibility Determination
6201300369	Management Class 2	6210500149	Management Class 2
6210500025	Management Class 2	6210500150	Management Class 2
6210500061	Management Class 2	6210500151	Management Class 2
6210500062	Management Class 2	6210500152	Management Class 2
6210500105	Management Class 2	6210500153	Management Class 2
6210500106	Management Class 2	6210500178	Management Class 2
6210500107	Management Class 2	6210500179	Management Class 2
6210500108	Management Class 2	6210500180	Management Class 2
6210500109	Management Class 2	6210500215	Management Class 2
6210500110	Management Class 2	6210500219	Management Class 2
6210500111	Management Class 2	6210500243	Management Class 2
6210500012	Management Class 2	6210500244	Management Class 2
6210500113	Management Class 2	6210500261	Management Class 2
6210500114	Management Class 2	6210500283	Management Class 2
6210500115	Management Class 2	6210500286	Management Class 2
6210500116	Management Class 2	6210500292	Management Class 2
6210500117	Management Class 2	6210500294	Management Class 2
6210500118	Management Class 2	6210500295	Management Class 2
6210500119	Management Class 2	6210500296	Management Class 1
6210500120	Management Class 2	6210500297	Management Class 2
6210500121	Management Class 2	6210500300	Management Class 1
6210500129	Management Class 2	6210500332	Management Class 2
6210500130	Management Class 2	6210500366	Management Class 2

Grazing 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/improvement, and wildlife/fisheries habitat protection/improvement) are proposed heritage program personnel will identify sites on the ground and will coordinate with appropriate project personnel to provide location information and additional protection mitigations as needed.

Cattle trailing between pastures would occur on pre-existing roadways. The permittee is reasonably required to keep the cattle within the disturbed road prism to avoid potential damage to heritage resources (particularly when trailing through Diamond City).

An Adaptive Management Strategy (AMS) is proposed under alternative D. Any project/treatment that results from the AMS would be subject to and comply with the NHPA Section 106 to ensure the protection of historic properties and traditional cultural resources.

By following the prescribed design criteria stated in chapter 2, alternative D will have no effect on heritage resources.

Tribal Concerns: POTENTIAL TO AFFECT

The concerns raised by the tribe may not be 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 TCPs 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.

Adaptive Management Effects on Heritage Resources for Alternatives C and D

The five potential adaptive management strategies include:

1. Installing additional riparian exclosures, livestock watering structures.
2. Improving pasture controls.
3. Reducing livestock numbers.
4. Reducing grazing season.
5. Planting native vegetation.

The effects of each of these strategies would be beneficial and protect heritage resources affected by livestock grazing and decrease the rate of deterioration of heritage resources.

The other adaptive management strategies that could be used to reduce impacts on water quality, streambank integrity, or riparian shrub density include:

1. Installing additional riparian exclosures or other barriers,
2. Re-building/armoring livestock crossing/watering structures,
3. Installing additional livestock watering structures in uplands,
4. Improving pasture controls or livestock movement by installing more fence, using vegetative barriers, or installing more cattle guards, or
5. Planting native vegetation around riparian zones to shade stream and stabilize banks.

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 Resources program would follow the guidance of the programmatic agreement when considering specific adaptive management projects.

Cumulative Effects (applies to all alternatives)

In general, effects on heritage resources are site specific and are not typically disturbed over the entire analysis area. Depending on the nature or use of a TCP, the effects can be site specific (traditional gathering location) or can affect a larger area (culturally significant view shed). Past, present, and reasonably foreseeable projects can be generalized into five categories: timber/vegetation management activities, road maintenance activities, riparian/fish management activities, recreation, and utility transmission special uses permit activities.

Timber/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 cultural resources that may have been previously protected by vegetative cover to ‘scratching’ and trampling. Vegetation management projects have the potential to affect TCPs if appropriate design criteria are not followed that protect wildlife resources, ethno-botanical resources, and culturally significant view-sheds.

Road maintenance activities typically do not affect cultural resources; 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 TCPs in that they allow tribal members and traditional practitioners’ access to TCPs while at the same time allowing access to other uses (OHV) that may not be compatible.

Riparian/fish management activities do not typically affect cultural resources and can on occasion provide additional protection to certain cultural site types (i.e. flumes, bridges, homesteads) through exclosure fencing. However, in the case of the proposed LeClerc Creek Dam removal; the removal would have a direct, negative effect to at least one cultural resource and has the potential to affect other downstream sites if not mitigated appropriately. Riparian/fish management activities do not typically affect TCPs.

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 the effect (i.e. looting, vandalism, and damage) heritage resources particularly to those resources that have increased visibility and user access. The OHV trails at Ballpark Meadow are located within an area known for its historic properties, however if the OHV use is restrained to the established trails there would be little to no effect to cultural resources. Recreation activities can have an effect on TCPs when those activities (OHV use) are incompatible.

Utility transmission transportation special uses permit typically do not affect cultural resources. Certain utility corridors allow for cattle movement and concentration typically removed from cultural resources. Utility transmission transportation special uses permit can have effects on some types of TCPs (culturally significant view-sheds).

The time bounding for cumulative effects encompasses previous and present disturbances from projects listed in appendix C and assumes disturbances from future projects. For a complete list

of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek allotment analysis areas, refer to Appendix C on page 298. No other projects including the proposed action would have detrimental effects to historic resources or TCPs.

Summary of Effects

Historic Properties

Under alternative A, alternative C, and alternative D, historic properties within the planning area would experience minimal effects. Effects may include destruction or damage to sites due to cattle trailing, cattle concentrations, and cattle rubbing against historic structures. Certain cattle management techniques such as fencing and the maintenance of natural boundaries around sites would effectively reduce these possible impacts. Other projects proposed in the area would follow site-specific mitigations to avoid all known historic properties and to cease/desist work in locations of newly identified historic properties.

Under alternative B, historic properties would experience a lesser degree of effect due to the removal of cattle grazing from the area.

Tribal Concerns

Under alternative A, TCPs would experience some degree of effect due to the continuation of cattle grazing from the area. Effects may include destruction or damage to medicinal plant sites due to cattle trailing and cattle concentrations. Certain cattle management techniques, such as, fencing and the maintenance of natural boundaries around sites would effectively reduce these possible impacts.

Under alternative B, alternative C, and alternative D, TCPs within the planning area would experience minimal effects from the culmination of projects in the area. Under alternative B, cattle would not be permitted in the allotment, thus reducing the tribal concerns. Alternative C proposes an allotment boundary change which would remove cattle from grazing, trailing, and/or concentrating in/near TCPs locations, thus reducing the majority of the tribal concerns. Alternative D proposes an allotment boundary change which would remove cattle from grazing, trailing, and/or concentrating in/near all but one TCP location, thus reducing the majority of tribal concerns in all but this one TCP location. Reasonable efforts would be made to prevent effects to the TCP but the potential to affect remains.

Future activities associated with the above alternatives within the planning area would have no foreseeable effects on the historic properties.

Forest Plan Compliance

The LeClerc Creek Grazing Allotment Planning DEIS, with the mitigation provided, meets the Forest Plan Standards and Guidelines for Cultural Resources item 2 page 4-37 and Federal regulations concerning Heritage 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 lead to degraded plant and animal habitat, displace native vegetation, increase erosion, 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 56. 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

SPECIES	CONTROL CATEGORY
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 on-going. 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 will 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

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 out-compete and prevent invasive species from becoming established and spreading. Invasive plants can compete with and out-compete 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 on-going 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

Direct and Indirect Effects

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-type equipment would be used for project implementation, such as the proposed cattleguard installation and hardened crossing construction, there is a risk of noxious weed seeds and reproductive parts being introduced. The potential for noxious weeds becoming established at the above mentioned sites would be effectively mitigated by requiring the washing or cleaning of equipment prior to entering the National Forest 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 into level 1 roads and trails with motorized vehicles to access some 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 – No Action (No Grazing)

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 due to lack of early detection by the permittee.

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 will 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 wind-blown seed. In addition to wind-blown 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 times the grazing permittees are the first people to observe and identify new noxious weed infestations within their allotments since they are frequently present within the allotment 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

Driving for pleasure, motorized recreation, hunting, hiking, firewood gathering, dispersed recreation, and camping are all expected to continue independent of the proposed action, 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 on page 298.

There have been past wildfires, both small and large, that have burnt 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 return to all or portions of the LeClerc Creek Allotment post-wildfire would be determined by and documented in fire rehabilitation plans.

Timber harvest has been experienced 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 re-vegetation 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 Service 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 road bed 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 will 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.

In spite of present and on-going noxious weed treatments in the area, which are implemented independent of this Environmental Impact Statement and the proposed action, 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 a herbicide application event depending on the herbicide used and the type of soil present.

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 on-going noxious weed control activities. Alternatives B, C and D would improve declining resource conditions that favor noxious weed establishment.

Recreation

Information provided in this Environmental Impact Statement about Recreation is excerpted from the LeClerc Creek Grazing Allotment Recreation Report by Kevin Walton, District Recreation Officer (2015). The full text of this report is incorporated by reference and is part of the project record.

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 holding pen 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. The 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 – No Change (Current Management)

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 in to 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 – No Action (No Grazing)

Under this alternative, grazing would be eliminated. Little or no significant effect would result 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.

Alternative C - Proposed Action

The proposed action would have little to no effect on recreation use with 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.

Alternative D – Modification of Proposed Action

Effects to recreation would be the same as alternative C. The changes in fence locations would not affect recreation use in this area. 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.

Adaptive Management effects for Alternative C and D

If any of the adaptive management strategies 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.

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 proposed action would meet the recreation goals and objectives identified in the Forest Plan page 4-7.

Transportation System

Information provided in this Environmental Impact Statement about Transportation is excerpted from the LeClerc Creek Grazing Allotment Transportation Report by Monte Zema, Forest Transportation Specialist (2015). 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.

7703.24 – Maintaining and Reconstructing Roads

1. Emphasize maintenance and reconstruction of NFS roads to meet road management objectives (FSM 7714).
2. Give priority to maintaining and reconstructing the most heavily used roads to provide safe and efficient travel and to reduce adverse environmental impacts. Do not maintain unauthorized roads. After an administrative unit or ranger district has completed route and area designation, motor vehicle use is prohibited on unauthorized roads, and those roads may be decommissioned as funding permits. Temporary roads are maintained as provided in the contract, permit, lease, or other written authorization for those roads and must be decommissioned at the conclusion of the authorized activity.
3. Access needs for utilization and administration of NFS lands and resources may sometimes result in establishment of NFS roads that are part of the forest transportation system but are not designated for motor vehicle use by the general public, and therefore are not shown on an MVUM.
4. Intermittent-service roads may provide access for Forest Service administration of NFS lands or for motor vehicles authorized by contract, permit, or other written authorization issued under federal law or regulation (36 CFR 212.51(a)(8)). These roads should continue to be managed, maintained, and operated consistent with the applicable land management plan and applicable road management objectives.
5. Access needed to private property or developments on or near NFS lands also may result in establishment of public or private roads that cross NFS lands but are not necessary for the protection, administration, and utilization of the NFS and therefore are not forest roads or

NFS roads. Like forest roads authorized by a legally documented right-of-way held by a state, county, or local public road authority, these roads should be maintained by the holder of the right-of-way.

7703.25 – Decommissioning Roads

1. Use travel analysis (FSM 7712; FSH 7709.55, ch. 20) to identify roads that may not be needed for the use and management of NFS lands; to identify roads that could be converted to trails; to identify restoration needs; and to establish decommissioning priorities. Unauthorized roads, temporary roads, and any NFS roads no longer needed for the use and management of NFS lands should be decommissioned. Do not designate temporary roads or unneeded roads for motor vehicle use, and do not show unneeded roads on an MVUM.
2. See FSM 7734 for further direction regarding decommissioning roads.

7709.57 – Road Construction Handbook

This handbook provides guidance on engineering for road construction. The road work associated with construction of a small segment of road into Hanlon Meadow would be done in accordance with the National Core BMPs (600 feet of new alignment off the existing NFS road 1935116).

Affected Environment

The LeClerc Creek Grazing Allotment lies approximately 13 miles northeast of Cusick, Washington, situated largely in the Middle and West Fork of LeClerc Creek drainages. 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 57. 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 layer on 12/13/2012, 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 58. Miles of System Road Under Forest Service Jurisdiction in the Planning Area by Maintenance Level

Oper./Obj.[11] Maint. Level	Length (miles)	Percent of total
Level 1/1	18.8	41.7%
Level 1/2	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. Following is a brief description of the maintenance levels for FS roads in Table 58 found in the planning area.

Maintenance Level 1: These roads are assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period is one year or longer. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Appropriate traffic management strategies (See FSM 7731.11) are “prohibit” and “eliminate.” Roads placed in this category may be any type, class, or construction standard, and may be managed at any other maintenance level during the time they are open for traffic. However, while being maintained at Level 1, they are closed to vehicular traffic, but may be open and suitable for nonmotorized uses. There are approximately 19 miles of Level 1 road in the LeClerc Creek Allotment Analysis Area under Forest Service jurisdiction. All Level 1 roads are closed physically (i.e., gate with CFR, guardrail barricade, earthen berm, boulders. etc.) or via roads that are closed physically.

There are seven roads, or segments of, totaling approximately 13.5 miles, identified as cost share roads with Stimson Lumber Company (SLC), Burlington Northern (BN), or the Washington State Department of Natural Resources (DNR). A listing of the road, the estimated length of the cost share segment (rounded to nearest 0.1 mile), the beginning and ending mileposts (MP) of the shared segment, and the cooperator is as follows:

1933112 (1.0 miles) MP 0.0 to MP 1.0 with SLC

1935011 (4.17 miles) MP 0.0 to MP 4.17 with SLC

1935025 (4.2 miles) MP 0.0 to MP 4.207 with SLC

1935107 (1.1 miles) MP 0.0 to MP 1.099 with SLC

1935108 (0.3 miles) MP 0.0 to MP 0.3 with SLC

1935110 (1.3 miles) MP 0.00 to MP 1.294 with SLC

[11] Operational and Objective Maintenance Levels.

1935112 (1.1 miles) MP 0.00 to MP 1.09 with SLC

Maintenance Level 2: Assigned to roads open for use by high clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level. Appropriate traffic management strategies are either (1) “discourage” or “prohibit” passenger cars or (2) “accept” or “discourage” high clearance vehicles.

There are approximately 14.8 miles of roads with an operational maintenance level of 2 in the LeClerc Creek Grazing Allotment Area under Forest Service jurisdiction. Of these, an estimated 0.00 miles have an objective maintenance level of 1. There are no cost share segments for level 2/1 in the Leclerc Creek Grazing Allotment Area.

Maintenance activities planned for accomplishment on roads in this category are intended to allow for the passage of high clearance vehicles and to prevent unacceptable resource damage. Segments of three different roads in this category, totaling approximately 7.06 miles, are currently cost shared with Stimson Lumber Company (SLC), Burlington Northern (BN), the Washington State Department of Natural Resources (DNR), or Crown Pacific (CP). A listing of the road, the estimated length of the cost share segment (rounded to nearest 0.1 mile), the beginning and ending mileposts (MP) of the shared segment, and the cooperator is as follows:

1935011 (4.17 miles) MP 0.0 to MP 4.17 with SLC

1935112 (1.09 miles) MP 0.0 to MP 1.09 with SLC

1935115 (1.8 miles) MP 0.551 to MP 2.36 with SLC

Maintenance Level 3: Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Roads in this category are typically low speed, single lane with turnouts and spot surfacing. Some roads may be fully surfaced with either native or processed material. Appropriate traffic management strategies are either “encourage” or “accept.” Maintenance Level 3 roads are subject to the Highway Safety Act (P.L. 89-564), which requires appropriate signing in accordance with the Manual on Uniform Traffic Control Devices (MUTCD). There are only two roads, (1935000 and 1936000), totaling approximately 12.9 miles, in this category in the planning area under USFS jurisdiction. NFS road 1935000 is currently cost shared with Stimson Lumber Company (MP 0.00 to MP 26.44).

Cattle Guards: There are eight cattle guards in the LeClerc Creek Grazing Allotment. These cattle guards are in various states of repair. Further analysis would be needed for each cattle guard location.

1933000 MP 0.00
1933000 MP 6.478
1934202 MP 0.03
1935000 MP 25.44
1935000 MP 21.06
1935105 MP 0.014
1935115 MP 0.535
1936000 MP 19.377

Effects

Alternative A - No Change (Current Management)

System road use would remain unchanged. Cattle guard locations would remain unchanged. No new construction or decommissioning would take place. No changes in maintenance intervals or locations if this alternative was selected.

Alternative B - No Action (No Grazing)

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 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.

Alternative C – Proposed Action

There are eight existing cattle guards on National Forest System roads within the LeClerc Creek Grazing Allotment analysis area. All but one of these would remain in their current locations. Under the proposed action the cattle guard at mile post (MP) 25.44 on NFS road 1935000 would be relocated north to new allotment boundary in T. 36 N., R. 44 E., Section 20, SE ¼.

In this proposal one new cattle guard would be installed on NFS road 1935011 near the eastern edge of section 10, T. 36 N., R. 44 E. (Stimson boundary). Install two new cattle guards on NFS road 1935000 where it crosses private land in T. 36 N., R. 44 E., section 21, NW ¼ (Stimson boundary). Install one new cattle guard on NFS road 1936000 at a location to be determined to keep cattle from drifting off pasture. Finally assess the need for one new cattle guard on NFS road 1935000 southwest of Bunchgrass Meadows to keep cattle from drifting off pasture in that location.

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 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.

With this decision 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. The proposed action and its specific activities meet Forest Plan direction and do not negatively affect the transportation system.

The 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.

Alternative D – Modification of Proposed Action

This alternative incorporates all the elements of alternative C, but with modifications. Current management of the allotment would change as described in the discussion of alternative C. Direct, indirect, and cumulative effects would be similar to those described for alternative C.

There are eight existing cattle guards on National Forest System roads within the LeClerc Creek Grazing Allotment analysis area and all would remain in their current locations. Under alternative D, one new cattle guard would be installed on NFS road 1935011 near the eastern edge of section 10, T. 36 N., R. 44 E, and two new cattle guards would be installed on the Paupac Road (NFS road 1936). One in T. 37 N., R. 43 E., section 23, and one on NFS road 1936010 in T. 37 N., R. 43 E., section 25.

All maintenance, new construction/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. Alternative D and its specific activities meet Forest Plan direction and do not negatively affect the transportation system.

Adaptive Management Effects for Alternatives C and D

If any of the adaptive management strategies were to be implemented in the next 10 years there would not be any foreseeable adverse or beneficial impacts to the transportation system.

Cumulative Effects

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. Check with district sale administration for timing of any stewardship activities.

Stimson Lumber Company could be hauling timber on these routes also. Any maintenance or construction activities could interfere with their haul. Check with Stimson Lumber Company for timing of logging activities before any maintenance or constriction take place.

For a complete list of recent or reasonably foreseeable activities within and adjacent to the LeClerc Creek allotment analysis areas, refer to Appendix C on page 298.

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

Information provided in this Environmental Impact Statement about Special Use Authorizations and Minerals is excerpted from the LeClerc Creek Grazing Allotment Special Uses and Minerals Report by Karen Nooney, Forest Special Use Authorizations Administrator (2014). The full text of this report is incorporated by reference and is part of the project record.

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.

Affected Environment - 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 is no active mineral material contracts issued for the project area.

Effects

Direct, Indirect, and Cumulative Effects and Forest Plan Compliance

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 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 on page 298. 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).

Other Required Disclosures

NEPA at 40 CFR 1502.25(a) directs "to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with other environmental review laws and executive orders." Applicable laws and regulations were considered in this

DEIS. The proposed activities in all alternatives are consistent with Federal, State, and local laws and requirements for the protection of the environment.

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 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.

Congressionally Designated Areas, Unique Ecosystems

The LeClerc Creek Grazing allotment does not contain, nor is it within an influence zone for, any existing wilderness, wilderness study area, wild and scenic river area, national recreation area, or municipal watershed. There are no unique ecosystems within the analysis area.

The existing allotment boundary is adjacent to the Bunchgrass Research Natural Area (RNA). The allotment boundary does overlap portions of two inventoried roadless areas (IRA) – Dry Canyon Breaks and Harvey Creek. The portions of the allotment that overlap these IRAs are located in areas that are steep and primarily inaccessible to cattle. No timber harvest or road construction activities are proposed within any IRA or RNA.

Environmental Justice Act

Environmental justice speaks to concerns that cost of federal decisions that could fall disproportionately on people of a particular ethnic or cultural heritage group, or on people with low incomes. Environmental Justice is an executive order (EO 12898) that requires, in brief, that each Federal Agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations. The Council on Environmental Quality (CEQ) (1997) provides the following definitions in order to provide guidance for compliance with environmental justice requirements in NEPA:

• “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 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."

The Forest Service does not maintain records on the minority status of permit holders and does not discriminate in the permitting process. The permit for this allotment is held by a corporation.

Alternatives B and C do not appear to generate a disparate impact on minority or low-income populations, women, or minorities. Alternatives A and D could have potential impacts to minority populations and these effects are discussed in the Heritage section of this DEIS (pages 198-207). 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.

Civil Rights Impact Analysis

USDA civil rights policy requires each agency to analyze the civil rights impact(s) of policies, actions, or decisions that will affect federally conducted and federally assisted programs and activities. A civil rights impact analysis (CRIA) facilitates the identification of the effects of eligibility criteria, methods of administration, or other agency-imposed requirements that may adversely and disproportionately impact employees or program beneficiaries based on their membership in a protected group. Protected groups include multiples of similarly situated persons who may be distinguished by their common race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetics, political beliefs, or receipt of income from any public assistance program. Restrictions on motor vehicle use that are applied consistently to everyone are not discriminatory. However, some groups could be impacted more than others. This assessment addresses such concerns.

Concerns and Mitigations Related to Potential Civil Rights Impacts

Through public involvement efforts and interdisciplinary discussions, several concerns were raised and are addressed below:

Effects To Resources Important to American Indians

Concerns were raised by American Indians and tribal representatives that this proposal would continue to allow cattle access to sacred sites or traditional gathering areas, which would detrimentally affect the traditional practitioner's experience. In addition, the effects of cattle grazing on native game and fish species used by tribal members for food sources would result in decreased health and population of these species. Changes to allotment boundaries and design features like off-site watering for alternatives C and D are expected to eliminate or decrease these effects. Further discussion of these effects are discussed in the Heritage section of this DEIS.

Prime Farm Land, Range Land and Forest Land

The actions proposed would have no effect on parklands or prime farmlands, rangeland, and forestland as defined in FSH 1909.15 section 65.2. These kinds of land allocations or land capability either do not exist in the analysis area or would be unaffected by the proposed activities in the alternatives.

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.

Applicable Laws and Executive Orders

Shown below is a partial list of federal laws and executive orders pertaining to grazing project-specific planning and environmental analysis on federal lands. This DEIS adheres to the following legal requirements:

American Indian Religious Freedom Act

Public Law No. 95-341, 92 Stat. 469 (Aug. 11, 1978) (commonly abbreviated to AIRFA), codified at 42 U.S.C. § 1996, is a United States federal law, enacted by joint resolution of the Congress in 1978. It 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 required 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. It also acknowledges the prior violation of that right.

Public Rangelands Improvement Act of 1978

This act established the present 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**.**

Multiple-Use Sustained-Yield Act of June 12, 1960

This act formally established the policy of managing national forests for multiple uses, including outdoor recreation, range, timber, watershed, wildlife, and fish purposes.

Rescissions Act of 1995, Section 504

This act directed the USFS to complete site-specific National Environmental Policy Act (NEPA) analysis and management decisions for allotments. It also directs the Agency to provide livestock-based economic opportunities in rural communities while contributing to the West’s social fabric and identity. Together, public lands and the adjacent private ranches maintain open spaces in the fast-growing West, provide habitat for wildlife, offer a myriad of recreational opportunities for public land users, and help preserve the character of the rural West.

National Forest Management Act (NFMA)

This act guides development and revision of National Forest Land Management Plans.

Multiple-Use Sustained Yield Act

This act states that renewable surface resources of the National Forests shall be developed and administered for multiple use and sustained yield. Due consideration shall be given to the relative values of the various resources in particular areas.

Endangered Species Act of 1973, as Amended

The purpose of this act is to provide for the conservation of endangered fish, wildlife, plants, and their habitats. Biological Assessments must be prepared to document possible effects of proposed activities on endangered and threatened species within the analysis area potentially affected by the project. Appropriate coordination, conferencing, and consultation with the US Fish and Wildlife Service will be completed prior to any decisions as a result of this document.

Migratory Bird Treaty Act of 1918, as Amended

The purpose of this act is to establish an international framework for the protection and conservation of migratory birds.

Invasive Species, Executive Order 13112

This 1999 order requires Federal agencies whose actions may affect the status of invasive species to identify those actions and within budgetary limits, "(i) prevent the introduction of invasive species; (ii) detect and respond rapidly to and control populations of such species…(iii) monitor invasive species populations… (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded, … (v) promote public education on invasive species… and not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species… unless, pursuant to guidelines that it has prescribed, the agency had determined and made public… that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions."

Based on management requirements for invasive plants, the LeClerc Creek Grazing Allotment DEIS complies with this Executive Order.

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.

Floodplains, 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.

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.

National Historic Preservation Act and Treaty Resources

This act requires federal agencies to consult with the State Historical Preservation Office and American Indian Tribes before cultural resources, such as archaeological sites and historic structures are damaged or destroyed. Section 106 of this act requires federal agencies to review the effects project proposals may have on cultural resources in the project area.

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Chapter 4. Consultation and Coordination

The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and other organizations and individuals during the development of this environmental impact statement.

Preparers and Contributors

The following agency personnel participated in the preparation of this Draft EIS.

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Federal, State, and Local Agencies

Pend Oreille County Commissioners

Public Utility District #1 of Pend Oreille County

US Fish and Wildlife Service

Washington State Department of Fish and Wildlife

Tribes

Confederated Tribes of the Colville Reservation

Kalispel Tribe of Indians

Spokane Tribe

Others

Washington Cattlemen's Association

Distribution of the Environmental Impact Statement

The following is a list of agencies, organizations, and individuals receiving a copy the Draft LeClerc Creek Grazing Allotment Environmental Impact Statement or notification of web availability. The list includes those who requested copies or responded to the scoping efforts; the allotment permittee affected by the proposal, and required agencies.

Individuals and Organizations

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Mark Cauchy, Public Utility District #1 of Pend Oreille County

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Kettle Range Conservation Group

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Stimson Lumber Company

John and Linda Szabo

Agencies

Environmental Protection Agency, Region 10

US Fish and Wildlife Service

Washington State Department of Fish and Wildlife

Washington State Department of Natural Resources

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LeClerc Creek Grazing Allotment EIS
Appendix A – Maps

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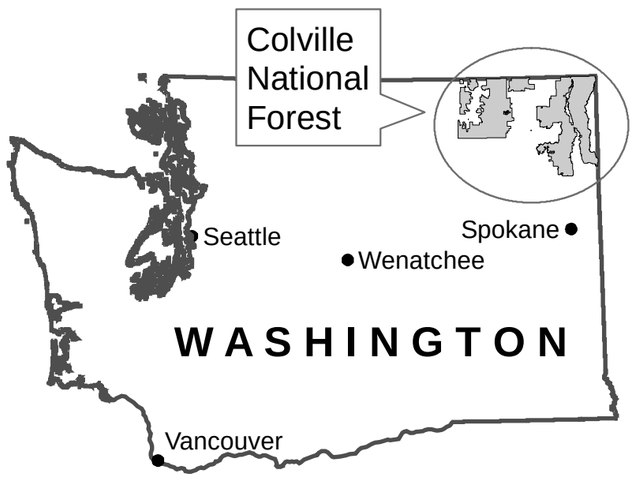
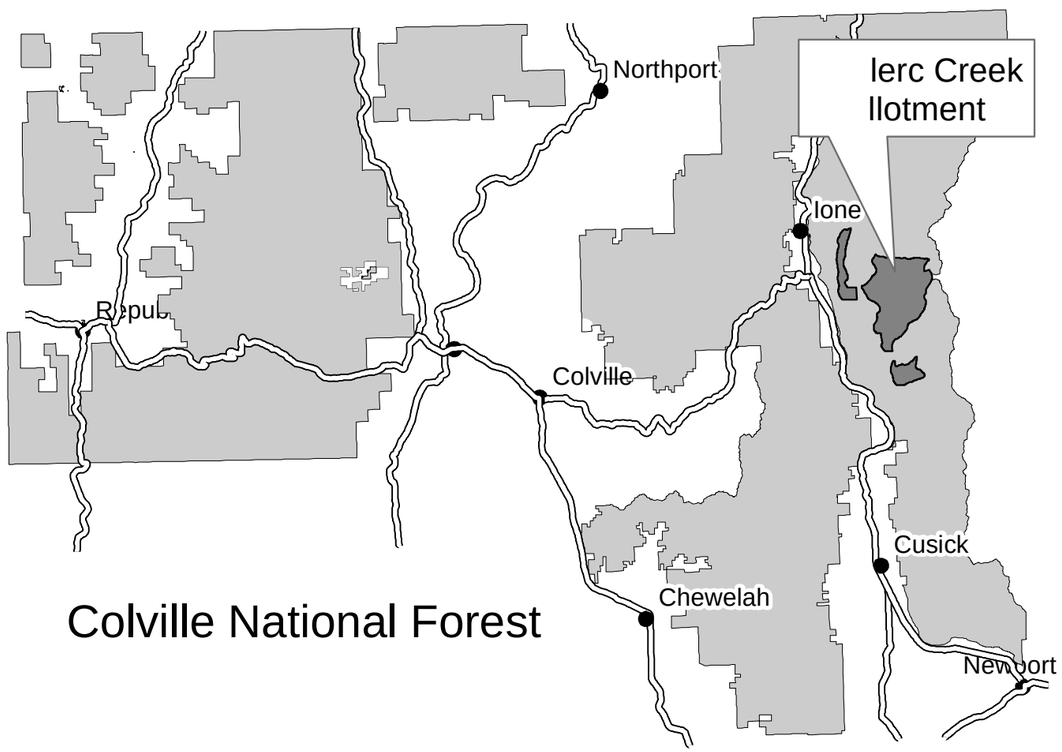
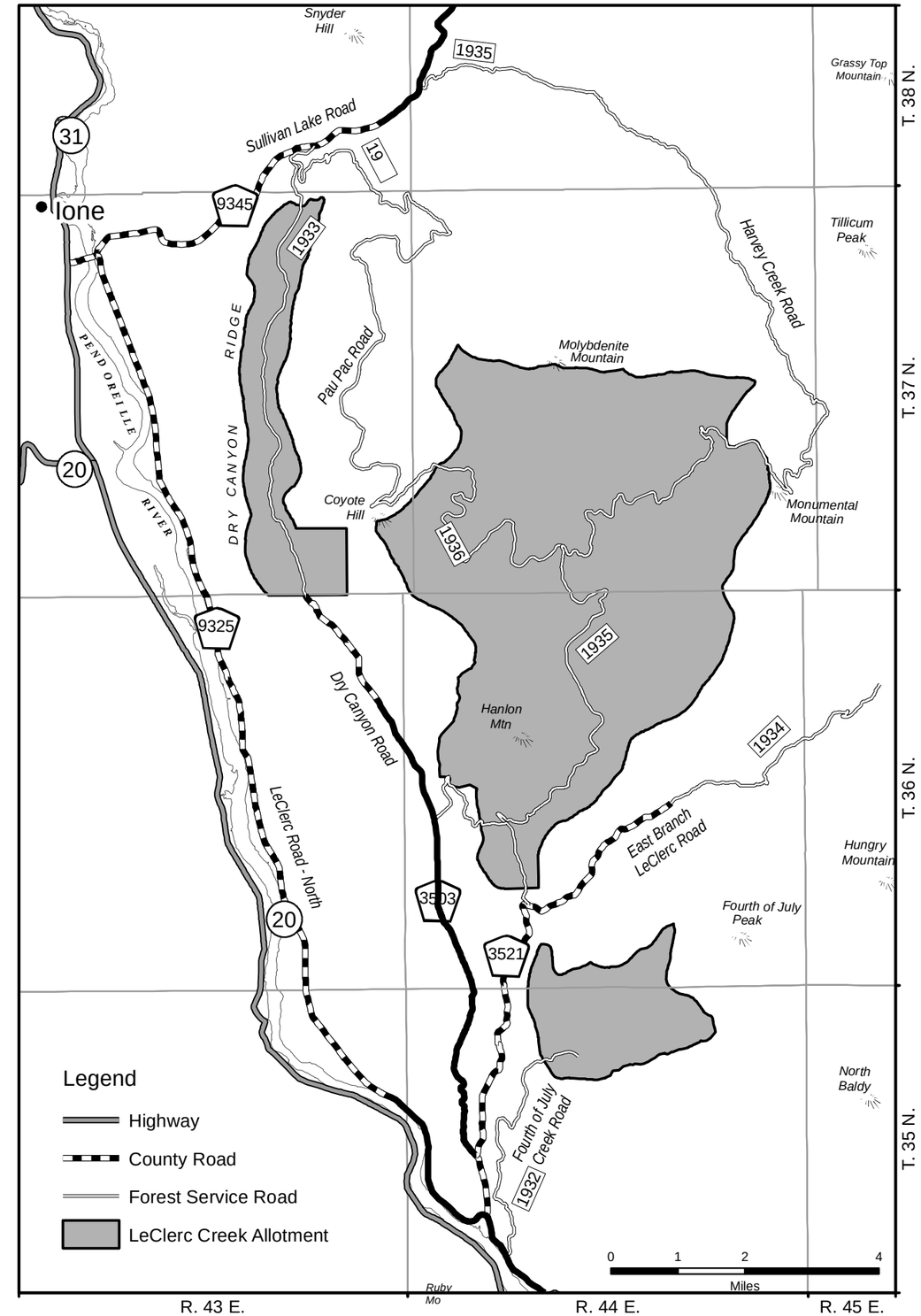
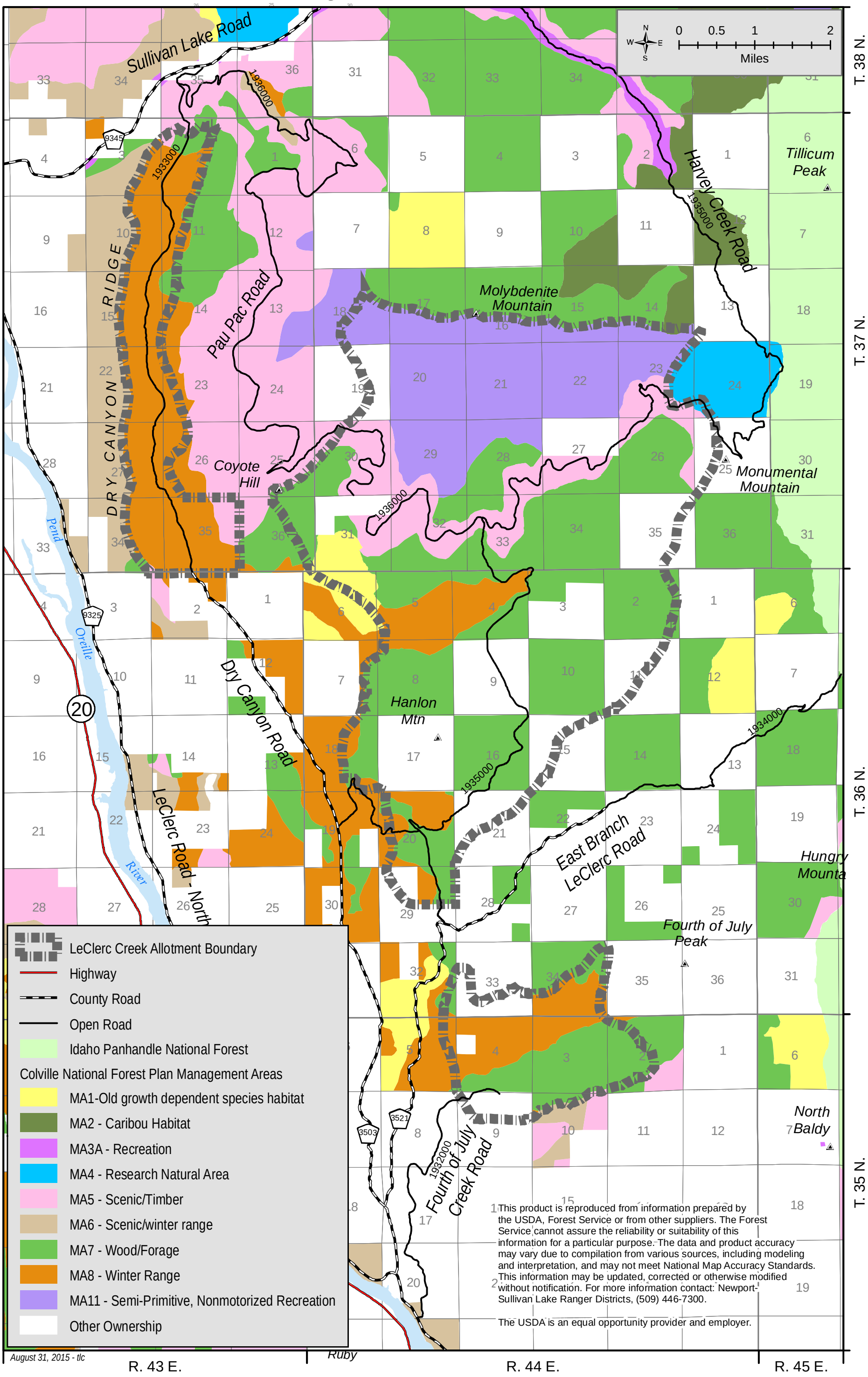
LeClerc Creek Allotment General Vicinity Map







LeClerc Creek Allotment Management Areas



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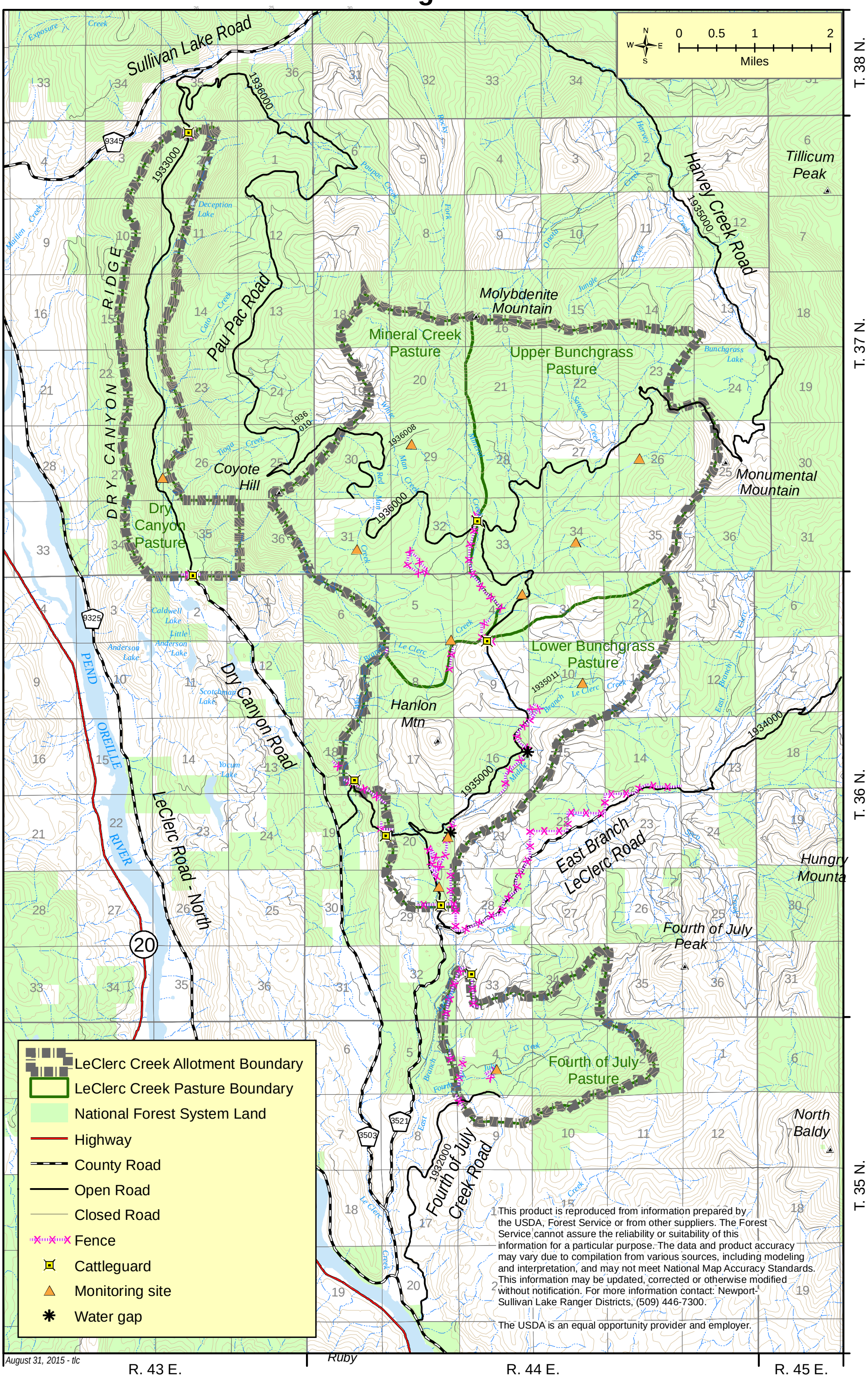
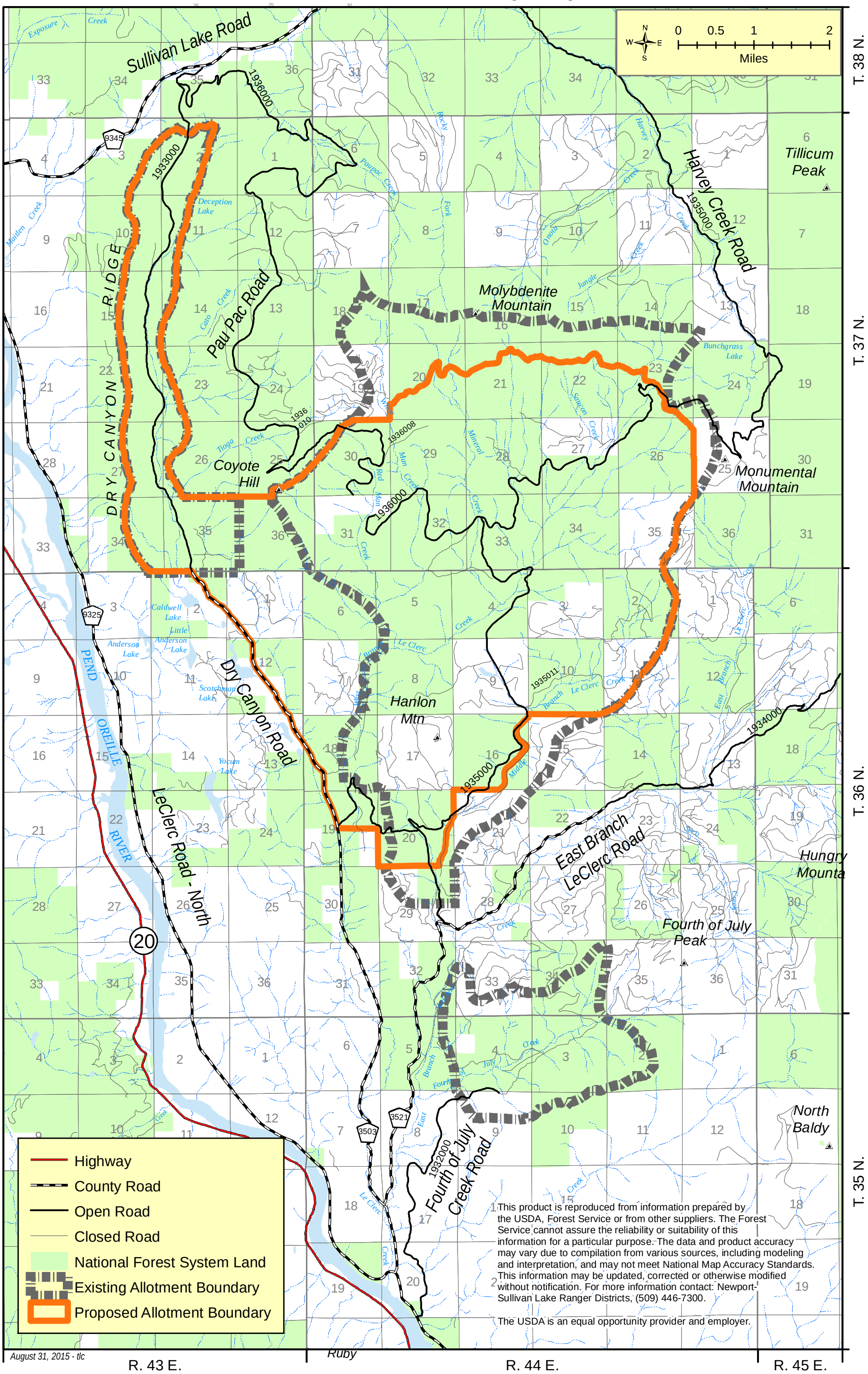
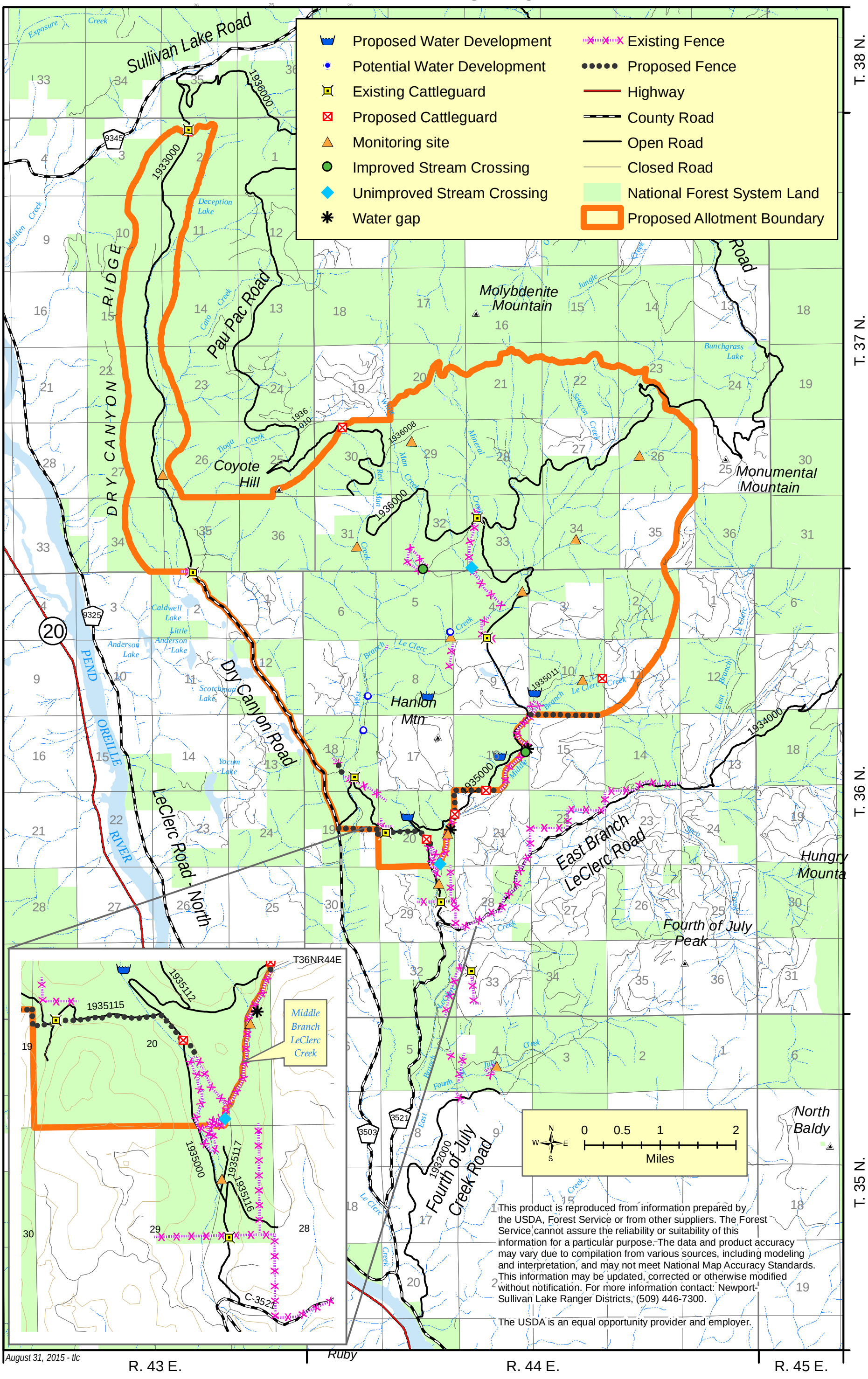


LeClerc Creek Allotment Alternative C: Boundary Proposal



LeClerc Creek Allotment Alternative C: Range Improvements



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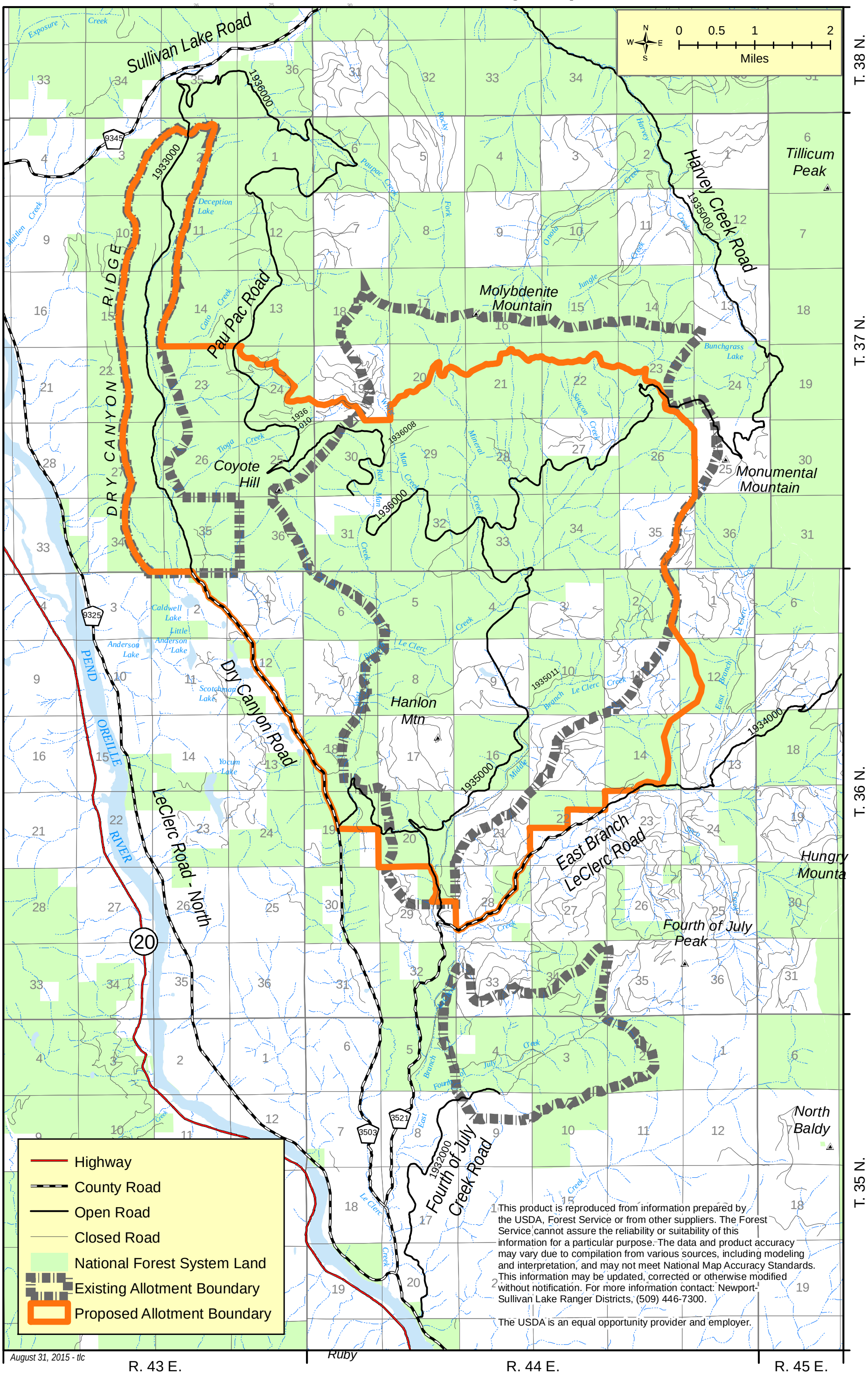
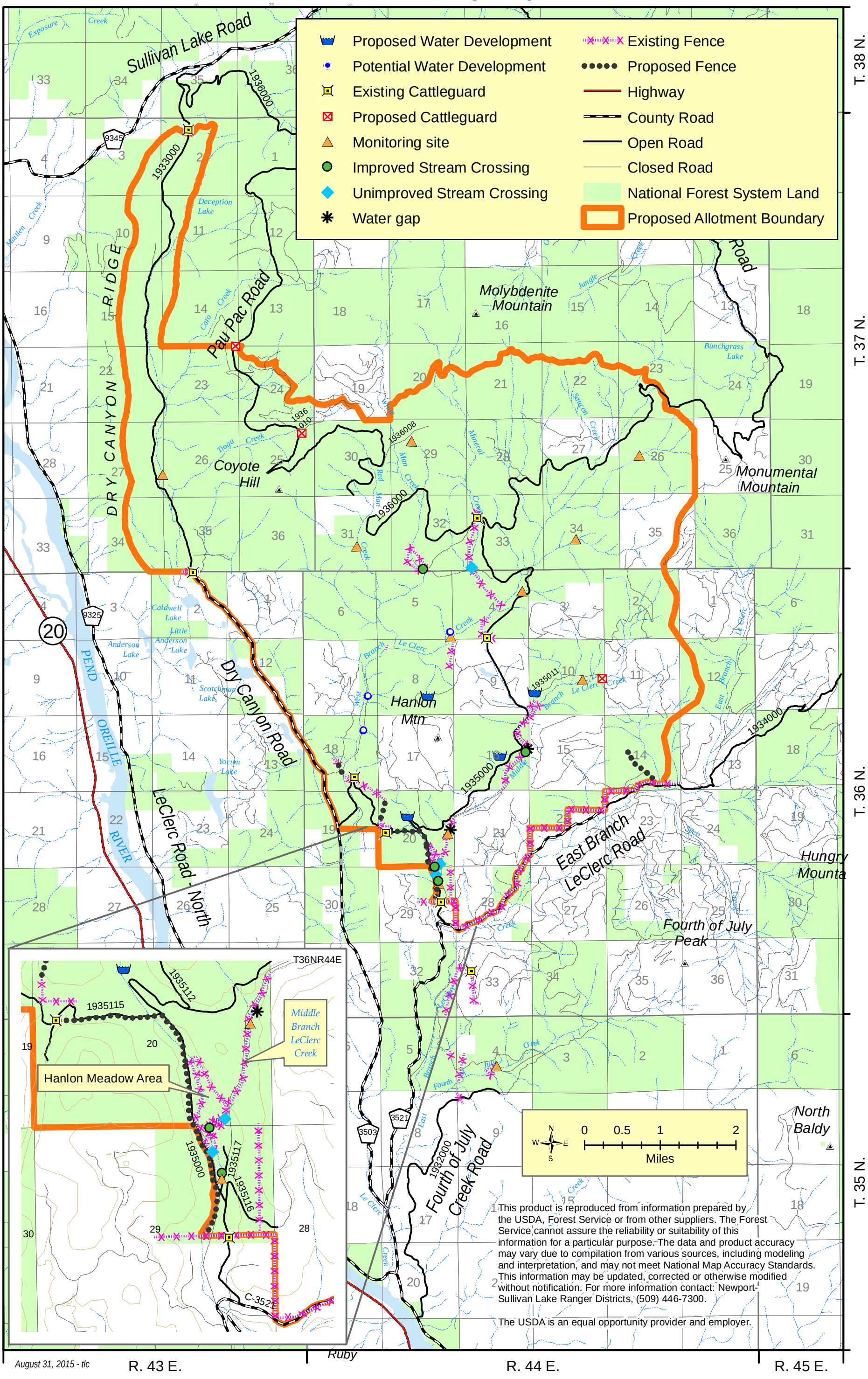
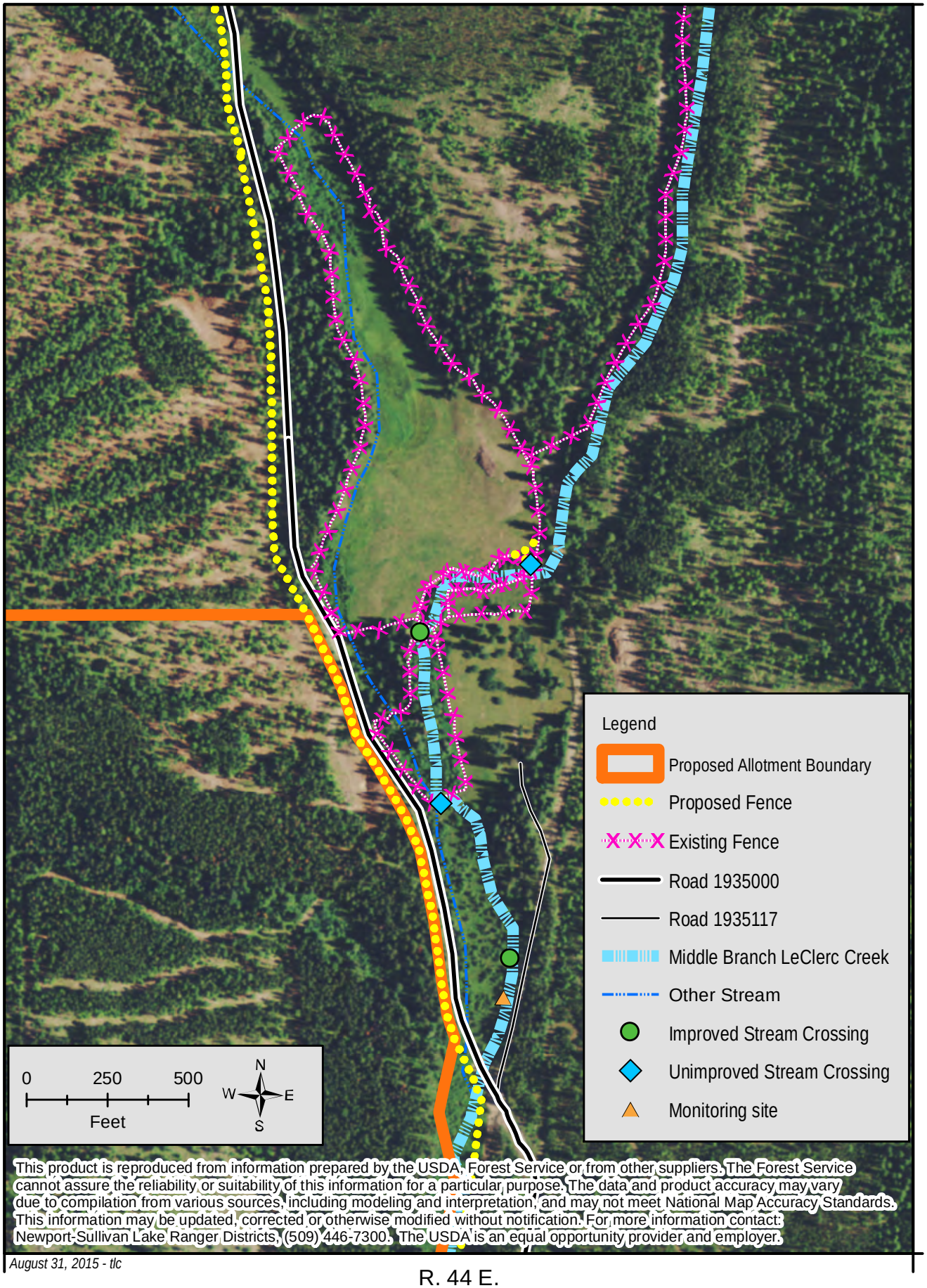
LeClerc Creek Allotment Alternative D: Boundary Proposal



LeClerc Creek Allotment Alternative D: Range Improvements



LeClerc Creek Allotment Alternative D: Hanlon Meadow Area



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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 59. 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 following format:

Table 60. 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

AML – Abandoned Mine Lands

AMP – Allotment Management Plan

AMZ – Aquatic Management Zone

AOI – Annual Operating Instructions

ARBO – Aquatic Restoration Biological Opinion

BAER – Burned Area Emergency Response

BLM – Bureau of Land Management

BMP – Best Management Practice

CFR – Code of Federal Regulations

COE – U.S. Army Corps of Engineers

CWA – Clean Water Act

CWE – cummulative watershed effects

DSR – Damage Survey Report

EPA – United States Environmental Protection Agency

ERFO – emergency relief for federally owned roads

FERC – Federal Energy Regulatory Commission

FLPMA – Federal Land Policy and Management Act

FY – Fiscal Year

FSH – Forest Service Handbook

FSM – Forest Service Manual

IDT – Interdisciplinary Team

IMT – Incident Management Team

LID – Low Impact Design

MIST – Minimum Impact Suppression Tactics

MSDS – Material Safety Data Sheet

MVUM – Motor Vehicle Use Map

NEPA – National Environmental Policy Act

NFMA – National Forest Management Act

NFS – National Forest System

NPDES – National Pollutant Discharge Elimination System

NRCS – Natural Resources Conservation Service

OHV – Off Highway Vehicle

RMO – Road Management Objectives

ROS – Recreation Opportunity Spectrum

SDWA – Safe Drinking Water Act

SMZ – Streamside Management Zone

SPCC – Spill Prevention Control and Countermeasure

TMDL – Total Maximum Daily Load

USDA – United States Department of Agriculture

USDI – United States Department of Interior

USFS – United States Forest Service

USGS – United States Geological Survey

WDFW – Washington Department of Fish and Wildlife

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 exclosure 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.

- o Consider enhanced BMPs identified in a TMDL or other watershed restoration plan to protect impaired water bodies within the project area.

- o Use site evaluations, professional experience, monitoring results, and land management plan standards, guidelines, and other requirements.

- o 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.

- o 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]).

- o Design activities on or near unstable areas and sensitive soils to minimize management induced impacts.

- o 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.
  - o Consider the natural sensitivity or tolerance of the watershed based on geology, climate, and other relevant factors.

  - o Consider the existing condition of the watershed and water quality as a reflection of past land management activities and natural disturbances.

  - o 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.

  - o Use land management plan direction; Federal, State, or local water quality standards; and other regulations to determine acceptable limits for CWE.

  - o Modify the proposed project or activity as necessary by changing project design, location, and timing to reduce the potential for CWE to occur.

  - o Consider including additional mitigation measures to reduce project effects.

  - o Identify and implement opportunities for restoration activities to speed recovery of watershed condition before initiating additional anthropogenic disturbance in the watershed.

  - o 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.

- o 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.

- o Consider how past, current, and future land use patterns may affect the proposed project site.

- o 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.

  - o Establish desired future conditions that are consistent with the land management plan's goals and direction.

  - o Use a reference condition to determine the natural potential water quality and habitat conditions of a water body.

  - o 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.

  - o 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.

  - o 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.

  - o 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.

- o 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.

- o 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.
  - o 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.

  - o Avoid scheduling instream work during periods that could be interrupted by high flows.

  - o 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.

  - o Clearly delineate the geographic limits of the area to be cleared.

  - o Use suitable drainage measures to improve the workability of wet sites.

  - o 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.
  - o Minimize heavy equipment entry into or crossing water as is practicable.

  - o Conduct operations during dry periods.

  - o Stage construction operations as needed to limit the extent of disturbed areas without installed stabilization measures.

  - o Promptly install and appropriately maintain erosion control measures.

  - o Promptly install and appropriately maintain spill prevention and containment measures.

  - o Promptly rehabilitate or stabilize disturbed areas as needed following construction or maintenance activities.

  - o Stockpile and protect topsoil for reuse in site re-vegetation.

  - o Minimize bank and riparian area excavation during construction to the extent practicable.

- o Keep excavated materials out of the waterbody.
- o Use only clean, suitable materials that are free of toxins and invasive species for fill.
- o Properly compact fills to avoid or minimize erosion.
- o Balance cuts and fills to minimize disposal needs.
- o Remove all project debris from the waterbody in a manner that will cause the least disturbance.
- o Identify suitable areas offsite or away from waterbodies for disposal sites before beginning operations.
- o Contour site to disperse runoff, minimize erosion, stabilize slopes, and provide a favorable environment for plant growth.
- o 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.
  - o Remove aquatic organisms from the construction area before dewatering and prevent organisms from returning to the site during construction.
  - o Return clean flows to channel or waterbody downstream of the activity.
  - o 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.
  - o 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.
  - o 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 water-bodies, 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 (holding pen) 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 holding pen 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.

- o 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.
  - o 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.
  - o Determine the shoreline slope configuration above and below the waterline.
  - o Consider the effects of offshore depth, dynamic wave height, and wave action on shoreline erosion processes.
  - o Determine the nature of the bank soil material to aid in estimating erosion rates.
  - o Consider foundation material at the site when selecting structural measures.
  - o 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.
  - o 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.

- o 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.

  - o Use accepted protocols to evaluate compliance with annual indicators of use and other land management plan standards.

  - o 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):

  - o Management objectives for livestock grazing and all resources affected by livestock grazing.

  - o Management requirements for livestock grazing in the allotment.

  - o Monitoring requirements to implement adaptive management in the allotment.

  - o 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.

o Use applicable practices of BMP Fire-2 (Use of Prescribed Fire) when using prescribed fire to improve rangeland vegetation and conditions.

o Use applicable practices of BMP AqEco-3 (Ponds and Wetlands) and BMP AqEco-4 (Stream Channels and Shorelines) for improvement activities that involve waterbodies.

o 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 holding pen 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 holding pen fence and access gate for the holding pen.

- 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.

- o 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.

  - o Use site conditions and local requirements to determine design flood flows.

  - o Use suitable measures to protect fill from erosion and to avoid or minimize failure of the crossing at flood flows.

  - o 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.

  - o Consider the use of bottomless arch culverts where appropriate to allow for natural channel migration and desired aquatic organism passage.

  - o 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.

  - o Use stream simulation techniques where practicable to aid in crossing design.

- **Bridges**

  - o Use an adequately long bridge span to avoid constricting the natural active flow channel and minimize constriction of any overflow channel.

  - o Place foundations onto non-scour-susceptible material (e.g., bedrock or coarse rock material) or below the expected maximum depth of scour.

  - o Set bridge abutments or footings into firm natural ground (e.g., not fill material or loose soil) when placed on natural slopes.

  - o Use suitable measures as needed in steep, deep drainages to retain approach fills or use a relatively long bridge span.

  - o Avoid placing abutments in the active stream channel to the extent practicable.

  - o 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 Environ- mental 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 waters 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.

- o 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.

  - o Use applicable practices of BMP AqEco-2 (Operations in Aquatic Ecosystems) when constructing diversion structures in waterbodies.

  - o Use applicable practices of BMP Fac-2 (Facility Construction and Stormwater Control) to control storm water and erosion when constructing diversion or conveyance structures.

  - o Use suitable measures to stabilize the banks of the diversion channel or conveyance structure to avoid or minimize resulting erosion and instream sedimentation

  - o 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.

  - o Use suitable measures at outlets to avoid or minimize erosion downstream of the structure when design flows are released.

  - o 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.

  - o Limit operation of the diversion and conveyances to the established period of use.

  - o Regularly inspect diversion and conveyance structures at suitable intervals to identify maintenance needs and situations that could lead to future overtopping or failures.

  - o Do not flush or otherwise move sediment from behind diversion structures downstream.

  - o Deposit and stabilize sediment removed from behind a diversion structure in a suitable designated upland site.

- o Maintain suitable vegetative cover near canal and ditch banks to stabilize bare soils and minimize erosion.

- o Harden or reroute breach-prone segments of ditches to minimize potential for failure and erosion of fill slopes.

- o Maintain and operate water conveyance structures to carry their design volumes of water with appropriate freeboard.

- o Keep water conveyance structures clear of vegetation, debris and other obstructions to minimize potential for failures.

- o 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: Recent or Reasonably Foreseeable Activities Within and Adjacent to the LeClerc Creek Allotment Analysis Area[12]

Legal Description	General Location	Acres/ feet/miles[13]	Activity[14]	Years	Ownership[15]
SE ¼ Sec. 33, T. 36 N., R. 44 E.	East Branch Le Clerc	235 ac	*The Growling TS* - Uneven-aged harvest with a skidder	2012-2015 completed	Stimson
Sec. 17, T. 36 N., R. 44 E.	Hanlon Mtn	249 ac	*Diggings TS* - Uneven-aged harvest with a skidder	2013 completed	Stimson
Sections 15 & 26, T. 36 N., R. 44 E.	Middle & East Branch Le Clerc	n/a	*LeClerc Cr. RMAP* – removal of 2 culverts	2013-2016	Stimson
Sec. 11, T. 36 N., R. 44 E.	Middle Branch LeClerc	4.4 ac	*Box Canyon AP* - 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 Le Clerc 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 Le Clerc 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 Le Clerc (1935)	2012-2014 completed	FS/Stimson

[12] The analysis area is the allotment boundary.
[13] Acres, feet, miles are approximate.
[14] The full disclosure of potential impacts from these activities is found in the effects analysis for each resource area. The potential impacts listed for each type of treatment are not fully inclusive.
[15] FS = Forest Service

Legal Description	General Location	Acres/ feet/miles[13]	Activity[14]	Years	Ownership[15]
Sec. 21, T. 36 N., R. 44 E.	Middle Branch LeClerc	n/a	Culvert removal as part of road abandonment of Middle Branch Le Clerc (1935)	2012-2014 completed	FS/Stimson
Sec. 14, T. 36 N., R. 44 E.	East Branch Le Clerc	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 Le Clerc	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 Le Clerc	69 ac	*Short Sighted #1 TS* - Uneven-aged harvest with a skidder	2011-2013 completed	Stimson
East ½ Sec. 31, T. 36 N., R. 44 E.	West Branch Le Clerc	318 ac	*Short Sighted #1 TS* - 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 Le Clerc	48 ac	*Short Sighted #2 TS* - Uneven-aged harvest with a skidder	2012-2015 completed	Stimson
NE corner Sec. 13, T. 36 N., R. 43E.	West Branch Le Clerc	50 ac	*Short Sighted #2 TS* - 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 Le Clerc/ Yocum Lake	1,677 ac	Scotchman Stewardship Contract	Ongoing	FS

Legal Description	General Location	Acres/ feet/miles[13]	Activity[14]	Years	Ownership[15]
T. 35 & 36 N., R. 44 E.	East and Middle Branch Le Clerc 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[16]
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.	Le Clerc 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.	Le Clerc Allotment analysis area	236 ac	Reforestation	1995-1999	FS (Whiteman TS)
T. 36 N., R. 44 E.	Le Clerc 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

[16] Rocky Mountain Elk Foundation

Legal Description	General Location	Acres/ feet/miles[13]	Activity[14]	Years	Ownership[15]
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.	Le Clerc 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.	Le Clerc Allotment analysis area	23,413 ac	Le Clerc 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.	Le Clerc Allotment analysis area	n/a	Cost-share Easements to Stimson Lumber Co. for access to 1935110 (north Le Clerc Allotment), 1935011 (railroad bridge), 1935112 (Le Clerc 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.	Le Clerc 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. SE ¼, SW ¼ Sec. 14, T. 36 N., R. 44 E.	East Branch LeClerc Creek Road No. 308 Seco Creek Road No. 919 Forest Road 1934000	n/a	FRTA[17] Easement to WA State Department of Natural Resources for use of these Forest roads	Ongoing	FS

[17] Forest Road and Trail Act.

Legal Description	General Location	Acres/ feet/miles[13]	Activity[14]	Years	Ownership[15]
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.	Le Clerc 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 &	Forest Road 1900740	n/a	FLPMA[18] Permit to Stephen & Julie	Ongoing	FS

[18] Forest Land Policy and Management Act.

Legal Description	General Location	Acres/ feet/miles[13]	Activity[14]	Years	Ownership[15]
NW ¼, NW 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.	Le Clerc 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. NW ¼, NW ¼, Sec. 18, Sec. 19, & Sec. 30, T. 36 N., R. 44 E. S ½, SE ¼, SE ¼, Sec. 15, T. 36 N., R. 43 E.	East Branch LeClerc Creek Line Ione Maitlen Creek Line S.J. Charbonneau Tap	n/a	Special Use Permit for PUD #1 overhead power transmission lines	Ongoing	FS
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 Le Clerc 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 Le Clerc II timber sale

Legal Description	General Location	Acres/ feet/miles[13]	Activity[14]	Years	Ownership[15]
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 Le Clerc 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 Le Clerc 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 Le Clerc 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 Le Clerc II timber sale
Sec. 11, T. 36 N., R. 44 E.	Middle Branch Le Clerc 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 Le Clerc 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	*Spike Camp TS* - harvest activity	2013	Stimson
	See Stimson planned harvest maps	200 ac	*6-Pack TS* - harvest activity	2013	Stimson
Sec. 25, T. 36 N., R. 44 E.	See Stimson planned harvest maps	unknown	*Debris Flow TS* - harvest activity	2013	Stimson
Sections 3&9, T. 36 N., R. 45 E.	See Stimson planned harvest maps	unknown	*Lost River TS* - harvest activity	2013	Stimson
Sections 15&21, T. 36 N., R. 44 E.	See Stimson planned harvest maps	unknown	*Prom ROW* - 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/miles[13]	Activity[14]	Years	Ownership[15]
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 Le Clerc Creek	2 mi	Road construction - Relocation of portion of the East Branch Le Clerc 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 Le Clerc Creek	2 mi	Road obliteration – abandonment of portion of East Branch Le Clerc road(1934/ C3521)	2007-2011	FS/Stimson
	Le Clerc Allotment analysis area	n/a	Forest Damage Response Team	ongoing	FS
	Le Clerc Allotment analysis area	n/a	Pend Oreille County PUD #1 restoration activities	ongoing	PUD

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Glossary

This glossary includes terms and acronyms used in the Environmental Impact Statement and Appendices.

Acronyms

AIRFA	American Indian Religious Freedom Act
AMP	Allotment Management Plan
AOI	Annual Operating Instructions
AUM	Animal Unit Month
BE	Biological Evaluation (plants, fish, wildlife)
BLM	Bureau of Land Management
BMP	Best Management Practice (water)
CFR	Code of Federal Regulations
CR	County Road
DEIS	Draft Environmental Impact Statement
DOE	Department of Ecology
EA	Environmental Assessment
EIS	Environmental Impact Statement
FEIS	Final Environmental Impact Statement
FPA	Forest Practice Applications (WA state land)
FR	Forest Road
FS	Forest Service
FSH	Forest Service Handbook
FSM	Forest Service Manual
FY	Fiscal Year
GBMU	Grizzly Bear Management Unit
GIS	Geographic Information System (computerized mapping and analysis software)
HPA	Hydraulic Project Approval process
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)
NEPA	National Environmental Policy Act of 1969
NFMA	National Forest Management Act
NFS	National Forest System
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places (heritage)
OHV	Off-highway Vehicle
PUD	Public Utility District
RHCA	Riparian Habitat Conservation Area (fish)
RMO	Riparian Management Objective (fish)
RNA	Research Natural Area
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum (recreation)
SHPO	State Historic Preservation Office (cultural resources)
SUP	Special Use Permit
TES	Threatened, Endangered and Sensitive (wildlife, plants)
TMDL	Total Maximum Daily Load (hydrology)

USDA	United States Department of Agriculture
USDI	United States Department of Interior
USFWS	US Fish and Wildlife Service (wildlife)
VQO	Visual Quality Objective (scenery management)
WADNR	WA State Department of Natural Resources

Definitions

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.