



United States Department of Agriculture

# 2020 Land Management Plan

## Helena - Lewis and Clark National Forest



Forest Service

Helena - Lewis and Clark National Forest

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# **2020 Land Mangement Plan**

## **Helena - Lewis and Clark National Forest**

**Lead Agency:** United States Department of Agriculture (USDA) Forest Service

**Responsible Official:** Bill Avey, Forest Supervisor  
2880 Skyway Dr.  
Helena, MT 59602  
406-449-5201

**For Information Contact:** Deb Entwistle, Forest Plan Revision Team Leader  
2880 Skyway Dr.  
Helena, MT 59602  
406-449-5201

**Abstract:** The Helena - Lewis and Clark National Forest has developed this 2020 Land Management Plan, in accordance with the 2012 National Forest System land management planning rule (2012 Planning Rule) adopted by the U.S. Department of Agriculture.

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- Appendix E – Priority and Conservation Watersheds
- Appendix F – Northern Rockies Lynx Management Direction Record of Decision
- Appendix G –Scenery Management
- Appendix H – Forest Plan Readers Guide



## Acronyms

DC – desired condition (plan component)

FS – Forest Service

FW – forestwide

GA – geographic area

GDL – guideline (plan component)

GO – goal (plan component)

HLC NF – Helena – Lewis and Clark National Forest

NFS – National Forest System

OBJ – objective (plan component)

RMZ – riparian management zone

STD – standard (plan component)

SUIT – suitability (plan component)

USDA – United States Department of Agriculture

USFWS – United States Fish and Wildlife Service

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# Chapter 1. Introduction

## Helena - Lewis and Clark Consolidation

The consolidation of the Helena National Forest and the Lewis and Clark National Forest was approved by the Under Secretary for Natural Resources and the Environment on Dec. 11, 2015. The official name of the combined forests is the Helena - Lewis and Clark National Forest. For the purposes of this document, it will be referred to as the HLC NF.

Prior to the consolidation, each forest had its own land management plan (both dated 1986). In 2010 the Regional Forester decided to combine the programs of the Helena and the Lewis and Clark National Forests. The combination of the two forests programs was consistent with the Northern Region’s direction for sharing leadership. Part of implementing this consolidation included a combined forest plan revision effort.

In addition to the consolidated HLC NF, this plan covers the southwest portion of the Elkhorns geographic area (GA) that falls within the Beaverhead-Deerlodge National Forest. See map below.

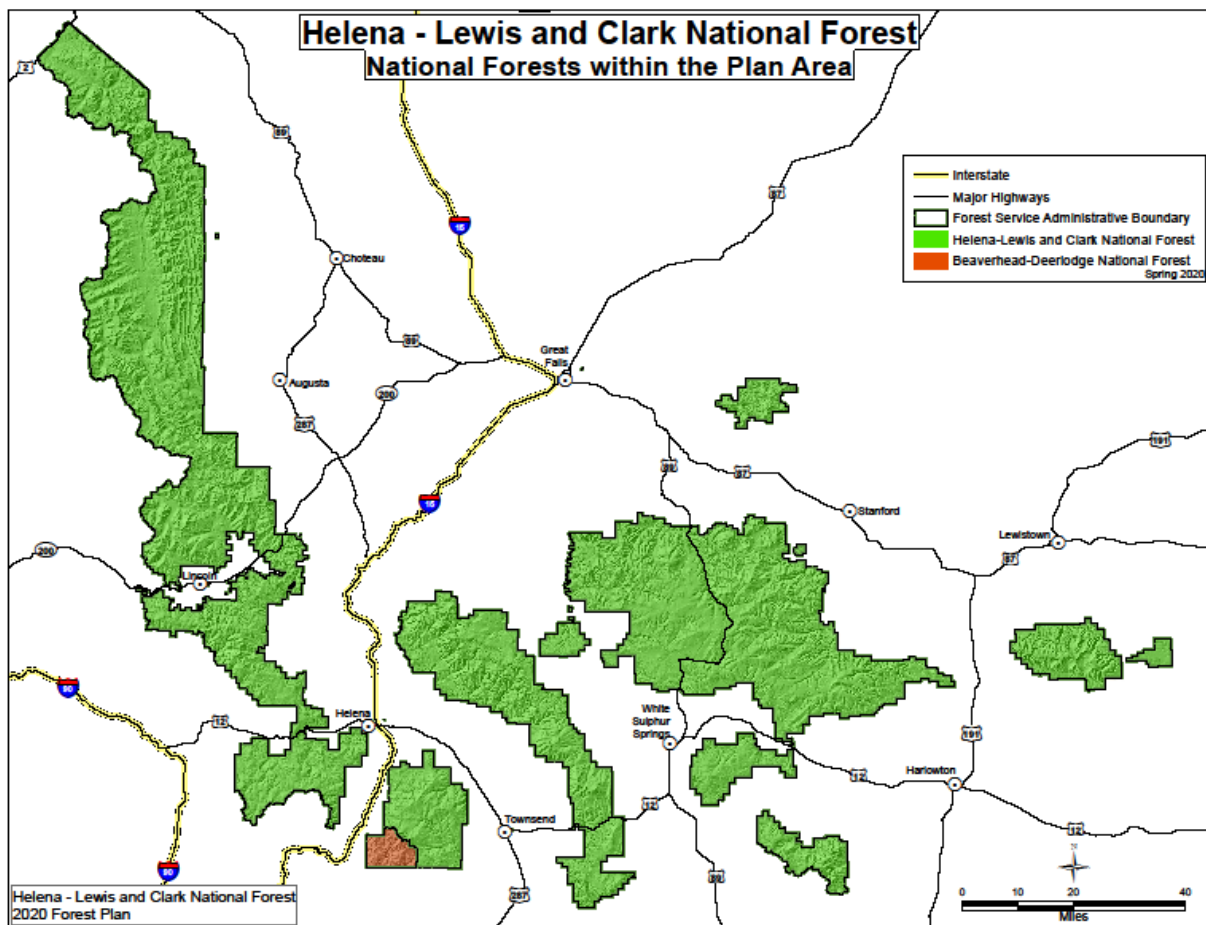


Figure 1. Helena – Lewis and Clark National Forest and vicinity

## Purpose of this Land Management Plan

The purpose of the HLC NF Land Management Plan (hereinafter referred to as the 2020 Forest Plan) is to have an integrated set of plan direction (referred to as plan components) to provide for social, economic, and ecological sustainability and multiple uses of the HLC NF lands and resources. The 2020 Forest Plan sets the overall context for informed decision making by evaluating and integrating social, economic, and ecological considerations relevant to management of the forest. In May of 2012, the United States Forest Service (FS) began using new planning regulations (2012 Planning Rule) to guide collaborative and science-based revision of land management plans that promote the ecological integrity of national forests while considering social and economic sustainability. The 2012 Planning Rule specifies the following primary decisions that are to be made in forest plans:

- Forestwide components to provide for integrated social, economic, and ecological sustainability, and ecosystem integrity and diversity, while providing for ecosystem services and multiple uses. Components must be within FS authority and consistent with the inherent capability of the plan area (36 Code of Federal Regulations 219.7 and 219.8–219.10).
- Recommendations to Congress (if any) for lands suitable for inclusion in the National Wilderness Preservation System and/or rivers eligible for inclusion in the National Wild and Scenic Rivers System (36 Code of Federal Regulations 219.7(2)(v) and (vi)).
- The plan area’s distinctive roles and contributions within the broader landscape.
- Identification or recommendation (if any) of other designated areas (36 Code of Federal Regulations 219.7 (c)(2)(vii)).
- Identification of suitability of areas for the appropriate integration of resource management and uses, including lands suited and not suited for timber production (36 Code of Federal Regulations 219.7(c)(2)(vii) and 219.11).
- Identification of the maximum quantity of timber that may be removed from the plan area (36 Code of Federal Regulations 219.7 and 219.11 (d)(6)).
- Identification of GA or management area specific components (36 Code of Federal Regulations 219.7 (c)(3)(d)).
- Identification of watersheds that are a priority for maintenance or restoration (36 Code of Federal Regulations 219.7 (c)(3)(e)(3)(f)).
- Plan monitoring program (36 Code of Federal Regulations 219.7 (c)(2)(x) and 219.12).

It is important to note that this plan does not authorize site-specific prohibitions or activities; rather it establishes broad direction, similar to zoning in a community. Project or activity decisions will need to be made following appropriate procedures. Site-specific analysis in compliance with the National Environmental Policy Act would need to be conducted in order for activities to be in compliance with the broader direction of the land management plan.

The 2020 Forest Plan will provide guidance for project and activity-level decision making on the Forest for approximately the next 15 years.

## Plan Structure

This plan is designed to communicate the concepts of strategic guidance and adaptive management for the HLC NF. The 2020 Forest Plan is organized as follows:

Chapter 1 describes the purpose of the land management plan, plan content, future project consistency with the plan, rights and interests, and how best available science will be considered.

Chapter 2 contains forestwide plan direction; the plan components related to physical and biological ecosystems; fire; air quality; the economic, cultural and social environment; and human uses and designations of the forest.

Chapter 3 contains GA plan direction and distinctive roles and contributions of each GA. Plan components specified at the GA level are those that are not adequately addressed by forestwide plan components. The HLC NF is divided into ten GAs.

Following chapter 3 is a glossary of terms and appendices as follows:

- Appendix A - Maps
- Appendix B - Monitoring Program
- Appendix C - Potential Management Approaches and Possible Actions
- Appendix D - Vegetation Classifications and Descriptions
- Appendix E - Priority and Conservation Watersheds
- Appendix F - Northern Rockies Lynx Management Direction Record of Decision
- Appendix G - Scenery Management
- Appendix H – Forest Plan Readers Guide

## Plan Content

This section describes the content of the forest plan and includes:

- Forestwide and GA desired conditions, goals, objectives, standards, and guidelines
- The suitability of lands for specific multiple uses, including those lands suitable for timber production
- An estimate of the long-term sustained yield and projected timber sale quantity
- A description of the plan area's distinctive roles and contributions within the broader landscape
- The identification of priority restoration watersheds
- Management actions and strategies that may occur on the plan area over the life of the plan
- Areas recommended to Congress for inclusion in the National Wilderness Preservation System
- Rivers identified as eligible for inclusion as part of the Wild and Scenic River System
- Changes to the list of proposed research natural areas
- The plan monitoring program

The 2020 Forest Plan does not include information on focal species or specific species of conservation concern. Focal species are addressed in the final environmental impact statement. Wildlife, fish, and plant species of conservation concern for the HLC NF are being identified at the regional level. The list can be reviewed at [www.fs.usda.gov/goto/RI/SCC](http://www.fs.usda.gov/goto/RI/SCC).

Numbers such as acres, miles, and volumes are approximate due to the use of geographic information system data and rounding.

## Plan Components

### Introduction

Plan components guide future projects and activities and the plan monitoring program. Plan components are not commitments or final decisions approving projects or activities.

The 2020 Forest Plan contains plan components at both at the forestwide and GA scales. GA components provide additional specificity and address the uniqueness of each landscape, within the broader forestwide context, if and when necessary. Projects or activities must be consistent with the relevant desired conditions at both scales.

In some cases, the plan components at the GA scale address elements that are not common to the Forest as a whole, and therefore the GA plan components are unique and “additive” to the forestwide components. For example, bull trout are not present in all GAs so there is no forestwide plan component specific to that species. There are plan components at the GA scale that address bull trout where it is present. A project or activity that occurs in one of those areas would need to be consistent with the bull trout plan components for that GA, as well as the more general aquatics plan components that apply forestwide.

In other cases, the plan components at the GA scale mirror the forestwide plan components, but the information is quantified specific to each GA. For example, there are an array of quantitative terrestrial vegetation attributes (cover type, tree species presence, size class, and density class) at both scales. In this case, a project that shows consistency with the GA desired condition would inherently also be consistent with the forestwide desired condition, because the GA desired conditions are the building blocks for the broader forestwide desired conditions.

Desired conditions, goals, objectives, standards, guidelines, monitoring questions, and monitoring indicators (in appendix B) have been given alpha-numeric identifiers for ease in referencing within the forest plan. The identifiers include:

- The level of direction (forestwide = FW, for GA direction the GA abbreviation is used)
- The resource (for example, WTR = watershed)
- The type of direction (where DC = desired condition, GO = goal, OBJ = objective, STD = standard, GDL = guideline, SUIT = suitability, MON=monitoring question, IND=monitoring indicator)
- A unique number (a numerical order starting with “01”)

For example, forestwide direction for watershed desired conditions would be identified starting with FW-WTR-DC-01. The Big Belts GA watershed desired conditions would be identified starting with BB-WTR-DC-01. The identifiers are included as part of the headings in chapters 2 and 3 with the unique number preceding each plan component.

Following are the definitions and where necessary, a description of their context for the required plan components (36 Code of Federal Regulations 219.7(e)).

### Desired Conditions

A desired condition (DC) is a description of specific social, economic, and/or ecological characteristics of the plan area, or a portion of the plan area, toward which management of the land and resources should be

directed. Desired conditions must be described in terms that are specific enough to allow progress toward their achievement to be determined, but not include completion dates (36 Code of Federal Regulations 219.7(e)(1)(i)).

Desired conditions are not commitments or final decisions approving projects and activities. The desired condition for some resources may currently exist, or for other resources may only be achievable over a long time period.

## Goals

A plan may include goals (GO) as plan components. Goals are broad statements of intent, other than desired conditions, usually related to process or interaction with the public. Goals are expressed in broad, general terms, but do not include completion dates. (36 Code of Federal Regulations 219.7(e)(2)). Goals may be appropriate to describe a state between current conditions and desired conditions but without specific amounts of indicators. Goals may also be appropriate to describe overall desired conditions of the plan area that are also dependent on conditions beyond the plan area or FS authority.

## Objectives

An objective (OBJ) is a concise, measurable, and time-specific statement of a desired rate of progress toward a desired condition or conditions. Objectives should be based on reasonably foreseeable budgets (36 Code of Federal Regulations 219.7(e)(1)(ii)). Objectives describe the focus of management in the plan area within the plan period. Objectives will occur over the life of the forest plan, considered to be over the first 15 years of plan implementation, unless otherwise specified. As with desired conditions, objectives can be forestwide or specific to GAs.

It is important to recognize that objectives were developed considering historic and expected budget allocations, as well as professional experience with implementing various resource programs and activities. It is possible that objectives could either exceed or not meet a target based upon a number of factors including budget and staffing increases/decreases, increased/decreased planning efficiencies, unanticipated resource constraints, etc.

## Standards

A standard (STD) is a mandatory constraint on project and activity decision making, established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements (36 Code of Federal Regulations 219.7(e)(1)(iii)). As with desired conditions, standards can be developed for forestwide application or specific to a GA.

## Guidelines

A guideline (GDL) is a constraint on project and activity decision-making that allows for departure from its terms, so long as the purpose of the guideline is met. Guidelines are established to help achieve or maintain a desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements (36 Code of Federal Regulations 219.7(e)(1)(iv)). As with desired conditions, guidelines can be forestwide or specific to a GA.

## Suitability of Lands

Specific lands within the Forest are identified as suitable (SUIT) for various multiple uses or activities based on the desired conditions applicable to those lands. The plan also identifies lands within the Forest as not suitable for uses that are not compatible with desired conditions for those lands. The suitability of lands need not be identified for every use or activity (36 Code of Federal Regulations 219.7 (e)(1)(v)).

Suitability identifications may be made after consideration of historic uses and of issues that have arisen in the planning process.

Identifying suitability of lands for a use in the forest plan indicates that the use may be appropriate but does not make a specific commitment to authorize that use. Final suitability determinations for specific authorizations occur at the project or activity level decision making process. Generally, the lands on the Forest are suitable for all uses and management activities appropriate for national forests, such as outdoor recreation, range, or timber, unless identified as not suitable. Every plan must identify those lands that are not suitable for timber production (§ 219.11). (36 Code of Federal Regulations 219.7(e)(1)(v)). For forestwide suitability determinations, please see chapter 2 and for GA specific suitability determinations, see chapter 3.

## Other Required Plan Content

This plan is designed to communicate the concepts of strategic guidance and adaptive management for the HLC NF. In addition to plan components, the plan includes information on priority watersheds, distinctive roles and contributions of the plan area, monitoring, and proposed and possible actions.

### Priority Watersheds

The Planning Rule requires land management plans to identify watershed(s) that are a priority for maintenance or restoration (36 Code of Federal Regulations 219.7(f)(1)). The identification of these watersheds is done to focus efforts on the integrated restoration of watershed conditions in these areas. Information about priority watersheds in the plan area can be found in appendix E. See appendix E for list of priority watersheds.

### Distinctive Roles and Contributions within the Broader Landscape

The description of the plan area's distinctive roles and contributions within the broader landscape reflects those things that are truly unique and distinctive (36 Code of Federal Regulations 219.2(b)). This description is important because it is a source of motivation or reasons behind desired conditions. It is important to understand the ecological, social/economic, and cultural/historic context of the plan area in order to better gauge the relative importance of each role. Doing so helps to set realistic and achievable desired conditions, which are the basis for management direction over the next 15 years. Each of the ten GAs has its own set of distinctive roles and contributions and can be found in chapter 3. Within the broader landscape, the ecological; social and economic; and cultural and historic characteristics are described as follows.

#### *Ecological characteristics*

The HLC NF stretches over 150 miles north to south and 200 miles east to west and encompasses roughly 2.9 million acres of NFS land. The plan area is made up of a series of distinctive landscapes and "island" mountain ranges, identified as GAs. It straddles the Continental Divide in southwestern and central Montana and is characterized by the topographical transition between western mountainous terrains and eastern prairie grasslands. The elevation ranges from about 3,000 feet along the Missouri, Clark Fork, and Blackfoot rivers to over 9,000 feet on mountain peaks. The dissected nature of the area has unique implications for ecosystem function.

The plan area extends into three distinct ecoregion sections: the Belt Mountain section, the Bitterroot Valley section, and the Rocky Mountain Front section. The Belt Mountain section encompasses most of the plan area east of the Rocky Mountain Front. This area is characterized by high mountains, gravel-capped benches, and intermontane valleys bordered by terraces and fans. The Bitterroot Valley section covers some portions of the Upper Blackfoot and Divide GAs west of the Continental Divide, and is



characterized by high, glaciated mountains with alpine ridges and cirques at higher elevations and glacial lakes. The Rocky Mountain Front section covers the Rocky Mountain Range GA in the northwestern part of the plan area. It is characterized by glaciated mountains with limestone scarps and ridges interspersed with glacial lakes and river valleys.

Bisected by the Missouri River and the Continental Divide, the plan area supports a wide diversity of vegetation due to its geographic extent, topography, natural disturbance regimes, and climate. The diversity of vegetation communities includes grassland prairie at the low elevations, open savannas and forests on dry foothills, dense coniferous forests and higher elevation grassland and shrublands, and alpine communities on cold, rocky sites at the highest elevations. Forests are most commonly dominated by Douglas-fir or lodgepole pine, but many other species are present including Rocky Mountain juniper, limber pine, ponderosa pine, aspen, cottonwood, western larch, Engelmann spruce, subalpine fir, and whitebark pine. There is also a wide diversity of nonforested vegetation types, including grasslands, shrublands, riparian and wetland areas, and alpine ecosystems, which support a wide variety of plant species. Rare habitat features such as cliffs, waterfalls, caves, and fens are present which support equally unique plant communities.

The HLC NF is inhabited by hundreds of species of native mammals, birds, fish, reptiles, amphibians, and invertebrates. The diversity of wildlife species is enhanced by the diverse ecology and large geographic span of the plan area. Several wildlife species are at either the eastern or western edge of their range on the HLC NF, with some (for example, Canada lynx, flammulated owl, Lewis's woodpecker, harlequin duck, westslope cutthroat trout) occurring only in the eastern or western GAs. Several carnivore species occur, including black bear, mountain lion, pine marten, and wolverine. Grizzly bears are known to occur in the westernmost GAs and individuals may be present throughout most of the HLC NF.

The Rocky Mountain Range and Upper Blackfoot GAs are part of the Northern Continental Divide Ecosystem for grizzly bears, and within the Northern Continental Divide Ecosystem Grizzly Bear Recovery Zone. The grizzly bear population is currently expanding eastward from the Rocky Mountain Range GA into historic habitat on the plains, and southward into the Divide GA. Grizzly bears occasionally moving south through the Divide, Elkhorns, and possibly the Big Belts GAs may provide some genetic connectivity with the population of grizzly bears in the Greater Yellowstone Ecosystem.

The Rocky Mountain Range, Upper Blackfoot, and Divide GAs also support Canada lynx, and are wholly or partly within unit 3 of critical habitat for Canada lynx as designated under the Endangered Species Act. The remaining GAs are not occupied by Canada lynx and provide much less in the way of potential lynx habitat. These GAs are geographically isolated from the rest of the northern Rockies lynx population.

The HLC NF spans the Continental Divide, with the portions to the west of the divide draining into the Upper Clark Fork and Blackfoot Rivers and the portions to the east draining into the Missouri River. Prominent streams include the Little Blackfoot and Blackfoot Rivers west of the divide and multiple prominent drainages within each GA east of the divide, including the Judith, Marias, Belt Creek, Sun, Mussellshell, Smith, Dearborn, and Upper Missouri Rivers. The networks of streams within the GAs are important aquatic ecosystems that support diverse riparian and wetland areas. Several bull trout populations occur on the west side of the divide, and westslope cutthroat trout inhabit multiple streams on both sides of the divide.

The HLC NF also has fourteen research natural areas (12 existing, 2 proposed), which are part of a national network of ecological areas for research, education, and maintenance of biological diversity. Additionally, the HLC NF is home to the Tenderfoot Creek Experimental Forest where research focuses on the sustainable productivity and biodiversity of lodgepole pine forests and watersheds.

### *Social and economic characteristics*

The HLC NF serves as a backdrop, workplace, and playground for not only the small rural communities of central Montana, but also for visitors from around the world. Island mountain ranges with unique geology, scenic river valleys, mountain silhouettes, vast expanses of natural appearing forests, and striking visual contrasts enhance the quality of life for residents and visitors. Deeply rooted in the culture and traditions of both Native American and early Euro-American settlers, the Forests' recreation settings and opportunities are enhanced by the many visible and accessible remnants of the past. A network of historic and modern era trails and roads gives visitors a chance to follow in the footsteps of Native Americans, the Lewis and Clark expedition, and early homesteaders and miners in search of silver and gold because of the numerous mineralized areas resulting from the Forests unique geologic landscape. Historic cabins and lookouts continue to serve as overnight destinations for today's visitors. Small family owned ranches and livestock grazing on public lands are important components of the backdrop and culture of the rural communities surrounding the forest areas.

The Forest has numerous instances of private land inholdings within the confines of the Forest boundaries. These private properties, mostly vestiges of the historic mining era in the form of patented mining claims, provide management challenges unique to the area. Additionally, large private land ownership surrounding the island mountain ranges present challenges for forest users wishing to obtain access to their public lands. These issues with private/public land interface provide challenges for all resource areas in trying to keep up with the social demands for power, water, access, and recreational needs.

There is a wide range of recreation opportunities available throughout the HLC NF. These year-round opportunities range from highly developed sites to more primitive and dispersed recreation opportunities. Unique developed recreation opportunities include cabin and lookout rentals, historic lodges, regionally significant ski areas, and a large visitor center that focuses on the journey of Lewis and Clark. Recreation opportunities include a network of motorized and nonmotorized roads and trails that provide access for hunting, fishing, wildlife viewing, and camping. Winter recreation includes extensive trail networks for snowmobiling, cross country and downhill skiing, snowshoeing, and dogsledding. Outfitter and guides provide additional access to unique backcountry, hunting, and floating opportunities along the Smith River.

Over 500,000 acres of the 2.9 million-acre HLC NF are designated wilderness including portions of the Bob Marshall and Scapegoat Wilderness Areas and the entire Gates of the Mountains Wilderness Area. Additionally, approximately 50% of the Forest is allocated as inventoried roadless areas. These inventoried roadless areas, when combined with designated wilderness, provide for vast landscapes that allow for more primitive recreation experiences. The Forests' recreation program contributes to the economic sustainability of central Montana's rural communities.

The HLC NF has contributed to the forest products industry, which has been a dominant feature of some local economies. Livestock grazing is a prominent use in many areas, owing to the native grass and shrub lands on the HLC NF. The HLC NF also provides hunting opportunities which is an important social and economic activity in Montana.

The Forest is the headwaters of both surface watersheds and groundwater aquifers within the planning area. In addition, the Forest provides abundant water for drinking and downstream uses. The HLC NF has five municipal watersheds within its jurisdictional boundary: Tenmile Creek (Helena); McClellan Creek (East Helena); Shorty and O'Brien Creeks (Neihart); Willow Creek (White Sulphur Springs); and Big Springs Creek groundwater recharge area in the Big Snowies GA (Lewistown).

### *Cultural and historical characteristics*

Historically, the plan area was the ancestral homeland and travel way of native bands now referred to as the Assiniboine, Blackfeet, Chippewa Cree, Confederated Salish and Kootenai, Crow, Eastern Shoshone, Gros Ventre, Sioux, Nez Perce, Northern Arapahoe, Northern Cheyenne, Shoshone-Bannock, and Little Shell Tribes. Most prominent among these groups found in the plan area were those historically known as the Blackfeet, Gros Ventre, Salish, Shoshone, Kootenai, and Metis. The landscape is significant to archaeological history because it strongly influenced Native American travel and settlement patterns. Most Native American groups within the plan area followed a nomadic lifeway with groups of various sizes moving across the landscape following food sources. However, there are a few examples of groups following a semi-nomadic lifeway or settlement pattern. One interesting example would be the Metis, whom historically were children of Indian mothers and French fathers (the fathers were typically fur trappers). Several groups of Metis travelled back and forth between Canada and the unspoiled valleys of central Montana, hunting and trapping along the way. Unlike other nomadic groups, the Metis typically built cabins and stayed sometimes for several years in one location. Metis established a permanent settlement on Spring Creek near present day Lewistown in 1879 and other dispersed settlements west of Choteau followed in 1885. These Choteau-area settlements are just east of land now managed by the Rocky Mountain Ranger District.

Native American use of the plan area over the centuries is manifest in hundreds of archaeological sites, sacred sites, and other areas of traditional cultural importance, many of which are listed or eligible to be on the National Register of Historic Places. In addition to the National Register of Historic Places listed sites, one traditional cultural property related to tribal cultural values, and two national historic trails exist. Plus, numerous cultural resources have been formally determined to be eligible for listing on the National Register of Historic Places by the FS and the Montana State Historic Preservation Officer but have not yet been formally nominated to the Register.

The arrival of the Corps of Discovery to the plan area in 1805 marks the beginning of the historic period for central Montana. Following the Corps of Discovery's eastward departure from the plan area in 1806, a slow trickle and then a tide of fur trappers/explorers entered central Montana. A series of expeditions surveyed the people, resources, and travel routes within the plan area. This period in Montana was also characterized by steamboat travel, the fur trade, the arrival of missionaries like Pierre-Jean DeSmet, and the earliest ranching and gold mining discoveries.

Today, thousands of historic mining features can be found throughout the plan area and embody a historic theme complete with ecological, economic, political, and social implications. The discovery of gold in and around Helena ushered in a wave of settlement and land use that transformed the plan area's natural and political landscape. Thousands of miners and businesses sprang up overnight in makeshift towns along with an emerging transportation system. Millions of dollars of gold, silver, and copper were initially extracted from the plan area. This locally produced capital provided an important source of hard currency for the Union during the Civil War. Thus, the economic impetus for, and political organization of, the Montana Territory at the time of its formation in 1864, and later statehood in 1889, had its initial origins squarely within the plan area. Today, thousands of historic mining features can be found throughout the plan area and embody a historic theme complete with ecological, economic, political, and social implications.

Alongside the mining that developed in and around ore sources, which is typically found in mountainous areas, open-range livestock (cattle or sheep) ruled in the flat open landscapes. The first farming of the plan area began in the fertile river valleys adjacent to the mining camps. Early producers of agricultural products sold their crops to mining communities and nearby military forts, which were in place by the late 1860's. The agricultural industry grew to keep pace with the influx of miners. The entry of the railroads

into the area boosted the agricultural industry considerably. Not only did railroad access provide transport for produce, it sought out and attracted farmers to Montana. The railroads portrayed great opportunity for farmers in the plan area and promoted dry land farming, as well as irrigation methods.

## Plan Monitoring Program

The monitoring program is designed to test assumptions used in developing plan components and to evaluate relevant changes and management effectiveness of the plan components. Typically, monitoring questions seek additional information to increase knowledge and understanding of changing conditions, uncertainties, and risks identified in the best available scientific information as part of an adaptive management framework. Best available scientific information can identify indicators that address associated monitoring questions. The best available scientific information is also important in the further development of the monitoring program as it may help identify protocols and specific methods for the collection and evaluation of monitoring information (from FS Handbook 1909.12 07.11). See appendix B for the monitoring program and additional information about adaptive management.

## Proposed and Possible Actions

The 2012 Planning Rule requires land management plans to “...contain information reflecting proposed and possible actions that may occur on the plan area during the life of the plan, including: the planned timber sale program; timber harvesting levels; and the proportion of probable methods of forest vegetation management practices expected to be used” (16 United States Code 1604(e)(2) and (f)(2)). Such information is not a commitment to take any action and is not a ‘proposal’ as defined by the Council on Environmental Quality regulations for implementing the National Environmental Policy Act (40 Code of Federal Regulations 1508.23, 42 U.S.C. 4322(2)(C)). (36 Code of Federal Regulations 219.7(f)(1)).” Management approaches and strategies presented in this section may include suggestions for on-the-ground implementation, analysis, assessment, inventory or monitoring, and partnership and coordination opportunities the Forest is proposing as helpful to make progress in achieving its desired conditions. The potential approaches and strategies are not intended to be all-inclusive, nor commitments to perform specific actions.

The possible actions and potential management approaches and strategies the HLC NF may undertake to make progress in achieving the desired conditions described in this plan can be found in appendix C.

## Project and Activity Consistency with the Plan

As required by the National Forest Management Act of 1976, subject to valid existing rights, all projects and activities that would be authorized by the FS, after the record of the decision for the 2020 Forest Plan, must be consistent with the applicable plan components (16 United States Code 1604 (i)) as described at 36 Code of Federal Regulations 219.15. This is accomplished by a project or activity being consistent with applicable plan components.

When a proposed project or activity would not be consistent with the applicable plan components, the responsible official shall take one of the following steps, subject to valid existing rights:

- Modify the proposed project or activity to make it consistent with the applicable plan components.
- Reject the proposal or terminate the project or activity.
- Amend the plan so that the project or activity will be consistent with the plan as amended.

- Amend the plan contemporaneously with the approval of the project or activity so that the project or activity will be consistent with the plan as amended. This amendment may be limited to apply to the project or activity.

## Determining Consistency

Because of the many types of projects and activities that can occur over the life of a plan, it is not likely that a project or activity can maintain or contribute to the attainment of all desired conditions, nor are all desired conditions relevant to every activity (for example, recreation desired conditions may not be relevant to a fuels treatment project). Most projects and activities are developed specifically to maintain or move conditions toward one or more of the desired conditions of the plan.

Every project and activity must be consistent with the applicable plan components. A project or activity approval document must describe how the project or activity is consistent with applicable plan components by meeting the following criteria (36 Code of Federal Regulations 219.15(d)):

1. **Goals, desired conditions, and objectives.** The project or activity contributes to the maintenance or attainment of one or more goals, desired conditions, or objectives, or does not foreclose the opportunity to maintain or achieve any goals, desired conditions, or objectives, over the long term.
2. **Standards.** The project or activity complies with applicable standards.
3. **Guidelines.** The project or activity:
  - i. Complies with applicable guidelines as set out in the plan; or
  - ii. Is designed in a way that is as effective in achieving the purpose of the applicable guidelines (§ 219.7(e)(1)(iv)).
4. **Suitability.** A project or activity would occur in an area:
  - i. That the plan identifies as suitable for that type of project or activity; or
  - ii. For which the plan is silent with respect to its suitability for that type of project or activity.

## Rights and Interests

The 2020 Forest Plan provides a strategic framework that guides future management decisions and actions. As such, the plan does not create, authorize, or execute any ground-disturbing activity. The plan does not subject anyone to civil or criminal liability and creates no legal rights. The plan does not change existing permits and authorized uses. When permits are reauthorized or changed, applicable plan components will be implemented.

## Use of Best Available Scientific Information

The 2012 Planning Rule requires the responsible official to use the best available scientific information to inform the development of the plan, including plan components and the monitoring program. The foundation from which the plan components were developed for the plan was provided by the *Assessment of the Helena and Lewis and Clark National Forests* and the best available scientific information and analyses therein. From this foundation, resource specialists used many resources that included peer-reviewed and technical literature; databases and data management systems; modeling tools and approaches; information obtained via participation and attendance at scientific conferences; local information; workshops and collaborations; and information received during public participation periods for related planning activities. Resource specialists considered what is most accurate, reliable, and

relevant in their use of the best available scientific information. The best available scientific information includes the publications listed in the literature cited sections of the Assessment and draft environmental impact statement, as well as any additional information that may have been used, and included, in the literature cited section of the final environmental impact statement or the planning record prior to the record of decision.

## Other Planning Efforts

The HLC NF contributes to the accomplishment of national strategic guidance in accordance with its own unique combination of social, economic, and ecological conditions. This plan helps define the Forest's role in advancing the agency's national strategy and reflects the national goals. This plan is reflective of the mission of the Forest Service, "to sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations."

The 2020 Forest Plan considered direction from other applicable tribal, federal, state, county, and city plans and strived to incorporate their goals by considering the broader landscape in which this plan would operate. More information can be found in the final environmental impact statement and the project record.

## Chapter 2. Forestwide Direction

### Introduction

This chapter contains direction that applies forestwide, unless additional or more restrictive direction is found in chapter 3. Forestwide direction includes desired conditions, goals, objectives, standards, and guidelines. Other FS direction, laws, regulations, policies, executive orders, and FS directives (manual and handbook) are not repeated in the plan.

The HLC NF intends to move toward these forestwide desired conditions over the next 15 years, although they may not all be achieved for many decades. Some desired conditions may be very difficult to achieve, but it is important to move toward them over time.

The plan components are organized by resource area, first the ecological resources followed by social, cultural, and economic resources. The benefits to people: multiple uses and ecosystem services section covers additional ecological, social, and economic resources that have direct ties to social and economic sustainability. However, all sections contain plan components that contribute to social and economic sustainability.

### Aquatic Ecosystems

#### Introduction

This introduction provides a brief synopsis of aquatic components on the Forest and the themes used for plan component development, including native fish, aquatic habitat, riparian areas, water quality, water quantity, and conservation watershed network. The conservation watershed network and priority watersheds under the Watershed Condition Framework can be found in appendix E, which goes into more depth regarding strategies to protect and restore native fish and water quality. Appendix C contains a list of possible management approaches or strategies on implementation of plan components.

Lands supply high quality water that supports a variety of uses throughout the HLC-NF. The Forest is also the headwaters of many downstream water users including municipal water systems, irrigation districts, and small instream flow rights. Aquatic ecosystems, watersheds, and wetlands have changed from historic conditions. Current conditions and trends indicate:

- A decline in migratory bull trout numbers on the west side of the planning area has occurred during the past several decades due primarily to changes in climate, habitat alterations, and invasive species. However, bull trout are present within some headwater streams in the Divide GA and are part of a functioning population in the Blackfoot GA.
- Across the planning area, threats to westslope cutthroat trout include the presence and expansion of non-native species (rainbow trout, brown trout, and brook trout) and climate change. East of the continental divide, westslope cutthroat trout are found in isolated populations and occupy roughly 4% of their historic range. They remain strong in small isolated stream reaches though they have a low potential for long-term viability without continued monitoring and habitat restoration.
- Stream flow alterations occur throughout the planning area from both private and federal water diversions and channel modifications. Flow alterations have resulted in habitat degradation leading to dewatering of critical habitats, stream alterations, and low flows during critical times.

- Historic mining has impacted streams throughout the planning area. Water quality has been degraded through delivery of acid mine drainage, sedimentation, and habitat alterations from legacy mine activities remain.
- Multiple inventoried road culverts are confirmed to be partial barriers or total barriers to native trout during some parts of the year, disrupting the natural migration patterns of native fish. In some cases these barriers may be beneficial for retention of genetically pure native fish populations by creating refugia that excludes nonnative fish.
- As of 2019, 55 stream reaches (617 miles) are listed on the HLC NF as water quality impaired (303d list) by the Montana Department of Environmental Quality (2018) under the Clean Water Act as a result of forest practices, such as road management, grazing, and mining.
- Soil, watershed, and aquatic habitats are being restored through partnerships and in cooperation with other agencies by implementing best management practices, removing excess roads, improving and relocating roads and trails to reduce sedimentation, removing fish migration barriers, reclaiming abandoned and inactive mines, and implementing riparian conservation strategies as well as threatened and endangered species conservation strategies.
- As of 2019, 103 or 35% of watersheds on the HLC NF are in Class 1 condition, functioning appropriately as determined by the Watershed Condition Framework Assessment completed in 2011. There are 159 (54%) watersheds rated as Class 2 (functioning at risk) and 34 (11%) rated as Class 3 (non-functioning) on the Forest.

The Forest has highly diverse wetland environments including marshes, swamps, wet meadows, fens, peatlands, glaciated ponds, wooded vernal pools, and riparian areas. Federally recognized species (including proposed, candidate, and recently delisted species), and species of conservation concern are associated with these and other unique habitats. Aquatic species of conservation concern for the HLC NF are being identified at the regional level. The list can be reviewed at [www.fs.usda.gov/goto/R1/SCC](http://www.fs.usda.gov/goto/R1/SCC).

## Watershed (WTR)

### Introduction

The plan area falls within 296 subwatersheds. Subwatersheds, 6 level-12 digit hydrologic unit code watersheds, range in size from 10,000 to 40,000 acres. According to the 2011 Watershed Condition Framework data, 103 subwatersheds were rated as functioning properly, 159 subwatersheds were rated as functioning at risk, and 34 subwatersheds were rated as impaired. The main impairments to the planning area watersheds were aquatic biota (nonnative species) and water quality. Largely, the impairments have been attributed to grazing and transportation infrastructure impacts. Restoration work is also planned and/or ongoing in other drainages as ‘priority’ under the Watershed Condition Framework.

The HLC NF headwaters are important water resources delivering high quality and consistent quantity of water to users on and off forest in support of municipal drinking water, agricultural irrigation, stock growers, and recreation. A large percentage of streams coming off the forest are diverted to supply these uses.

Riparian and wetland vegetation types are currently mapped on over 70,000 acres of the HLC NF’s administrative area, which is less than 3% of the area. This number likely underestimates total wetland/riparian lands within the HLC NF. Riparian areas are important elements of watersheds that provide critical transition zones linking terrestrial and aquatic ecosystems. Riparian management zones (RMZs), with associated plan components, would be established to protect the ecological integrity of these areas.



Groundwater resources are important components of watershed function and biological integrity. Groundwater is an important storage of water providing base flow to perennial and intermittent streams helping to mitigate possible adverse effects of drought and climate change. Groundwater discharge areas also provide important temperature refugia for aquatic species during drought and high water temperatures. Groundwater dependent ecosystems, which include wetlands, springs, seeps, fens, and wet meadows maintain important biological diversity on the HLC NF. Groundwater also helps to maintain water quality at a level that sustains the biological, physical, and chemical integrity of aquatic systems and the survival, growth, reproduction, and mitigation of native aquatic species.

Properly functioning watersheds provide suitable conditions for sustainable clean water, healthy stable soils, timber growth, forage, aquatic and wildlife habitats, and the ability to withstand high intensity floods. Healthy watersheds contribute to local economies in the planning area including quality lands and water for, but not limited to, hunting, fishing, timber production, irrigation, and ranching. Desired conditions provide a platform for future management actions.

### Desired Conditions (FW-WTR-DC)

- 01** National Forest System subwatersheds provide the distribution, diversity, and complexity of landscape-scale features including natural disturbance regimes and the aquatic, wetland, and riparian ecosystems to which native species, populations, and communities are uniquely adapted within those watersheds. Watersheds and associated ecosystems retain their inherent resilience to respond and adjust to disturbance without long-term adverse changes to the physical or biological integrity.
- 02** Spatial connectivity exists within or between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, groundwater, wetlands, upslope areas, headwater tributaries, and intact habitat refugia. These network connections provide chemically and physically unobstructed routes to areas critical for fulfilling the requirements of aquatic and riparian-associated plants and animals.
- 03** The timing, variability, and duration of floodplain inundation is within the natural range of variation. Floodplains are accessible to water flow and sediment deposits. Over-bank floods allow floodplain development and the propagation of flood-associated riparian plant and animal species.
- 04** In streams and floodplains with highly altered systems, the systems are stable or moving towards stability.
- 05** Upland areas surrounding wetlands that have the most direct influence on wetland characteristics, as well as stream segments that flow directly into wetlands, sustain the characteristics and diversity of those wetlands. Nonforested areas in and surrounding wetlands are composed of plant and animal communities that support and contribute to wetland ecological and habitat diversity.
- 06** Water quality, including groundwater, meets or exceeds applicable state water quality standards and fully supports beneficial uses, downstream users, municipal water supplies, and natural resources. Flow and habitat conditions in watersheds, streams, lakes, springs, wetlands, and groundwater aquifers fully support beneficial uses, and meet the ecological needs of native species (including species of conservation concern and threatened and endangered species).
- 07** The Forest has no documented lands or areas that are delivering water, sediment, nutrients, and/or chemical pollutants that would result in conditions that violate the state of Montana's water quality standards or is permanently above natural or background levels.

- 08** The sediment regime within water bodies is within the natural range of variation. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.
- 09** Beavers play an important ecological role in wetlands and riparian areas where they benefit and enhance groundwater, surface water, floodplain and riparian habitat complexity, and add resilience to changing climate conditions.
- 10** In-stream flows are sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, and duration of peak, high, and low flows are retained. Stream flow regimes maintain riparian ecosystems and natural channel and floodplain dimensions. Stream channels transport sediment and woody material over time while maintaining reference dimensions (for example, bankfull width, depth, entrenchment ratio, slope, sinuosity, large woody material, percent pools, residual pool depth, median particle size, and percent fines).
- 11** Groundwater dependent ecosystems, including peatlands, fens, wetlands, wet meadows, seeps, springs, riparian areas, groundwater-fed streams and lakes, and groundwater aquifers persist in size, seasonal and annual timing, and water table elevation within the natural range of variation in order to maintain biodiversity of flora and fauna. Wetland and groundwater dependent ecosystem vegetation communities are resilient to drought, climate change, and other stressors. Also see Threatened, Endangered, Proposed, and Candidate and Plant Species of Conservation Concern (PLANT).
- 12** Cave ecosystems exhibit natural hydrologic and environmental functions.
- 13** All stream crossing structures afford capacity for Q100 discharge and are properly aligned with the stream channel.

### Goals (FW-WTR-GO)

- 01** Under Montana Code Annotated 2015, 85-20-1301; the HLC NF works with the USDA-FS-Montana compact to attain water rights to preserve instream flows for nonconsumptive water uses to provide for channel maintenance, water quality, aquatic habitats, and riparian vegetation.
- 02** Federal, tribal, state, and local governments cooperate to identify and secure instream flows needed to maintain riparian resources, channel conditions, and aquatic habitat.
- 03** Work cooperatively with Montana Department of Environmental Quality on development of watershed restoration plans, total maximum daily load plans, water quality issues, monitoring, wetland characterization, and mapping.
- 04** Work cooperatively with Montana Fish, Wildlife, and Parks to use beavers to manage aquatic habitat quality.

### Objectives (FW-WTR-OBJ)

- 01** Within at least four priority watersheds, complete essential work as defined by the Watershed Restoration Actions Plans identified in the Watershed Condition Framework.
- 02** Improve soil and watershed function and resiliency on an average of 500 acres/year with an emphasis on priority watersheds under the Watershed Condition Framework and Conservation Watershed Network.

- 03** Plan and implement restoration activities on at least two acres of groundwater dependent ecosystems every five years.

### Standards (FW-WTR-STD)

- 01** Projects that withdraw (i.e. pump) water from surface water features or groundwater must ensure that water is maintained at levels that will protect management uses and forest resources, including water quality and aquatic species and their habitat (including groundwater dependent ecosystems - fens, springs).
- 02** Best management practices (including both federal and the state of Montana Best Management Practices) shall be incorporated in all land use, transportation, infrastructure, and project plans as a principle mechanism for controlling nonpoint pollution sources to meet soil and watershed desired conditions and to protect beneficial uses.
- 03** Portable pump set-ups shall include containment provisions for fuel spills and fuel containers shall have appropriate containment provisions. Vehicles shall be parked in locations that avoid entry of spilled fuel into streams.

### Guidelines (FW-WTR-GDL)

- 01** When conducting management activities, in order to support aquatic habitat quality and resiliency, beaver complexes should be enhanced or maintained.
- 02** Special use permits related to water uses should include provisions to ensure that water quality and beneficial uses are fully protected.
- 03** In order to protect the ecological functions that beavers provide, management actions to reduce beaver threats to infrastructure should use techniques that sustain beaver presence (refer to Appendix C for possible management approaches).

## Riparian Management Zones (RMZ)

### Introduction

RMZs are portions of watersheds where riparian-associated resources receive primary emphasis, and management activities are subject to specific standards and guidelines. RMZs include traditional riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems by 1) influencing the delivery of coarse sediment, organic matter, and woody debris to streams, 2) providing root strength for channel stability, 3) shading the stream, and 4) protecting water quality. Another critical function of RMZs is to provide for wildlife habitat use and connectivity.

Desired conditions for RMZs have been expanded to focus on key ecological processes and functions, highlight vegetation structure and composition, and provide suitable connected wildlife habitat rather than being fish-centric under the Inland Native Fish Strategy. Vegetation management within RMZs is allowed but riparian and aquatic conditions must be maintained, restored, or enhanced. Many activities that can cause soil compaction or soil erosion are restricted or minimized. RMZs are not “no management zones” since treatment may be necessary to achieve desired conditions. However, guidance is provided for activities within RMZs.

## Desired Conditions (FW-RMZ-DC)

- 01 RMZs reflect a natural composition of native flora and fauna and a distribution of physical, chemical, and biological conditions appropriate to natural disturbance regimes affecting the area. The species composition and structural diversity of native plant communities in RMZs provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration. They will supply amounts and distributions of nutrients, coarse woody debris, and fine particulate organic matter sufficient to sustain physical complexity and stability. See Table 1 below for typical width of a RMZ.
- 02 RMZs feature key riparian processes and conditions that function consistent with local disturbance regimes, including slope stability and associated vegetative root strength, wood delivery to streams and within the RMZs, input of leaf and organic matter to aquatic and terrestrial systems, solar shading, microclimate, and water quality. RMZs also provide an opportunity for riparian and terrestrial connectivity.

## Objectives (FW-RMZ-OBJ)

- 01 Improve at least 500 acres of riparian habitat during the life of the forest plan. Improvement can be actions such as, but are not limited to, road obliteration, riparian planting, and reconstructing floodplains by removing road prisms or berms.

## Standards (FW-RMZ-STD)

- 01 RMZs shall be delineated as follows:

**Category 1 Fish-bearing streams:** RMZs consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet total, including both sides of the stream channel), whichever is greatest.

**Category 2 Permanently flowing nonfish bearing streams:** RMZs consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance (300 feet total, including both sides of the stream channel), whichever is greatest.

**Category 3 Constructed ponds and reservoirs, and wetlands greater than 1 acre:** RMZs consist of the body of water or wetland and: the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or the extent of unstable and potentially unstable areas, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance from the edge of the wetland greater than 1 acre or the maximum pool elevation of constructed ponds and reservoirs, whichever is greatest.

**Lakes and natural ponds -** RMZs consist of the body of water and: the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or to the extent of unstable and potentially unstable areas, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance, whichever is greatest.

**Category 4 Seasonally flowing or intermittent streams, wetlands, seeps and springs less than 1 acre, and unstable and potentially unstable areas:** This category applies to features with high variability in size and site-specific characteristics. At a minimum, the RMZs should include:

- The extent of unstable and potentially unstable areas (including earthflows).
- The stream channel and extend to the top of the inner gorge.
- The stream channel or wetland and the area from the edges of the stream channel or wetland to the outer edges of the riparian vegetation, extending from the edges of the stream channel to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest. A site-potential tree height is the average maximum height of the tallest dominant trees for a given site class.
- Intermittent streams are defined as any nonpermanent flowing drainage feature having a definable channel and evidence of annual scour or deposition. This includes what are sometimes referred to as ephemeral streams if they meet these two physical criteria. Fish-bearing intermittent streams are distinguished from non-fish-bearing intermittent streams by the presence of any species of fish for any duration. Many intermittent streams may be used as spawning and rearing streams, refuge areas during flood events in larger rivers, and streams or travel routes for fish emigrating from lakes. In these instances, the guidelines for fish-bearing streams would apply to those sections of the intermittent stream used by the fish.

The RMZ is broken into two areas called the inner and outer zones (see Table 1). As noted in footnotes of the table, the inner RMZ width can be extended beyond the length in the table in some special cases to whatever is greatest of the following: the top of the inner gorge, the outer edges of the 100-year floodplain, to the outer edges of riparian vegetation, or to a distance equal to the height of either one or two site-potential trees. Some activities are prohibited or restricted in the inner zone, whereas more active management can occur in the outer zone. RMZs are not intended to be “no touch zones,” but rather “carefully managed zones” with an increase in protections in close proximity to water resources.

**Table 1. Typical widths<sup>1</sup> of inner and outer areas within RMZs**

Stream type	Inner (ft)	Outer (ft)	Total width (ft)
Category 1 – Fish bearing stream	100 <sup>2</sup>	200	300 <sup>1</sup>
Category 2 – Perennial, nonfish bearing Stream	100 <sup>2</sup>	50	150 <sup>1</sup>
Category 3 – Natural Lakes and ponds, Constructed Ponds and Reservoirs, and wetlands greater than 1 acre	100	50	150
Category 4a – Intermittent steep (>35% side slope)	100 <sup>3</sup>	0	100
Category 4b – Intermittent flat (<35% side slope) Disconnected intermittent MT State Class 3 and wetland <1 acre.	50	50	100

<sup>1</sup>. Widths listed are for each side of the stream, total width would be double the numbers listed.

<sup>2</sup>. Inner Riparian Management Zone widths extend on each side of the stream extending from the edges of the active stream channel either to the distance listed or to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, whichever is greatest.

<sup>3</sup>. Inner Riparian Management Zone widths extend on each side of the stream extending from the edges of the stream channel either to the distance listed or to the top of the inner gorge, or to the outer edges of riparian vegetation, or to a distance equal to the height of one site-potential tree, whichever is greatest.

- 02** Vegetation management treatments shall only occur in the inner RMZ in order to restore or enhance aquatic and riparian-associated resources; only nonmechanical treatments shall be authorized.
- 03** Vegetation management may occur within the outer RMZs to meet desired conditions, so long as project activities within RMZs do not prevent attainment of desired conditions for wildlife and the inner RMZ.

- 04** Herbicides, pesticides, and other toxicants and chemicals shall only be applied within RMZs if needed to maintain, protect, or enhance aquatic and riparian resources or to restore native plant communities.
- 05** Storage and refueling sites shall be located outside of RMZs to minimize effects to aquatic resources. If refueling or storage is needed within RMZs, the locations must be approved by the FS and have an approved spill containment plan.
- 06** Salvage harvest shall not occur in the inner RMZ.

### Guidelines (FW-RMZ-GDL)

- 01** Trees felled inside RMZs should be left onsite to achieve aquatic and riparian desired conditions.
- 02** To maintain stream channel stability and aquatic habitat, large woody debris should not be cut and/or removed from stream channels unless it threatens critical infrastructure, such as mid-channel bridge piers or fire control breaks.
- 03** To avoid disturbing or compacting soil or damaging vegetation, management activities should be excluded within a minimum of 100 feet of peatlands, fens, and other groundwater dependent ecosystems.
- 04** To reduce the likelihood of sediment input to streams, new road and landing construction should be avoided, including temporary roads, in RMZs except where:
  - necessary for stream crossings, or
  - a road relocation contributes to attainment of aquatic and riparian desired conditions, or
  - Forest Service authorities are limited by law or regulation.
- 05** To minimize sediment delivery and adverse effects to stream channels, construction of machine fireline in RMZs should be avoided, except where needed to cross streams. Following wildfire and prescribed fire operations, fire lines should be rehabilitated to limit the creation of new stream channels.
- 06** To reduce the likelihood of sediment input to streams and reduce adverse effects to stream channels and riparian areas, when conducting fire operations, the use of heavy equipment within RMZs should be minimized.
- 07** New sand and gravel borrow pit development or gravel mining should not occur within RMZs to minimize ground disturbance and sediment inputs.
- 08** To reduce the likelihood of sediment input to streams and reduce adverse effects to stream channels and riparian areas, temporary fire facilities (for example, incident bases, camps, staging areas, helispots, and other centers) for incident activities should be located outside RMZs. When no practical alternative exists, all appropriate measures to maintain, restore, or enhance aquatic and riparian dependent resources should be used.
- 09** New landings, designated skid trails, staging, and decking should be located outside RMZs to minimize effects to riparian and aquatic resources. If landings are needed inside of RMZs, the disturbance area footprint should be minimized, and the activities should be located outside the active floodplain.

- 10** Aerial application of chemical retardant, foam, or other fire chemicals and petroleum should be avoided in mapped aerial retardant avoidance areas (refer to latest regional avoidance map) in order to minimize impacts to the RMZ and aquatic resources.
- 11** To reduce the likelihood of sediment input to streams and reduce adverse effects to stream channels and riparian areas, clearcut harvest should not occur in RMZs.
- 12** To reduce the likelihood of sediment input to streams and reduce adverse effects to stream channels and riparian areas, all management activities in RMZs should protect key riparian features and processes, including maintenance of stream bank stability, input of organic matter, temperature regimes, water quality, and aquatic and terrestrial habitat connectivity.

### Suitability (FW-RMZ-SUIT)

- 01** RMZs are not suitable for timber production, but harvest for other multiple use values is allowed as appropriate under the RMZ plan components.

## Fisheries and Aquatic Habitat (FAH)

### Introduction

The intent of the following plan components is to maintain or restore watershed conditions so that managed watersheds are moving towards or are in concert with reference watersheds when considered at a national forest scale. Changes between the 1986 plans, as amended, and the 2020 Forest Plan are captured in the components below.

This section also addresses species that are listed by the USFWS as threatened, endangered, proposed, or candidate under the Endangered Species Act; or those that are identified as species of conservation concern by the Regional Forester of the Forest Service. Species of conservation concern are species other than federally recognized species that are known to occur in the plan area and for which the Regional Forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area (36 Code of Federal Regulations 219.9; FSH 1909.12.52). Species of conservation concern for the HLC NF are identified at the regional level. The list can be reviewed at [www.fs.usda.gov/goto/R1/SCC](http://www.fs.usda.gov/goto/R1/SCC). If additional species are added to the SCC list in the future, the plan components in this section would apply and additional species-specific components may be needed.

### Desired Conditions (FW-FAH-DC)

- 01** Watersheds and associated aquatic ecosystems retain their inherent resilience to respond and adjust to disturbances and climatic fluctuations without long-term, adverse changes to their biological integrity. Components of this biological integrity include supporting native fish, amphibians, birds, and invertebrates, as well as productive recreational fish populations. Essential characteristics of this resilience are healthy, functioning aquatic, riparian, upland, and wetland ecosystems.
- 02** Instream habitat conditions for managed watersheds move in concert with or towards those in reference watersheds. Aquatic habitats are diverse, with channel characteristics and water quality reflective of the climate, geology, and natural vegetation of the area. Stream habitat features across the forest, such as large woody material, percent pools, residual pool depth, median particle size, and percent fines are within reference ranges as defined by agency monitoring.

- 03** Aquatic systems and riparian habitats express physical integrity, including physical integrity of shorelines, banks, and bottom configurations, within their natural range of variation.
- 04** Connectivity between water bodies provides for movement between habitats associated with species' life stages (for example, fish migration to spawning areas, amphibian migration between seasonal breeding, foraging, and overwintering habitats), and for processes such as recolonization of historic habitats.
- 05** Habitats favor native aquatic species. Impacts of nonnative fish species on native salmonids, such as hybridization, competition, replacement, and predation are minimal.
- 06** Aquatic ecosystems are free of invasive species such as zebra mussels, New Zealand mud snails, quagga mussels, and Eurasian milfoil. Non-native plant and amphibian species are not expanding into water bodies that support native amphibian breeding sites (for example, non-native bullfrogs, chytrid fungus, or reed canary grass are not expanding into boreal toad breeding sites).
- 07** Streams, lakes, and rivers provide habitats that contribute toward recovery of threatened and endangered fish species and address the habitat needs of all native aquatic species, as appropriate.
- 08** Increased availability of quality habitat reduces risk to the genetic diversity and population viability of aquatic threatened, endangered, or species of conservation.

### Goals (FW-FAH-GO)

- 01** Work with Montana Fish, Wildlife, and Parks to contribute to the expansion of core populations of bull trout as outlined in the Bull Trout Conservation Strategy (or the latest guiding document).
- 02** Work with Montana Fish, Wildlife, and Parks to contribute to the expansion of core populations of westslope cutthroat trout as outlined in the Westslope Cutthroat Trout Conservation Strategy (or the latest guiding document).
- 03** The Forest Service coordinates with federal agencies, state agencies, tribes, counties, interested groups, and interested private landowners to recover threatened and endangered species.
- 04** The Forest Service works with federal, state, tribal, and private land managers towards an all-lands approach to management and cooperation, including efforts to mitigate threats or stressors, provide for wildlife and fish habitat connectivity, and to provide social, economic and ecological conditions that contribute to mutual objectives.
- 05** The Forest Service cooperates with state agencies, federal agencies, tribes and other interested stakeholders to develop actions that lead to progress towards meeting other agencies' objectives for native and desired non-native fish and wildlife species.
- 06** Work with appropriate agencies including Montana Fish, Wildlife, and Parks to provide information and preventive measures to the public about aquatic invasive species at water-based recreation sites. Also see Public Information, Interpretation, and Education (CONNECT).

### Objectives (FW-FAH-OBJ)

- 01** Improve the habitat quality and hydrologic function of at least 20 miles of aquatic habitat, focusing on streams with listed species or species of conservation concern. Activities include, but are not limited to, berm removal, large woody debris placement, road decommissioning or stormproofing, riparian planting, and channel reconstruction.



- 02 In streams with recreational fishing populations, improve the habitat quality and hydrologic function of at least 20 linear miles of habitat. Prioritize impacted, highly productive stream segments.
- 03 Reconnect at least 10 miles of habitat in streams disconnected by roads or culverts where aquatic and riparian-associated species' migratory needs are limiting distribution of those species.

### Standards (FW-FAH-STD)

- 01 New stream diversions and associated ditches shall be screened to prevent capture of fish and other aquatic organisms.

### Guidelines (FW-FAH-GDL)

- 01 Prior to use in a water body or when moving between watersheds, equipment (including boats, rafts, drafting equipment, water tenders, and helicopter buckets) should be inspected and cleaned to reduce the potential for the introduction of aquatic invasive species, including aquatic pathogens.
- 02 When drafting water from streams, pumps should be screened to prevent capture of fish. During the spawning season for native fish, pumping sites should be located away from spawning gravels.
- 03 New and revised livestock management plans should be designed to maintain or improve water quality by minimizing impacts caused by livestock grazing in RMZs within active livestock allotments. Also see Benefits to People, Livestock Grazing (GRAZ).
- 04 Construction activities within the ordinary high-water mark that may result in adverse effects to native or desirable nonnative aquatic species, or have the potential to directly deliver sediment to their habitats, should be limited to times outside of spawning and incubation seasons. Specific time periods should be coordinated through the permitting process with Montana Fish, Wildlife, and Parks.
- 05 Human created migration barriers to aquatic species should not be created unless they are needed to prevent invasions by nonnative species.

## Conservation Watershed Network (CWN)

### Introduction

The conservation watershed network is a specific subset of watersheds (10 or 12-digit hydrologic unit codes) where prioritization for long-term conservation and preservation of water quality, bull trout, and pure westslope cutthroat trout occurs. Conservation watershed networks also include all municipal watersheds and all watersheds with 303d listed segments or total maximum daily load listed stream segments. Restoration projects would be prioritized in areas absent of non-native competition or in areas that are critical to maintain viability of native species where non-native species are present. Evaluation of management activities in conservation watershed networks will follow appropriate levels of review prior to resource management (i.e., multiscale analysis). See appendix E.

**Table 2. Municipal watersheds of the HLC NF**

Community	Hydrologic unit code	Hydrologic unit code name	Source water
Neihart	100301050102	Carpenter Creek-Belt Creek	O'Brien and Shorty Creeks
White Sulphur Springs	100301030105	Trout Creek-North Fork Smith River	Willow Creek
Helena	100301011401	Upper and Middle Tenmile Creek	Tenmile, Banner, Moose, Minnehaha, Beaver and Porcupine Creeks.

Community	Hydrologic unit code	Hydrologic unit code name	Source water
East Helena	100301011307	McClellan Creek	McClellan Creek
Lewistown	100401030701	Big Spring Creek	All of the Big Spring Creek groundwater source watershed

### Desired Conditions (FW-CWN-DC)

- 01** Conservation watershed networks have functionally intact ecosystems that provide high-quality water and contribute to and enhance the conservation and recovery of threatened or endangered fish species and aquatic species of conservation concern.

### Objectives (FW-CWN-OBJ)

- 01** Repair at least two road/stream crossings every five years at locations where chronic sediment sources are found (for example, up-size culverts, reduce sediment delivery to waterways from roads, realign stream constraining road segments, improve livestock stream crossings and trailing, etc.). Give precedence to priority watersheds as identified in the conservation watershed network in appendix E.
- 02** Stormproof at least 15% percent of the roads in the conservation watershed network prioritized for restoration to benefit threatened, endangered, proposed, and candidate aquatic species, aquatic species of conservation concern, and municipal watersheds. See appendix C for specific strategies for discussion of treatment options and for prioritization.

### Guidelines (FW-CWN-GDL)

- 01** For subwatersheds included in the conservation watershed network, net increases in stream crossings and road lengths should be avoided in RMZs, unless the net increase would improve ecological function in aquatic ecosystems. The net increase is measured from beginning to end of each project.
- 02** Roads in conservation watershed networks should be prioritized for road decommissioning, closure, relocation or other strategies to reduce sediment delivery to benefit aquatic species (for example, bull trout). See appendix C for specific strategies for discussion of treatment options and for prioritization.
- 03** During project planning, conservation watershed networks should be the highest priority for restoration actions for the aquatic environment.

## Soil (SOIL)

### Introduction

The National Forest Management Act states that management activities on NFS lands will not produce substantial and permanent impairment of soil productivity. Productivity is maintained by establishing soil quality standards. During the last planning cycle, physical soil disturbance has been the focus of soil management on the HLC NF managed lands. In 2010, FS Manual Chapter 2550 Soil Management was revised at the national level. The emphasis of soil management was changed to include long-term soil quality and ecological function. The manual defines six soil functions: soil biology, soil hydrology, nutrient cycling, carbon storage, soil stability and support, and filtering and buffering. The objectives of the national direction on NFS lands are 1) to maintain or restore soil quality, and 2) to manage resource uses and soil resources to sustain ecological processes and function so that desired ecosystem services are

provided in perpetuity. To provide for multiple uses and ecosystem services in perpetuity, these six soil functions need to be active. In addition to the plan components in this section, also see the Livestock Grazing, Timber, and Infrastructure sections.

**Desired Conditions (FW-SOIL-DC)**

**01** Soil quality and productivity are not impaired and support desired conditions for terrestrial and aquatic ecosystems. See Table 3.

**Table 3. Soil ecological functions with attributes, indicators, and desired conditions**

Soil function <sup>1</sup>	Selected attributes	Soil quality indicator	Desired condition
Soil biology	Roots and aeration	Root growth	Root growth, both vertically and laterally, is unimpeded by compaction.
	Flora and fauna	Community composition	The soil is capable of supporting a distribution of desirable plant species by vegetative layer (trees, shrubs, herbaceous) as identified in the potential plant community (based on ecological site descriptions or equivalent). The site has not transitioned to an undesirable state.
		Canopy cover and ground cover	Soil temperature and moisture regimes are maintained in conditions to support desired plant communities.
Soil hydrology	Infiltration	Surfaces	Surface structure is as expected for the site (for example, granular, subangular blocky, single grain). Surface crusting and pore space are as expected for the site.
Nutrient cycling	Organic matter composition	Forest or rangeland floor	Forest and rangeland floor are appropriate for vegetation type and successional stage. Rangeland to be determined by field analysis and USDA-NRCS Soil Survey descriptions specific to soil type.
		Coarse woody material (greater than 3 inches)	Coarse woody material is on site in various stages of decay and size classes in amounts appropriate for habitat type. See FW-DC-VEGF-07 and FW-GDL-VEGF-05.
	Nutrient availability	Surface (A) horizon or mollic layer	"A" horizon is present, well distributed, not fragmented.
Support and stability	Stability	Surface erosion (wind, rill, or sheet)	Erosion is occurring at natural rates or not evident. Bare ground is within expected ranges base on USDA-NRCS Soil Survey descriptions for soil type.
		Site stability (mass erosion, landslide prone)	Site stability potential is unchanged or stability has been improved.

<sup>1</sup>For the purposes of repeatability and reliability in measurement of the soil quality indicators in the field, 4 of the 6 functions listed in the FS manual were chosen that best represent conditions.

**02** Biological soil crusts (mosses, lichens, algae, liverworts) occurring on very dry sites are stable.

**Standards (FW-SOIL-STD)**

**01** Land management activities shall be designed and implemented in a manner that conserves soil physical, chemical, and biological functions, improves these functions, and maintains site productivity.

- 02** Land management activities shall not create detrimental soil conditions on more than 15 percent of an activity area. In activity areas where less than 15 percent detrimental soil conditions exist from prior activities, the cumulative detrimental effect of the current activity following project implementation and restoration must not exceed 15 percent. In areas where more than 15 percent detrimental soil conditions exist from prior activities, the cumulative detrimental effects from project implementation and restoration must not exceed the conditions prior to the planned activity and rehabilitation must address the current impaired soil functions to improve the long-term soil condition.
- 03** Project specific best management practices and design features shall be incorporated into land management activities as a principle mechanism for protecting soil resources.

### Guidelines (FW-SOIL-GDL)

- 01** Ground-based equipment used for vegetation management should only operate on slopes less than 45 percent to protect soil quality. On sensitive soils ground based equipment should only operate on slopes less than 35 percent. Log skidding equipment should only operate on slopes less than 35 percent to limit detrimental soil disturbance. Exceptions may be authorized where soil, slope, and equipment are determined appropriate to maintain soil functions.
- 02** To maintain soil quality and stability, ground-disturbing management activities should not occur on soils prone to mass wasting. Exceptions may be considered after site-specific soils analysis.
- 03** To minimize soil disturbance, during management actions, existing or past disturbed areas should be used before creating new disturbances for temporary roads, landings, skid trails, or other activity areas (such as burn piles or mining sites) unless new disturbances would be less impactful.
- 04** Project activities should provide sufficient effective ground cover with a post-implementation target of 85 percent to provide nutrients and reduce soil erosion. Exceptions to the target may be considered based on site potential.
- 05** To maintain organic matter for soil function, management activities (including prescribed fire) should conserve coarse woody debris at levels that correspond to soil and habitat type. Management activities should either retain forest floor at half the current thickness or no less than one centimeter thick on average across activity areas. Also see FW-VEGF-GDL-05.
- 06** After a road is decommissioned or after cessation of management activities on temporary roads, soil function appropriate to the site potential should be restored, using demonstrably effective methods.
- 07** To restore soil quality, when reclaiming skid trails, landings, burn pile scars, and nonsystem roads, demonstrated effective treatment methods should be used.
- 08** To protect identified areas of volcanic ash and granitic soils, erosion control measures should be planned prior to any ground disturbing activities.

## Air Quality (AQ)

### Introduction

Clean air is an important environmental benefit provided by forests. Clean air is necessary for all life on Earth, and air pollution has been associated with a range of adverse health and environmental effects. Trees absorb and sequester greenhouse gases through photosynthesis and produce oxygen for people and animals to breathe. Trees also play an important role in capturing air pollutants deemed hazardous to

human health: ground-level ozone, particulate matter, nitrogen dioxide, and sulfur dioxide. The pollutants come from dust, pollen, smoke, ash, motor vehicles, and industrial sources such as power plants. There are two primary types of air quality effects concerning the Forest and forest operations: 1) the effects of regional air pollution on forest natural resources and human health, and 2) the effects of forest emissions on forest natural resources, human health, and regional air sheds.

Air pollution affects the natural quality of forest lands, particularly wilderness areas or air quality related values or wilderness air quality values. High ozone concentrations can injure sensitive vegetation. Fossil fuel burning emits sulfur dioxide and nitrogen oxides into the atmosphere. Certain types of agricultural activities, such as livestock grazing and dairy production, emit ammonia to the atmosphere. Such emissions can lead to atmospheric deposition of sulfuric acids, nitric acids, and ammonium to national forest ecosystems above critical load thresholds. Atmospheric deposition can cause lake body acidification, eutrophication, and hypoxia, soil nutrient changes, and vegetation impacts. Deposition of toxic metals such as mercury and lead can be harmful to both aquatic and terrestrial ecosystems. Visibility in most national forests is obscured some portion of the year by anthropogenic haze of fine pollutant particles. In addition, the Clean Air Act requires FS operations and permitted operations such as prescribed burning, fossil fuels development and production, and mining to comply with National Ambient Air Quality Standards and protection of air quality related values/wilderness air quality values.

The EPA establishes National Ambient Air Quality Standards as directed by the Clean Air Act, and the Montana Department of Environmental Quality manages these standards within the state of Montana. The Montana Department of Environmental Quality, along with select counties, monitor for air pollution and provide reports summarizing air quality data. The National Ambient Air Quality Standards focus on six criteria pollutants including: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, and particulate matter –including both particulate matter 10 and particulate matter 2.5 as defined by the aerodynamic diameter of the particulate in microns.

FS air quality policy directs coordination of National Forest activities with state and federal air quality control efforts. This is done by managing and/or mitigating the sources of air pollution emitted by FS activities, such as prescribed burning, the construction and use of roads, and the operation of various facilities. Mandatory Class I federal areas have special protection afforded by amendments to the Clean Air Act and Wilderness Act. The Bob Marshall, Scapegoat, and Gates of the Mountains Wilderness Areas are Class I federal areas. The FS has the responsibility to protect the air quality related values in Class I areas as directed by the Wilderness Act and Clean Air Act.

The air quality in and around the HLC NF is generally good and the state of Montana forecasts improving air quality conditions across the state and improving visibility in wilderness areas. However, air quality is compromised during winter months in communities where wood smoke causes health standard exceedances, and during fire season months when wildfires causes exceedances across broad portions of the state. Prescribed fires, agricultural burning, and agriculture dust can adversely impact air quality, although the pollutants do not generally reach unhealthy levels. The Montana Department of Environmental Quality regulates open burning throughout the year while working with the Montana/Idaho Airshed Group to coordinate projects and identify potential air quality impacts from each prescribed burn.

### Desired Conditions (FW-AQ-DC)

- 01** Good air quality contributes to visibility, human health, quality of life, economic opportunities, quality recreation, and wilderness values.

## Goals (FW-AQ-GO)

- 01** In order to minimize air quality impacts, FS management activities affecting air quality are done in compliance with regulations enforced by the Montana Department of Environmental Quality. The Forest coordinates prescribed fire operations and wildfires managed for resource benefit purposes through participation in the Montana/Idaho Airshed Group.

## Fire and Fuels Management (FIRE)

### Introduction

Fire is a natural and essential ecological disturbance process that occurs along a spectrum of differing intensity, severity, and frequency that allows ecosystems to function in a healthy and sustainable manner. Fire is a necessary disturbance process within the HLC NF. It has shaped the structure and composition of forested and nonforested ecosystems. Fire influences the pattern of vegetation across the landscape and is a critical part of the life cycle for many plant and wildlife species. Over the past 150 years, facilities and infrastructure to support economic activities such as recreation, outfitting, mining, timber extraction, farming and ranching have been established on lands surrounding and within the HLC NF. In addition, the development of residences has occurred on private lands on the borders of National Forest, as well as on private inholdings within the Forest. While wildfire plays an essential role in maintaining the health and function of the Forest's plant and animal communities, it can also threaten human safety, health, livelihoods, homes, and property. In some cases, wildfire may also pose an unacceptable threat to specific ecosystem components.

Fire management strives to balance the natural role of fire while minimizing the impacts from fire on values to be protected, especially in the wildland urban interface. This can be accomplished by implementing a coordinated risk management approach to promote landscapes that are resilient to fire-related disturbances and preparing for and executing a safe, effective, and efficient response to fire.

Treatment of vegetation for fuels mitigation is typically designed to change predicted fire intensity and duration and/or mitigate the rate of fire spread. Treatments focus on restoring and maintaining essential ecological disturbance process that occur along a spectrum of differing intensity, severity, and frequency that allows ecosystems to function in a healthy and sustainable manner. Additionally, the emphasis of fuel treatments is to restore and/or maintain fire regimes, reduce negative impacts of wildfires to watershed health, wildlife habitat, and to community values at risk.

Fire management is achieved through prescribed fire, which includes management-ignited fire and naturally ignited wildfire (ignited by lightning as opposed to humans), and mechanical methods. In many cases, natural ignitions - primarily resulting from lightning - can be managed without a full suppression response. Management can range from limiting human activity within the vicinity of the fire, monitoring fire behavior, to aggressive suppression of those areas of the fire at times and places where the fire may affect human values or ecosystem components. Full suppression of a fire is a management choice that should be utilized when fire poses an unacceptable risk to human values, ecosystem components, or when a fire is caused by human agency and is unplanned (e.g. abandoned campfire, arson, or equipment operation). Full suppression responses will vary depending on the individual fire and can include strategies to confine the fire. It is possible for a fire to be managed using multiple strategies including resource-benefit. All wildfire management decisions will be made with primary consideration given to both the health and safety of the public and of fire personnel. All decisions to manage wildfire will be made and documented through a decision support process and will emphasize public and fire personnel safety. With all wildland fire management actions, it is critical to only implement actions that can be successful while considering actual values at risk with the least exposure necessary.

Please see the glossary for definitions related to fire and fuels management.

### Desired Conditions (FW-FIRE-DC)

- 01** Wildfire maintains and enhances resources and, as nearly as possible, is allowed to function in its natural ecological role across the landscape, including wilderness. Under favorable conditions, wildfires and prescribed fires are managed to ensure highest probability of success, minimum exposure to responders, and to meet resource objectives.
- 02** Within the wildland-urban interface and around high value resources, surface fuel loading and crown spacing provide conditions for low severity surface fire that minimizes threats to values.
- 03** Treated fuel management areas (management actions or wildfire) allow opportunities over time for natural fire occurrence and provide fuel conditions that benefit fire management operations.

### Goals (FW-FIRE-GO)

- 01** The HLC NF coordinates with state, county, and local cooperators to meet goals identified in community wildfire protection plans.
- 02** The HLC NF works with adjacent communities, landowners, permittees and state, local, and other federal agencies to promote a collective understanding about wildfire risk and that wildland fire is an ecological process.
- 03** The HLC NF works with the state and other partners as needed when designing fuels reduction projects to identify areas and resources of value for fuel treatments.

### Objectives (FW-FIRE-OBJ)

- 01** Hazardous fuels treatments occur on a minimum of 15,000 acres per decade within the wildland urban interface. Use any available wildland fire management opportunity to reduce fire intensity and severity. Treatment includes initial entry and maintenance to ensure desired fuel conditions are achieved. Achieving this would also contribute to FW-VEGT-OBJ-01.

### Standards (FW-FIRE-STD)

- 01** Suppression of wildfires will be at the lowest risk to fire personnel and public, taking into consideration costs and effects to resources and values at risk.

### Guidelines (FW-FIRE-GDL)

- 01** To create (and/or minimize threats to) resilient, healthy ecosystems, vegetation treatment projects should allow opportunities for naturally ignited wildfire to occur and provide fuel conditions that benefit fire management operations.
- 02** To create (and/or minimize threats to) resilient, healthy ecosystems, wildland fire management strategies should promote desired vegetation conditions where wildfires result in fire severities that are “self-regulating” and reduce future risk.
- 03** To ensure shared stewardship when wildfires affect identified areas of tribal importance, the FS should communicate and collaborate with tribal leadership during fire incident management to identify and, to the extent practical, protect tribal values and minimize impacts to resources or areas of tribal importance.

- 04 To maintain the character of designated areas, minimum impact strategies and tactics should be applied if fire management actions are required to manage wildland fire, unless more direct attack is needed to protect life or adjacent property or mitigate risks to responders.

## Vegetation

### Introduction

The vegetation section is broken into several subsections. The “All Terrestrial Vegetation” section includes concepts and plan components that apply to all types of vegetation found on the HLC NF. Then, there is a section each for; Forested Vegetation; Nonforested Vegetation; and Threatened, Endangered, Proposed, and Candidate Plant Species and Plant Species of Conservation Concern. Pollinators are also included, due to interconnectedness with vegetation. Finally, Invasive Plants are addressed.

### All Terrestrial Vegetation (VEGT)

#### Introduction

This section addresses forestwide plan components for terrestrial vegetation. The HLC NF supports a wide diversity of plant communities growing on sites that include warm, dry foothills; productive mesic slopes; and cold, steep timberline areas. Plant associations found include coniferous forests, grasslands, shrubland/woodlands, riparian and wetland vegetation, hardwood forests, and alpine plant communities. Vegetation characteristics are influenced by fixed site features, such as soils and topography, which interact with dynamic system drivers such as climate, vegetative succession, fire, insects, disease, invasive species, floods, droughts, and human uses and developments. Vegetation conditions are subject to continual change; these changes can be rapid or gradual. Wildfires are a primary ecosystem driver. Please refer to the glossary for a description of the fire regimes found on the HLC NF.

The 2012 Planning Rule adopts a complementary ecosystem and species-specific approach, known as “coarse-filter/fine-filter”, to provide the natural diversity of plant and animal communities and ensure long-term persistence of native species in the plan area. Coarse-filter plan components are designed to maintain or restore ecological conditions for ecosystem integrity and diversity within agency authority and the inherent capability of the land. Fine filter plan components provide additional specific habitat needs, when those needs are not met through the coarse filter. Although many influences on vegetation are not easily controlled, the intent of plan components is to collectively provide for the full suite of native biodiversity across the plan area. Plan components that address composition, structure, and function of vegetation communities represent the coarse filter. The fine filter is addressed by components such as those specific to 1) threatened, endangered, proposed, and candidate species which are designated by the United States Fish and Wildlife Service; 2) species of conservation concern, which are identified by the Regional Forester; and 3) specific structural components of interest such as old growth, downed wood, and snags.

Broad potential vegetation types serve as a basis to describe ecological conditions in this plan; these types are defined in appendix D. A consistent hierarchy of broad potential vegetation types developed for the Northern Region is used which is appropriate for broad level analysis and monitoring. These types are aggregations of habitat type that classify ecosystems based on potential productivity, biodiversity, and natural processes. They represent like biophysical environments that produce plant communities of similar composition, structure, and function. The vegetation community that would develop over time, given no major disturbances (the “climax”), would be similar within a potential vegetation type. However, existing vegetation may vary widely, reflecting each site’s unique history and point in time along the successional pathway. Attributes such as cover type, size class, and density class change through time



whereas potential vegetation types generally remain constant. By necessity, potential vegetation types were mapped at the broad scale to facilitate analysis. However, this map cannot be expected to be accurate at the project or stand level where management decisions will be made. Further, it is expected that potential vegetation maps will continually be developed and improved over time. Projects should use the best available potential vegetation identification and mapping, and validate the information at the project and/or treatment unit scale to implement the plan.

Terrestrial vegetation desired conditions are designed to maintain and enhance ecological integrity, diversity, function, and resiliency while contributing to social and economic sustainability as required by the 2012 Planning Rule. Desired conditions are based on an analysis of the natural range of variation for key ecosystem characteristics which provides an understanding of how ecosystems are dynamic and change over time in a manner that is resilient to perturbations and disturbance. As such, the natural range of variation is a guide to understanding how to maintain or restore a resilient ecosystem with structural and functional properties that will enable it to persist into the future. Although the natural range of variation is the underpinning, desired conditions also represent an integration of additional factors such as wildlife habitat needs, existing or anticipated human use patterns, potential future climate conditions, resiliency to future disturbances, and ecosystem services that may be desired (such as reduction of fire hazard or production of forest products).

The percentages shown in desired conditions represent the desired percentage of that attribute across the entire scale of interest. Forested attributes (such as tree species distribution, size class, density class, old growth, and snags) should be applied on forested potential vegetation types. Nonforested desired conditions should be promoted on nonforested potential vegetation types, and on the hottest driest forested types that were historically maintained in a nonforested or savanna condition by disturbance. Project-level determination of potential vegetation type would inform where to apply desired conditions. For example, if a desired condition calls for an increase in the seedling/sapling size class, this condition could be promoted on forested lands through stand replacing fire or harvest; it would not be appropriate to promote the expansion of conifer seedlings into grassland or shrublands. The use of proportions of the landscape to describe desired conditions, rather than an acreage value, allows for the possibility that the mapping of potential vegetation could be improved through time, and/or that a changing climate could cause changes in moisture regimes such that potential vegetation types shift in location and abundance.

Desired conditions for vegetation should be interpreted in the short-term (for example, the “life of the plan,” which is 15 years) and the long-term because ecological, social, and economic sustainability require a long-term perspective. To provide context for the desired trend during the initial phases of plan implementation, an “existing condition” value is included in some desired conditions. This reflects conditions that exist at the writing of this plan. The “existing condition” will change through time as reported by monitoring.

Some desired conditions use numeric ranges which are to be applied at the forestwide scale (as shown in this chapter), or at the GA scale (chapter 3). The goal is to provide a suite of components that represent the broad-scale planning unit, while also capturing the unique condition of each GA. Project-level activities are not required to apply the same numeric ranges at smaller analysis scales. Rather, projects and activities must either contribute towards or not preclude the achievement of the desired conditions at the larger scales. Standards and guidelines are designed to ensure that activities are conducted in a manner that move the Forest towards desired conditions. Appendix C provides descriptions of potential management approaches and actions that are expected to be used in the plan area, as well as further information to explain plan components. Desired conditions may be achieved through both natural processes and management activities. Vegetation conditions anywhere within the specified range at the scale specified would meet the desired condition. Fluctuations in vegetation conditions over time are

expected. Managing a particular vegetation characteristic at the upper, lower, or mid-point of the desired range may be appropriate, as influenced by other ecological, social or economic objectives. Monitoring assists in evaluation of vegetation change over time and supports an adaptive management approach to forest management (36 CFR 219.12). See appendix B for the monitoring plan.

### Desired Conditions (FW-VEGT-DC)

- 01 Vegetation occurs across the landscape in a diverse pattern of compositions and structures within the natural range of variation that are resilient to future climates and disturbances such as fire, insects, disease, invasive species, floods, and droughts. Conditions are such that effective recovery of vegetation is possible following disturbances. These conditions are described in Table 4 and further quantified under desired conditions in the VEGF and VEGNF sections.

**Table 4. Forestwide terrestrial vegetation desired conditions by broad potential vegetation types**

Broad potential vegetation type	Terrestrial vegetation desired conditions
Warm dry	<p>Forest resilience is achieved by emphasizing fire adapted species and structures. An increase in the extent and dominance of ponderosa pine, limber pine, and aspen occurs relative to the existing condition, while Douglas-fir decreases (but remains common). Rocky mountain juniper occurs but its abundance is limited on historically nonforested areas. Other species such as Engelmann spruce and lodgepole pine may thrive where moisture is less limiting. The quantity and extent of large and very large trees increases relative to the existing condition. Savannas occur on the driest sites, and some sites may be maintained in a nonforested condition by frequent disturbance or restoration. Seedling/sapling and small forest size classes occur but are limited, because large tree remnants are retained as is characteristic of a high frequency, low intensity disturbance regime. Stands in the large and very large tree size classes are often open or clumpy, with the large tree component comprised of long-lived fire-resistant species (ponderosa pine and Douglas-fir). Complex landscape patterns of size class and density occur, with open, uneven-aged forests and high within-stand variability common. Forests with low to medium density increase relative to the existing condition, while forests with high density decrease. Stands with higher densities occur on more mesic sites and are interspersed with open forests and meadows. Early successional forest patches are relatively small. Plant understories include rough fescue, Idaho fescue, bluebunch wheatgrass, sagebrush, common juniper, and bitterbrush on the driest sites and Oregon grape, snowberry, pinegrass, kinnickinnick, white spiraea, heartleaf arnica, elk sedge, and ninebark on more mesic sites. Snags are scattered as individuals or small groups. Coarse woody debris is fairly low.</p>
Cool moist	<p>Forest resilience is achieved through diversity of species and age/size class. The extent and dominance of aspen, Engelmann spruce, and whitebark pine increase relative to the existing condition, with lodgepole pine and Douglas-fir remaining abundant and subalpine fir also common. Minor amounts of ponderosa pine may also occur, on the warmest/driest sites. The spruce/fir cover type includes dense, multistoried stands that provide high quality multistory lynx habitat. Small size classes are common due to preponderance of lodgepole pine; but a decrease in the small size class with increases in large and very large classes still occurs relative to the existing condition. There is wide variability in size class because of the high severity, low frequency disturbance regime. Most especially, high diversity in size class occurs in lodgepole pine to ensure insect and fire disturbances occur at a scope and scale within their natural range of variation. The amount of low/medium and medium/high density classes increase while the high-density class decreases relative to the existing condition primarily in lodgepole pine and Douglas-fir forests. Large and very large trees, primarily Douglas-fir, are clumpy but scattered across the landscape to provide seed. Single-storied and single-aged conditions are common in lodgepole pine. Early successional forest patches tend to be fairly large. Understory plant species present may include twinflower, beargrass, huckleberry, grouse whortleberry, pinegrass, heartleaf arnica, elk sedge, and western meadowrue. Other species such as menziesia and alder may be found on the wettest sites. Snags occur in pulses and in clumpy distribution. Coarse woody debris levels vary widely.</p>

Broad potential vegetation type	Terrestrial vegetation desired conditions
Cold	<p>Forest resilience is achieved by emphasizing the presence of whitebark pine where possible. Increases in whitebark pine occur relative to the existing condition, focusing on open ridges and harsher aspects. On these sites, there is a decrease in subalpine fir and Engelmann spruce relative to the existing condition. Subalpine fir and Engelmann spruce remain common and dominate northerly and easterly aspects, swales, moist basins, and riparian areas. Lodgepole pine is present as well, on warmer sites. The abundance of the small forest size class is decreased relative to the existing condition, with an increase in the large size class. Whitebark pine is maintained across its natural range to the degree possible within the context of climate changes and increasing disturbance, with large trees present that are tolerant of moderate or low severity fires. Large subalpine fir and Engelmann spruce are also promoted on productive sites. The proportion of forests in the low/medium density class is increased with decreases in the high cover class relative to the existing condition, focusing on restoration of resilient, open multi-aged whitebark pine forests where dense multistoried spruce/fir or single-storied lodgepole pine dominate. Natural patch sizes reflect a mixed fire regime. Understory plant species present, such as grouse whortleberry and beargrass, may be sparse at the highest elevations where alpine vegetation is interspersed with bare ground and rock. Snags occur in pulses. Coarse woody debris levels vary widely.</p>
Xeric grass-land	<p>Xeric grassland plant communities are dominated by native species, and have high diversity of tall and medium height, cool and warm season grasses (for example, bluebunch wheatgrass, western needlegrass, needle-and-thread, blue grama), and short grasses (for example, Sandberg bluegrass, pine junegrass). Sub-shrubs and shrubs are present at less than 10% canopy cover. There is a variety of native forbs in varying amounts. The diversity of native plant species present allows for drought tolerance. Individual species can vary greatly in the amount of production depending on growing conditions. Vegetation typically has strong and robust root systems that allow production to increase considerably with favorable growing conditions. This plant community provides for soil stability and a properly functioning hydrologic cycle. Plant litter is a common component and is available for soil building and moisture retention. Plant litter is properly distributed with very little movement off-site, with natural plant mortality typically being low. Bare ground is present because of the warm dry nature of these sites but at low amounts. Encroachment by conifers and juniper is limited, since these grasslands are either maintained by a natural high frequency low severity fire regime, or are maintained by site conditions (i.e., they do not require fire to maintain the grassland vegetation). These vegetation types are generally tolerant of fire when fire frequency is in the range of 5 -15 years, although recovery is dependent on fire intensity and species. Maintenance of grasslands is dependent, in part, on periodic fires to remove residual litter and encroaching shrubs and trees, which may increase the burn intensity and possibly damage the dominant grassland species. Microphytic crust is maintained as a key feature.</p>
Mesic grass-land	<p>Mesic grassland communities are dominated by native species, and have greater amounts of mesic forbs, denser cover, and more species richness than xeric grasslands. The functional plant groups are characterized by long lived, moderately deep-rooted cool grass species (for example, rough fescue, Idaho fescue, timber oatgrass, upland sedges, tufted hairgrass, etc.) with a wide variety of mesic forbs present in varying amounts. Shrubs may be present with minor cover. Introduced species are rare. Bare ground is typically low (less than 3%) across most sites with litter being a common component and available for soil building and moisture retention. Plant litter movement is expected to be limited with plant litter being properly distributed and rarely moving off-site. These vegetation types are generally tolerant of moderate intensity wildfire. Common dominant grasses, such as rough fescue and Idaho fescue, may be topkilled, but the root crowns and associated growing points are protected and they respond favorably with vigorous regrowth. Within just a few years these species usually recover to pre-fire levels. Frequent burning maintains diversity in these vegetation types. Microphytic crust is maintained as a key feature.</p>

Broad potential vegetation type	Terrestrial vegetation desired conditions
Xeric shrubland /woodland	<p>Xeric shrubland plant communities support shrub species such as Wyoming big sagebrush, basin big sagebrush, rabbitbrush, horsebrush, broom snakeweed, low sagebrush and black sagebrush. Overstory species vary by location and site type. For example, low sagebrush tends to occupy the lower, drier and hotter sites with shallow soils whereas basin big sagebrush typically dominates sites with deeper soils and more plant available moisture. The understory is typically dominated by graminoid species such as needle-and-thread, Sandberg bluegrass and bluebunch wheatgrass. Canopy cover varies depending on the site and growing conditions but is typically low to moderate. Bare ground is present in higher amounts relative to mesic shrubland sites. Xeric woodlands are typically hot and dry or are steep, with shallow, skeletal soil. The dominant overstory species varies but includes Rocky Mountain juniper and mountain mahogany. Mountain mahogany is restricted to steep rocky soils and rock outcrops. Encroachment by conifers is limited, as it is maintained by a natural high frequency low severity fire regime. While sagebrush and mountain mahogany are often killed by fire, nonlethal or mixed severity fires that burn in a mosaic pattern leave live individuals and promote age class diversity while promoting the sprouting of other shrub (e.g. rabbitbrush, horsebrush) and grass species. The natural fire regime of this vegetation type maintains a patchy distribution of shrubs, so the general aspect of the vegetation is shrub-steppe grassland. Periodic low intensity burns can reduce sagebrush cover and increase herbaceous abundance of herbaceous species, creating a mosaic of burned and unburned patches. Microphytic crust is maintained.</p>
Mesic shrubland	<p>Mesic shrubland plant communities are generally more moist and productive than xeric sites. Shrub species such as mountain big sagebrush and mesic deciduous shrubs (for example, bitterbrush, snowberry, ninebark, serviceberry) are the dominant over story species with grass species (such as rough fescue, Idaho fescue, mountain brome) and various mesic forbs (for example, cinquefoil, prairie smoke) typically dominating the understory. Canopy cover varies depending on the site and growing conditions (for example, temperature, timing and amount of precipitation), but is typically moderate to high, and may result in lower cover of understory species. Encroachment by conifers is limited. Most shrub species respond well to light and mixed severity fire. With the exception of mountain big sagebrush, most of the mesic shrub species are vigorous root crown sprouters and respond favorably to fire, typically sprouting immediately following fire. However, extremely hot and intense fires that occur during summer months can cause damage to these shrublands and seed banks. Periodic burns can maintain this system. Microphytic crust is maintained as a key feature.</p>
Riparian/wetland	<p>Riparian systems are comprised of a mosaic of communities dominated by species which tolerate and are adapted to periodic flooding and an associated seasonally high water table. Deciduous trees, particularly cottonwood, may be present along with riparian shrubs and herbaceous species. In wide valley bottoms, the vegetation typically is a mosaic of all lifeforms with patterns reflecting the meander patterns of the stream/river. Black cottonwood is the dominant tree species although other tree species may include aspen, narrowleaf cottonwood, Engelmann spruce and subalpine fir; on drier sites, Douglas fir and Rocky Mountain juniper may be present with low cover and scattered distribution. Dominant shrubs may include mountain alder, various species of willows, river birch, dogwood, hawthorn, chokecherry, rose, silver buffaloberry, Rocky Mountain maple and/or snowberry, among others. A wide variety of herbaceous species, including, grasses, sedges, rushes, spikerushes, bulrushes and forbs, are present in the understory in varying amounts. Wetlands are characterized by dominant vegetation adapted to saturated (anaerobic) soil conditions. The vegetation complex is usually represented by a mosaic of herbaceous and woody plant communities that armor streambanks and create floodplain roughness, slowing flows and facilitating bank and floodplain development. Low willow species (e.g., wolf willow), bog birch and bog blueberry are typically present in subalpine wetlands. Herbaceous species may be dominated by sedges, rushes, spikerushes cattails, and/or bulrushes. Bryophytes, including sphagnum, are often well represented in fens. Also see forestwide components for RMZs. Rare species, such as sundew, may also be present in peatlands. Typically, with the exception of conifers, species in riparian/wetland systems respond favorably to fire. The growing points of the vegetation are usually protected in the moist to saturated soil. Regrowth typically occurs within the same growing season. Microphytic crust is maintained.</p>

Broad potential vegetation type	Terrestrial vegetation desired conditions
Alpine	Alpine ecosystems occupy harsh high elevation sites, resulting in short stature and relatively slow growth for both shrubs and herbaceous species. Wetland communities are present in snowloaded depressions, and support various willow species (e.g., planeleaf willow), along with wetland herbaceous species (e.g., tufted hairgrass, marsh marigold). Alpine ecosystems are mostly treeless, although some conifers (e.g., subalpine fir, whitebark pine) may be present with minor cover as krummholtz patches. Vegetation cover is typically low to moderate, depending on site characteristics. The plant communities are dominated by a number of shrubs, forbs and graminoids including: arctic willow (turf community), mountain avens, (cushion plant community), mountain heather and moss-heather (snow bed communities). Many of these areas experience only patchy fire due to the low amounts and patchiness of fuels. The fire return interval is typically very long (500 years or greater) in alpine ecosystems. Historically, stand-replacing fires occur infrequently in adjacent associated subalpine woodlands. Fire severity and spread is usually variable due to the short duration without snow cover. In addition, limited fuel loading and rock scree fields preclude fires from spreading if lightning strikes do occur. Microphytic crust is maintained as a key feature.

02 The plan area supports a distribution of cover types shown in Table 5. Nonforested cover types can occur on forested broad potential vegetation types and be perpetuated by natural disturbances or restoration activities.

**Table 5. Forestwide existing and desired conditions for cover types (percent of area)**

Cover Type <sup>1</sup>	Forestwide		Warm dry, Region 1 broad potential vegetation type		Cool moist, Region 1 broad potential vegetation type		Cold, Region 1 broad potential vegetation type	
	Existing <sup>3</sup>	Desired	Existing <sup>3</sup>	Desired	Existing <sup>3</sup>	Desired	Existing <sup>3</sup>	Desired
Nonforested <sup>2</sup>	14 (11-16)	15-25	13 (10-17)	5-20	10 (6-14)	5-10	11 (7-16)	1-10
Aspen/hardwood	1 (0.4-2)	2-5	1 (0.3-2)	2-5	2 (0.2-3)	2-5	Trace	Trace
Ponderosa pine	8 (6-10)	15-25	16 (12-20)	40-60	2 (0.6-4)	1-5	Trace	Trace
Douglas-fir	29 (25-35)	15-25	52 (42-61)	30-40	23 (17-28)	5-15	5 (2-8)	2-5
Lodgepole pine	27 (24-30)	15-25	16 (12-21)	2-7	35 (29-42)	25-35	37 (29-44)	40-50
Spruce/Fir	12 (10-15)	10-20	Trace	Trace	19 (14-24)	35-45	27 (21-34)	40-45
Whitebark pine	4 (2-5)	2-5	Trace	Trace	2 (0.6-4)	2-5	12 (7-16)	10-20

<sup>1</sup> Cover types are broad groups of vegetation based on the dominant species. A cover type often contains multiple species (see appendix D for a more detailed description).

<sup>2</sup> Nonforested areas include grass and shrub cover types, which may support widely scattered trees in some cases.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval in parenthesis. Source is R1 Summary Database, FIA data. Existing condition represents 2018 conditions. Estimates are rounded to the nearest whole number unless the value is less than 1%, in which case it is rounded to the nearest 10th. The totals do not necessarily equal 100% due to non-vegetated areas (water or rock).

03 Vegetation conditions provide habitat requirements to support populations of species of conservation concern, threatened or endangered species, and other native and desired non-native species based upon the inherent capability of lands.

- 04** Vegetation patterns provide connectivity and allow for potential genetic interchange to occur to support ecosystem functions, including potential species range shifts that may occur in response to climate change.
- 05** Vegetation conditions in permitted special use areas, developed or designated recreation areas, administrative sites, infrastructure, utility corridors, mine repositories and reclamation sites, and specific designated or special areas meet the unique desired conditions for those sites. Refer to plan components found in those sections.
- 06** Bryophytes, algae, lichen, and fungi are present in their natural extent and abundance.

### Objectives (FW-VEGT-OBJ)

- 01** Vegetation management occurs on at least 130,000 acres per decade to maintain, restore, or move vegetation towards desired conditions. Control of invasive species and livestock grazing also may contribute to the achievement of desired conditions; however, these activities are addressed in the Invasive Plants and Livestock Grazing sections. Also see FW-FIRE-OBJ-01. Treatments to achieve this objective may occur on forested or nonforested vegetation communities and include, but are not limited to, the following activities:
  - Planned or unplanned fire ignitions
  - Fuel reduction treatments such as thinning, piling, chipping, and mastication
  - Removal of encroaching trees in nonforested ecosystems
  - Timber harvest
  - Tree planting and revegetation of native plants
  - Noncommercial thinning of forests

### Guidelines (FW-VEGT-GDL)

- 01** Removal of native vegetation during nonvegetation management activities (for example, road maintenance) should be limited to the extent needed to achieve the project purpose and need.
- 02** Livestock grazing practices should be modified as necessary to ensure that revegetation and/or reforestation is successful after management activities or natural disturbances, as defined in site-specific prescriptions.
- 03** To maintain the diversity of native tree species, when artificial reforestation is prescribed locally, adapted tree stock should be used unless nonlocal stock is deemed appropriate based on an assisted migration strategy.
- 04** To ensure the re-establishment of desirable vegetation and limit the spread of invasive plants following management activities which disturb or expose soil, reseeding with native plants should occur promptly. Seeding should occur during optimal seeding windows for germination and survival and should utilize blue-tag certified seed and weed-free native seed. Seed mixes should be approved by a botanist. Genetically appropriate native plant materials should be given primary consideration during revegetation. Techniques which promote establishment of native species should be incorporated into revegetation planning. Nonnative plant species may only be used when consistent with national policy and direction.

## Forested Vegetation (VEGF)

### Introduction

This section deals exclusively with lands that have the potential of being forested, not areas such as grasslands, shrublands or alpine environments. By definition, these lands are found on one of the three forested Region 1 Broad Potential Vegetation Types found on the HLC NF: cold, cool moist, and warm dry. Forested desired conditions vary by broad potential vegetation types due to important differences in climatic conditions, productivity, biodiversity and disturbance regimes. Refer to appendix D for more detailed descriptions of the vegetation attributes in this section, which include the following:

- Composition is described by the distribution of individual tree species.
- Structure is represented by size and density classes. Size classes are based on average tree size. Density classes are defined by average canopy cover.
- Large-tree structure.
- Old growth.
- Snags.
- Coarse woody debris.
- Landscape patch and pattern.
- Expected function of forest insects.

### Desired Conditions (FW-VEGF-DC)

**01** The plan area supports a distribution of individual tree species as described in Table 6. This distribution supports the natural species diversity across the landscape and allows for recruitment following disturbances.

**Table 6. Forestwide existing and desired conditions for tree species presence (percent of area<sup>1</sup>)**

Tree species	Forestwide <sup>3</sup>		Warm dry, Region 1 broad potential vegetation type		Cool moist, Region 1 broad potential vegetation type		Cold, Region 1 broad potential vegetation type	
	Existing <sup>2</sup>	Desired	Existing <sup>2</sup>	Desired	Existing <sup>2</sup>	Desired	Existing <sup>2</sup>	Desired
Limber pine	11 (9-13)	10-15	16 (12-20)	15-25	9 (6-13)	5-15	5 (2-9)	5-15
Rocky Mountain juniper	5 (4-7)	2-5	12 (9-15)	5-15	1 (1-2)	0-5	0.2 (0.2-1)	0-5
Ponderosa pine	7 (5-9)	15-25	17 (13-21)	55-65	0.4 (0.4-1)	1-10	Trace	Trace
Douglas-fir	46 (43-50)	35-45	70 (65-75)	65-75	43 (37-49)	25-35	15 (9-20)	10-20
Aspen and cottonwood	2 (1-3)	2-5	2 (1-4)	5-10	3 (1-5)	2-10	Trace	Trace
Engelmann spruce	23 (20-26)	15-25	5 (3-7)	1-5	42 (36-49)	30-40	32 (25-39)	30-40
Lodgepole pine	38 (35-42)	20-30	24 (19-29)	5-15	52 (46-58)	30-40	51 (43-59)	45-55
Subalpine fir	27	15-25	Trace	Trace	46	45-55	54	40-50

Tree species	Forestwide <sup>3</sup>		Warm dry, Region 1 broad potential vegetation type		Cool moist, Region 1 broad potential vegetation type		Cold, Region 1 broad potential vegetation type	
	Existing <sup>2</sup>	Desired	Existing <sup>2</sup>	Desired	Existing <sup>2</sup>	Desired	Existing <sup>2</sup>	Desired
	(24-31)				(39-52)		(47-61)	
Whitebark pine	11 (9-14)	10-20	Trace	Trace	10 (6-14)	5-15	31 (24-38)	35-45

<sup>1</sup> Percent of area where at least one tree of the species is present.

<sup>2</sup> Total may be greater 100% because more than 1 species can be present on a site. Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

<sup>3</sup> Forestwide distributions include trees that occur on nonforested potential vegetation type.

**02** The plan area supports a natural diversity of forest size classes as shown in Table 7, which represents the diversity of successional stages across the landscape. The location and precise abundance of size classes fluctuate over time as forests develop, are influenced by disturbances, and may be limited by site productivity and species composition.

**Table 7. Forestwide existing and desired conditions of size class (percent of area<sup>2</sup>)**

Forest size class <sup>1</sup>	Forestwide		Warm dry, Region 1 broad potential vegetation type		Cool Moist, Region 1 broad potential vegetation type		Cold, Region 1 broad potential vegetation type	
	Existing <sup>3</sup>	Desired	Existing <sup>3</sup>	Desired	Existing <sup>3</sup>	Desired	Existing <sup>3</sup>	Desired
Seedling/sapling (0-4.9")	13 (10-17)	1-15	11 (7-15)	1-10	12 (7-18)	1-20	22 (14-30)	1-35
Small (5-9.9")	39 (36-42)	5-20	36 (31-41)	1-10	42 (36-48)	5-30	44 (37-51)	5-40
Medium (10-14.9")	21 (19-24)	5-20	25 (21-29)	1-10	24 (20-29)	5-35	14 (9-18)	5-45
Large (15.0-19.9")	5 (4-7)	20-30	9 (6-12)	20-40	4 (2-7)	20-30	1 (0.1-3)	25-40
Very large (20"+)	2 (0.8-3)	5-25	4 (2-6)	15-40	0.2 (0.2-0.7)	10-25	0.2 (0.2-1)	1-5

<sup>1</sup> Size class = the average diameter class of live trees based on basal area weighted diameter, shown as ranges of diameter at breast height, or 4.5' above ground level. A stand within a size class may contain trees smaller and/or larger than the class range.

<sup>2</sup> Total may less than 100% because nonforested areas (grass, shrub, savanna) are excluded.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

**03** The plan area supports a natural diversity of forest density classes as shown in Table 8. A wide range of densities and associated vertical structures (canopy layers) occur, contributing to resiliency, wildlife habitat, and timber productivity.

**Table 8. Forestwide existing and desired conditions of density class (percent of area)**

Forest density class <sup>1</sup>	Forestwide		Warm dry, Region 1 broad potential vegetation type		Cool Moist, Region 1 broad potential vegetation type		Cold, Region 1 broad potential vegetation type	
	Existing <sup>2</sup>	Desired	Existing <sup>2</sup>	Desired	Existing <sup>2</sup>	Desired	Existing <sup>2</sup>	Desired
Low/med (< 39.9)	26	25-50	26	25-55	22	20-40	14	20-50
Med/high (40-59.9)	27	30-50	29	20-45	20	30-50	21	45-65
High (60+)	48	10-35	45	10-50	58	15-40	65	5-25

<sup>1</sup> Density class = the average canopy cover of live trees, shown as ranges of canopy cover percent.



<sup>2</sup> Existing condition is from the SIMPLLE input landbase, based on VMap imagery.

**04** Forest conditions support an increasing trend in the distribution of large-tree structure as shown in Table 9 to provide ecosystem functions such as structural diversity, seed sources for post-disturbance resilience, and wildlife habitat.

**Table 9. Forestwide existing and desired conditions of large-tree structure (percent of area)**

Large tree structure <sup>1</sup>	Forestwide		Warm dry, Region 1 broad potential vegetation type		Cool moist, Region 1 broad potential vegetation type		Cold, Region 1 broad potential vegetation type	
	Existing <sup>2</sup>	Desired	Existing <sup>2</sup>	Desired	Existing <sup>2</sup>	Desired	Existing <sup>2</sup>	Desired
Large (>15" d.b.h.)	14 (12-16)	35-50	16 (13-19)	35-65	16 (12-20)	35-45	9 (6-13)	40-70
Very large (>20" + d.b.h.)	7 (6-9)	10-35	13 (9-16)	20-60	5 (3-7)	15-35	2 (0.5-3)	2-10

<sup>1</sup> Large-tree structure depicts where minimum numbers of large trees are found and can occur in any size class. The minimum tree criteria for large tree structure are described in the glossary and appendix D.

<sup>2</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

**05** Forest conditions support an abundance and distribution of old growth that is dynamic over time. All vegetation desired conditions help ensure that an appropriate array of conditions is present to provide old growth. The amount of old growth is similar to or greater than that of the 2018 existing condition. The desired condition of old growth is further described in Table 10.

**Table 10. Forestwide existing and desired conditions of old growth<sup>1</sup>**

Region 1 broad potential vegetation types <sup>2</sup>	Existing condition <sup>3</sup>	Desired condition
Forestwide	11% (9-13)	Old growth is distributed widely across the forest and in every GA, and levels vary depending on available compositions and structures, disturbance levels, and management objectives. Old growth may be subject to wider pulses of availability than in the past due to the likelihood of increased extent and/or severity of wildfire disturbances. Old growth distribution that complements habitat connectivity is desired. Old growth contains components that contribute to high quality habitat, including large and/or very large live trees with rot or broken tops, snags, downed woody material, and a diversity of tree size classes and canopy layers. A variety of old growth types are present, representing the natural species diversity of the HLC NF.
Warm dry	8% (6-11)	Old growth is dominated by ponderosa pine, Douglas-fir, and/or limber pine, often in large patches with an uneven-aged and irregular tree distribution. Ponderosa pine-dominated old growth is particularly desirable, because it is currently rare. Stands are resilient to low severity disturbance. Other old growth types such as spruce/fir occur in riparian areas. Species such as juniper and aspen are valuable habitat components.
Cool moist	14% (10-19)	Old growth is subject to wider pulses of availability relative to the other potential vegetation types, due to the higher severity disturbance regimes in this type. Old growth includes spruce/fir or Douglas-fir dominated stands, often with dense canopy layers, as well as lodgepole pine. Landscape-level resiliency is provided by a mosaic of younger forests that grow to replace old growth when it is killed by stand-replacing events.
Cold	15% (11-20)	Old growth generally consists of whitebark pine, Engelmann spruce, and/or subalpine fir. Stand-level resiliency and open structures is desired in whitebark pine types versus spruce/fir types which may be more dense and layered.

<sup>1</sup> See glossary and appendix D for definitions of old growth.

<sup>2</sup> Region 1 broad forested potential vegetation type. Also see appendix D.

<sup>3</sup> Existing condition (2018) is the mean percent of old growth with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

**06** Forest conditions support natural quantities and distributions of snags. Snags are unevenly distributed and dynamic over time, with a range of decay classes represented. The highest densities of snags occur in burned areas and in areas infested by insects; the lowest densities occur along roads, in areas where the concern for human safety is elevated, and in stands where active management is occurring. Individual stands may have no snags, or many, depending upon site-specific conditions. Table 11 displays the desired minimum number of snags per acre by size class and snag analysis group.

**Table 11. Forestwide existing condition and desired minimum snags per acre**

Snag analysis group <sup>1</sup>	Medium (>10" d.b.h. <sup>4</sup> )		Large (>15" d.b.h. <sup>4</sup> )		Very large (>20" d.b.h. <sup>4</sup> )	
	Existing condition <sup>2</sup>	Desired minimum <sup>3</sup>	Existing condition <sup>2</sup>	Desired minimum <sup>3</sup>	Existing condition <sup>2</sup>	Desired minimum <sup>3</sup>
Lodgepole pine	12 (9-15)	12.9	1 (1-2)	2.0	0.1 (0-0.3)	0.2
Warm dry	7 (5-9)	4.3	2 (1-3)	1.1	1 (0.4-1)	0.2
Cool moist	15 (11-19)	12.3	3 (2-5)	2.4	1 (0.3-2)	0.4
Cold	17 (12-24)	13.4	4 (2-6)	2.3	1 (0.2-2)	0.9

<sup>1</sup> Snag analysis groups are from Bollenbacher (2008). See appendix D.

<sup>2</sup> Existing condition is the mean snags per acre, with the 90% confidence intervals shown in parenthesis. Source is R1 Summary Database, FIA data, Hybrid 2011.

<sup>3</sup> Desired is derived from Bollenbacher (2008) supplemental data tables (2017), where the natural range is represented by the mean of snags found in wilderness and roadless areas on the HLC NF measured on periodic forest inventory and analysis plots.

<sup>4</sup> Diameter at breast height (4.5' above the ground). The classes are not mutually exclusive; e.g. the numbers for the 10"+ medium class include the large/very large classes and the 15"+ large class includes the very large class.

Table 12 displays the desired minimum distribution of snags, in terms of the percent area of the snag analysis group that contains at least 1 snag of the indicated size class.

**Table 12. Forestwide existing condition and desired minimum snag distribution (percent of area)**

Snag analysis group <sup>1</sup>	Medium (>10" d.b.h. <sup>4</sup> )		Large (>15" d.b.h. <sup>4</sup> )		Very large (>20" d.b.h. <sup>4</sup> )	
	Existing condition <sup>2</sup>	Desired condition <sup>3</sup>	Existing condition <sup>2</sup>	Desired condition <sup>3</sup>	Existing condition <sup>2</sup>	Desired condition <sup>3</sup>
Lodgepole pine	22 (18-27)	15	4 (2-7)	5	0 (0.4-1)	2
Warm dry	17 (13-21)	8	7 (5-10)	4	4 (2-5)	2
Cool moist	31 (24-38)	20	9 (5-14)	10	3 (1-5)	3
Cold	30 (22-38)	20	11 (6-17)	10	3 (1-7)	5

1, 2, 3, 4 Refer to the foot notes for Table 11.

**07** Coarse woody debris (downed wood greater than or equal to 3 inches diameter) is present across forested vegetation communities in quantities consistent with the natural range of variation as shown in Table 13 to provide wildlife habitat, long-term nutrient cycling, and other ecosystem functions.

**Table 13. Forestwide desired and existing tons/acre of coarse woody debris**

Region 1 broad potential vegetation type	Existing <sup>1</sup>	Average desired <sup>2</sup>	Appropriate distribution
Warm dry	3.38 (2.66-4.19)	3-20	Coarse woody debris is variable in amount, size, species and stages of decay across space and time, emphasizing pieces 10" in diameter and 10' in length or greater, which are higher value for wildlife. Individual stands may have little or no coarse woody debris, or a higher amount. Very minimal or no coarse woody debris occurs in nonforested potential vegetation types. It may be appropriate for 30 to 50 percent of a forested potential vegetation type area to have little to no coarse woody debris at a given time. Amounts below the desired average are found on hot dry sites, in developed recreation
Cool moist	7.22 (5.81-8.76)	10-30	
Cold	7.04 (5.33-8.91)	10-30	

Region 1 broad potential vegetation type	Existing <sup>1</sup>	Average desired <sup>2</sup>	Appropriate distribution
			<p>areas, and where the concern for fire impacts to values at risk is elevated. Higher amounts may be found on moist sites and riparian areas, areas with low direct human influence, areas that have burned, and those with insect/disease infestations. Pulses of coarse woody debris occur following disturbances. Downed wood in pine-dominated forests may be expected to increase during the first decade of the Plan due to a mountain pine beetle outbreak.</p>

<sup>1</sup> Existing condition shown is the mean tons per acre with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

<sup>2</sup> Desired tons/acre is derived from Brown et al 2003 and the tons/acre found in wilderness and roadless areas on the HLC NF, R1 Summary Database, FIA data.

**08** Forest patches of different compositional and structural conditions form a landscape pattern that contributes to resilience and habitat connectivity. Early successional forest patches provide edge habitat and functional openings that contrast sharply with adjacent forests. Patches of different size classes vary in extent, and are generally bounded by ridges, streams, and other topographic or biophysical features. Landscape and within-patch patterns reflect natural fire regimes to the extent possible given changing climate conditions.

- In the warm dry broad potential vegetation type, forest patches are indicative of low severity underburns as well as mixed severity and occasional stand replacing events. Early successional forest patches tend to be smaller than the other potential vegetation types, due to the more frequent disturbance regimes which tend to cause a complex mosaic of within-stand structures and small gap openings with mature tree remnants as opposed to patches dominated by seedlings.
- In the cool moist and cold potential vegetation types, patches reflect more mixed severity and stand replacing disturbance regimes. Early successional forest patches in these potential vegetation types tend to be larger than in the warm dry potential vegetation type, due to high severity disturbances.

**09** Forest composition, structure, and pattern allow for native forest insect and diseases to occur across their native extent and affect vegetation at a scope and scale consistent with their natural endemic role. Forests impacted by insects and disease provide structural features including snags, downed wood, and decaying live trees.

**10** Native forest insect and/or disease activity and associated tree mortality are at the lower end of the natural range of variation in areas where fire hazard or human safety is of concern.

**11** Understory vegetation (grasses, forbs, shrubs, lichens, bryophytes, fungi) beneath the forest canopy occurs in distribution and densities consistent with the natural disturbance regime. This vegetation is resilient in response to disturbance such as fire and resistant to nonnative plant invasion.

### Guidelines (FW-VEGF-GDL)

**01** Vegetation management projects should be designed to retain at least the minimum number of large live trees listed below to provide future seed, structural diversity, wildlife habitat, future snags and downed wood. This guideline applies as an average across all treatment units in a project. Large live trees need not be present on every acre or in every treatment unit.

- Lodgepole pine snag analysis group: 1 tree >15” dbh per 10 acres
- Warm dry snag analysis group: 2 trees >15” dbh per 10 acres
- Cool moist snag analysis group: 9 trees >15” dbh per 10 acres

- Cold snag analysis group: 3 trees >15 per 10 acres

If the minimum number of large trees are not present, leave all that are available. Trees preferred for retention are the longest lived, healthiest, windfirm, most fire adapted species. Exceptions may occur when there are fewer than the minimum desirable trees available due to insects, disease, lack of wind firmness, or unavoidable operational limitations. Large trees may also function as replacement snags, and/or be mixed in clumps with snags, to meet FW-VEGF-GDL-02. Exceptions may occur where there are issues of human safety, especially in designated campgrounds and developed recreation sites, permitted ski areas, and utility lines. See FW-RSUP-DC-05, LB-SHOWSKI-DC-02, and RM-TETONSKI-DC-02.

- 02** When conducting timber harvest or other activities that involve mechanically cutting trees over 10” diameter, projects should retain the following minimum snags per acre<sup>1</sup>  $\geq$  10” diameter averaged across the snag analysis groups<sup>2</sup> in the project area to provide snag habitat at the project level.

- Across the warm dry snag analysis group, retain an average of at least 2 snags/acre<sup>3</sup>.
- Across all other snag analysis groups, retain an average of at least 8 snags/acre<sup>3</sup>.

Snags retained on the landscape should include a variety of size classes and species available. Preference should be given to the largest snags available, with snags >20” diameter being highest priority. Snag species preference from highest to lowest is ponderosa pine, western larch, whitebark pine, limber pine, Douglas-fir, hardwoods (aspen or cottonwood), Engelmann spruce, subalpine fir, lodgepole pine. Snags should be 300’ or farther from a road that is open to firewood cutters when possible. Snags should be distributed in a clumpy manner; they need not be present on every acre. If fewer than the minimum required snags are present outside of treatment units, or the number of snags outside of treatment units is unknown, retain snags if available where it is safe and operationally feasible to do so within treatment units to achieve the project area averages; or to achieve the average across treatment units, whichever is less. Snags that are created by activities such as prescribed burning may be counted toward the desired averages. If fewer than the minimum snags are present across the project area and in treatment units, retain those that are available as well as live snag replacements to achieve the desired numbers, averaged across treatment units. When selecting snag replacement trees, retain the largest and most decadent trees; those with rot or wildlife use are preferred. Replacement snags may be used to meet FW-VEGF-GDL-01. In the event that snags intended for retention are cut or toppled by fire, they should be left onsite as woody debris.

Snag retention does not apply where there are issues of human safety in designated campgrounds and developed recreation sites, permitted ski areas, utility lines, prescribed burn control lines, and immediately adjacent to open roadways or private infrastructures. See FW-RSUP-DC-05, LB-SHOWSKI-DC-02, and RM-TETONSKI-DC-02.

<sup>1</sup> Snags per acre is the average of snags per acre across the entire snag analysis group within the project area.

<sup>2</sup> See appendix D.

<sup>3</sup> The minimum numbers to leave are based on the lower bound of the 90% confidence interval of the mean desired snags per acre displayed in FW-VEGF-DC-06.

- 03** Vegetation management activities in tree improvement areas (such as seed orchards, test plantations, and seed production areas) should be conducted according to regional office assignments, and so as not to impair tree improvement activities.
- 04** To promote the retention of old growth (see glossary) and contribute to biodiversity, vegetation management activities in old growth stands should only occur for one or both of the following purposes. Management activities conducted for these purposes should retain all minimum quantitative old growth characteristics as well as qualitative attributes to the extent possible.

- Maintain or restore old growth habitat characteristics and ecosystem processes.
- Increase resistance and resilience to disturbances or stressors that may have negative impacts on old growth characteristics or abundance (such as drought, wildfire, and bark beetles).

Exceptions to this guideline are allowed for the following purposes:

- Where needed to mitigate imminent hazards to: (1) public safety in campgrounds, other designated recreation sites, administrative sites, and permitted special use areas; or (2) infrastructure that is essential to community welfare (e.g., utilities, communications, and where fire modeling shows a risk to evacuation routes).
- Where project analysis has identified a need to remove a proportion of lodgepole pine old growth to achieve a diversity of age classes.

**05** Vegetation management projects should retain at least the minimum amount of coarse woody debris (greater than or equal to 3” in diameter) displayed below, averaged for each treatment unit on forested sites, to provide for well-distributed coarse woody debris that contributes to nutrient cycling, structural diversity, and habitat. The requirement should be met immediately following completion of all project activities. Also see FW-SOIL-GDL-05.

- Warm dry R1 broad potential vegetation type: 5 tons/acre
- Cool moist and cold R1 broad potential vegetation types: 10 tons/acre

The guideline applies to any vegetation treatment in forested communities, including timber harvest and prescribed fire. This guideline does not apply in nonforested vegetation communities or in open forest savannas that may occur in the warm dry potential vegetation type. The guideline applies as an average across each vegetation treatment unit; the downed wood may be irregularly distributed. Downed wood should consist of intact pieces of a variety of species, sizes and stages of decay, depending on site conditions. Prescriptions should emphasize retaining larger debris (pieces 10” diameter and 10’ in length or greater) where possible, which are higher value to wildlife.

Exceptions to the guideline may occur where there is elevated concern with fire risk (recreation sites, areas adjacent to infrastructure or private ownerships, wildland urban interface areas, utility lines, etc.), as supported by site-specific analysis.

## Nonforested Vegetation (VEGNF)

### Introduction

This section deals primarily with lands found on one of the six nonforested Region 1 broad potential vegetation types on the HLC NF: xeric grassland, mesic grassland, xeric shrubland /woodland, mesic shrubland, riparian/wetland, and alpine. There are also areas on the landscape categorized as “sparse”, where vegetation is limited, such as rocky scree slopes. In addition, dry sites in forested broad potential vegetation type that would naturally be maintained in a nonforested condition (e.g., ecotone areas) or support only sparse tree cover (e.g., forest savannas) are included. Shifts in plant composition can occur by natural forces or as a result of human actions. Healthy ecosystems are resilient or able to recover if external disturbances occur, thereby allowing various combinations of plant species and seral states to fluctuate over time. Invasive plant species establishment and conifer encroachment can pose threats to grassland, shrubland, woodland, and riparian ecosystem resilience.

Refer to the GRAZ components for additional guidance for nonforested plant communities that are utilized for livestock grazing. Also see the Aquatic Ecosystem sections for more additional guidance specific to riparian and wetland areas.

### Desired Conditions (FW-VEGNF-DC)

- 01** Native plant communities support diverse age classes of shrubs and a vigorous, diverse, self-sustaining understory of grasses and forbs relative to site potential (based on ecological classification) and consistent with the natural range of variation.
- 02** Native plant species dominate, and invasive plant species are at low abundance or non-existent. Naturalized non-native species (such as Kentucky bluegrass and timothy) may be present but do not increase in extent.
- 03** Nonforested vegetation dominates sites on dry forested potential vegetation types that were historically maintained without trees by frequent fire. This includes fire-maintained grass and shrublands where tree comprise 0-5% canopy cover as well as savannas characterized by a dominance of grass or shrub understories with widely spaced fire-resilient trees at 5-10% canopy cover. In such areas, encroachment of conifer species is minimal.

### Guidelines (FW-VEGNF-GDL)

- 01** Treatments to restore savannas, grasslands, or shrublands on sites in the warm dry forest broad potential vegetation group should focus on sites with living or dead remnants of mountain big sagebrush or other key indicators that the community was historically dominated by nonforested vegetation.

## Threatened, Endangered, Proposed and Candidate and Plant Species of Conservation Concern (PLANT)

### Introduction

This section addresses plant species that are listed by the USFWS as threatened, endangered, proposed, or candidate under the Endangered Species Act; or those that are identified as species of conservation concern by the Regional Forester of the Forest Service. At the time of the preparation of this forest plan, only whitebark pine (*Pinus albicaulis*) falls under the Endangered Species Act, as a candidate species. If additional plants are added to the SCC list in the future, the plan components in this section would apply and additional species-specific components may be needed.

Species of conservation concern are species other than federally recognized species that are known to occur in the plan area and for which the Regional Forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area (36 Code of Federal Regulations 219.9; FSH 1909.12.52). Plant species of conservation concern for the HLC NF are identified at the regional level. The list can be reviewed at [www.fs.usda.gov/goto/R1/SCC](http://www.fs.usda.gov/goto/R1/SCC).

### Desired Conditions (FW-PLANT-DC)

- 01** Habitat conditions support the recovery and persistence of plant species that are recognized as threatened, endangered, proposed, or candidate under the Endangered Species Act, and those that are identified as species of conservation concern. Ecological conditions and processes that sustain the habitats currently or potentially occupied by these plant species are maintained or restored.
- 02** Key whitebark pine areas such as cone collection sites, resistant seed-bearing trees, and seed orchards persist on the landscape.

## Goals (FW-PLANT-GO)

- 01 Recovery and long-term persistence of plants that are threatened, endangered, proposed, or candidate under the Endangered Species Act or species of conservation concern is supported by cooperation with other agencies and landowners to expand inventories, identify potential habitat for these species, and promote protection and/or restoration of associated habitats.

## Objectives (FW-PLANT-OBJ)

- 01 Treat at least 4,500 acres over the life of the plan for the purpose of sustaining or restoring whitebark pine and contribute to achieving desired conditions as described in the forested vegetation section. Achieving this would also contribute to FW-VEGT-DC-01. Refer to appendix C for information on possible restoration strategies and activities.

## Guideline (FW-PLANT-GDL)

- 01 Activities affecting vegetation in known occurrences or suspected habitat of plants listed as threatened, endangered, proposed, or candidate under the Endangered Species Act, and those that are identified as species of conservation concern should be designed to provide for their long-term persistence.

## Pollinators (POLL)

### Introduction

This section addresses invertebrate pollinator species that occur on the HLC NF and their respective habitat requirements. At the time of the preparation of this forest plan, no pollinator species known on the forest have any additional designation under the Endangered Species Act or Region 1 species of conservation concern designation.

### Desired Conditions (FW-POLL-DC)

- 01 Plant communities composed of an abundant and diverse mix of native grass, forb, shrub, and tree species are present across the landscape to provide foraging habitat for native pollinators. Pollinator nesting and hiding cover are also provided through graminoid and herbaceous structural diversity in nonforested habitats as well as snags and large downed woody material in forested habitats.

### Goals (FW-POLL-GO)

- 01 Collection of data about pollinators and improvement of the best available information on local species' diversity, ecological requirements, and threats is supported by cooperation with other agencies and partners.

### Guidelines (FW-POLL-GDL)

- 01 When issuing special use permits for beehives in the plan area, the placement of hives should not displace native pollinators with a limited habitat distribution.

## Invasive Plants (INV)

### Introduction

A species is considered invasive if it meets two criteria: (1) it is non-native to the ecosystem under consideration, and (2) its introduction causes, or is likely to cause economic, or environmental harm or

harm to human, animal, and plant health (Executive Order 13751, 2016). This section covers only invasive plant species. Refer to the Aquatic Ecosystems section for components related to invasive aquatic species.

A noxious weed is defined by Montana Code Annotated (MCA 7-22-2101) as, “any exotic plant species established or that may be introduced in the state that may render land unfit for agriculture, forestry, livestock, wildlife, or other beneficial uses or that may harm native plant communities”. Invasive plants are capable of successfully expanding their populations into new ecosystems beyond their natural range and can create lasting impacts to native plant communities. Impacts from invasive plants can be exacerbated by fire, native pests, weather events, human actions, and environmental change.

The intent of the invasive species components in this plan are to ensure that all FS management activities are designed to minimize or eliminate establishment or spread of invasive species on NFS lands, or to adjacent areas. The following desired conditions are complimentary to other sections that provide for healthy resilient and resistant plant communities. Management actions intended to prevent and respond to invasive plants will be dynamic and designed in a manner that allows for an adaptive management approach. The desired conditions describe conditions associated with invasive species and articulate the platform on which future management actions should be designed to address them. These conditions will be addressed within the bounds of resource constraints. Future actions will be balanced by considering cost as well as potential gains to biodiversity, native species, and native soil biota.

### Desired Conditions (FW-INV-DC)

- 01** Intact native plant communities dominate the landscape, while non-native invasive species are in low abundance and do not disrupt ecological function and resilience. Noninfested rangeland and forested areas remain free of invasive plant species.
- 02** No new nonnative invasive plant species become established in terrestrial or aquatic plant communities on the forest.
- 03** Terrestrial communities at risk of negative impacts from nonnative invasive plants are able to retain or regain function, process, and structure after disturbance.

### Goals (FW-INV-GO)

- 01** A coordinated invasive species management, awareness, and education approach is used internally and externally so that invasive species awareness is maintained and/or improved.
- 02** Opportunities are provided to cooperators, organizations, partners, and members of the public to contribute to an integrated species management strategy. This could include survey, inventory, monitoring, and/or treatment.
- 03** Landscape scale weed treatments are coordinated with weed treatments occurring on adjacent lands.

### Objectives (FW-INV-OBJ)

- 01** Prevent invasive species establishment and reduce existing infestations through annual invasive species management actions on at least 3,000 inventoried acres.



## Standards (FW-INV-STD)

- 01** For all proposed projects or activities, the risk of noxious weed introduction or spread shall be determined and appropriate mitigation measures shall be implemented. Activities shall be designed to minimize the risk of spreading invasive species and meet multiple use and ecological objectives.
- 02** Domestic sheep or goat grazing used as part of an integrated pest management weed control program shall maintain effective separation of bighorn sheep from domestic sheep or goats. Current agency or interagency recommendations and best available scientific information shall be used to define effective separation and to establish the means to achieve it (refer to appendix C for information on recommendations and strategies).

## Guidelines (FW-INV-GDL)

- 01** During management activities, integrated pest management tools should be used to prevent the spread of and/or decrease existing infestations of state of Montana listed noxious weeds and other priority invasive species.
- 02** Weed management activities should consider potential effects to native pollinators and develop measures to reduce non-target impacts. Also see Vegetation, Pollinators (POLL).
- 03** Treatments that are most effective in the long-term and compatible with other resources should be emphasized when feasible in order to maintain native plant diversity and prevent expansion of existing infestations.
- 04** When conducting invasive plant treatments in areas with threatened, endangered, proposed, and candidate plants or plant species of conservation, integrated treatment methods that are not detrimental to those species should be used to reduce impacts to desired plant species or communities.
- 05** Native plant species with natural abilities to compete with or persist amongst invasive species should be used in restoration efforts when feasible to maintain desirable plant composition. Also see FW-VEGT-GDL-04.

## Wildlife

### Introduction

This section provides direction designed to maintain the diversity of animal communities and “support the persistence of native wildlife species within the plan area, subject to the extent of FS authority and the inherent capability of the plan area” (FS Handbook 1909.12, Chapter 20, Section 23.1). The 2012 Planning Rule adopts a complementary ecosystem and species-specific approach, known as a “coarse-filter or fine-filter approach,” to provide the natural diversity of plant and animal communities and ensure long-term persistence of native species in the plan area. Ecosystem plan components are designed to maintain or restore the integrity and resilience of ecosystems and are therefore expected to maintain the species that are dependent on those ecosystems. Species-specific plan components are included where specific habitat needs are not met by ecosystem components.

Wildlife habitats depend largely on terrestrial vegetation. Therefore, the plan components for terrestrial vegetation represent most of the ecosystem components that will support the persistence of native species within the plan area. General references to wildlife habitats are included where appropriate in the description of desired conditions for terrestrial vegetation in order to help clarify that relationship. Plan components for wildlife are described below where needs exist separately from vegetation-related

components, and where a specific-species components is needed. Additional plan components that address wildlife needs or management concerns may also be found in sections that address other resources.

The HLC NF supports a diversity of plant communities across a wide range of physical environments. This diversity of communities and ecosystems supports a great diversity of wildlife species, many of which occur only in portions of the plan area. Therefore, plan components are provided only in the appropriate GAs for species whose distribution encompasses only one or a few GAs, or for species whose presence may be desired in only one or a few GAs. As an example, flammulated owls have been documented only in the Big Belts, Divide, Elkhorns, and Upper Blackfoot GAs, which corresponds to their known distribution in Montana. Therefore, species-specific plan components for flammulated owl are found only in the sections for those GAs.

Native ungulates, also referred to as big game, are an important component of wildlife diversity on the HLC NF. General plan components in this section address the potential for management and other activities to affect native ungulates. Plan components that address viewing, harvest, and other recreational opportunities associated with wildlife presence on public lands are included in the forestwide and GA level “Benefits to People” sections of the plan.

Some plan components in this section are relatively broad statements describing desired conditions and goals for wildlife habitats and species in general, and therefore apply to all wildlife species or habitats in the plan area. Some plan components are specific to individual species or groups of species for whom plan components may be necessary to address specific risks presented by management or other activities. Some plan components are specific to species listed as threatened, endangered, proposed, or candidate species under the Endangered Species Act at the time the plan was written, or to those identified by the Regional Forester as species of conservation concern.

Threatened, endangered, proposed, and candidate species are identified by the USFWS, which maintains up-to-date information regarding which of those species may be found on the HLC NF. At the time of preparation of this forest plan, three species found on the HLC NF fall into categories identified under the Endangered Species Act (U.S. Fish and Wildlife Service list dated 23 October 2018):

- Grizzly bear (*Ursus arctos*) – threatened; resident /transient west of Interstate Highway 15, and east of Interstate Highway 15 may be present in Elkhorn Mountains, Big Belt Mountains, Little Belt Mountains, and Highwood Mountains
- Canada lynx (*Lynx Canadensis*) – threatened; resident (core habitat)/transient (secondary/peripheral habitat) west of Interstate Highway 15; transient (secondary/peripheral habitat) east of Interstate Highway 15
- Wolverine (*Gulo gulo*) – proposed; documented in all GAs except the Highwoods and Snowies

The status of these and other species may change during the life of the forest plan. If species are removed from listing or consideration under the Endangered Species Act, or if recovery plans or conservation strategies for listed, candidate, or proposed species change, plan components for those species could be changed through amendment(s) to this plan.

This plan retains the decision for managing Canada lynx habitat from the March 2007 Record of Decision for the Northern Rockies Lynx Management Direction (see appendix F). Note that the Northern Rockies Lynx Management Direction includes standards, guidelines, and objectives that direct management of a variety of resources, including vegetation management activities and practices, livestock management, human use projects, and linkage areas, along with required monitoring. If habitat management

requirements are changed through changes in the status of Canada lynx, through changes made to the Northern Rockies Lynx Management Direction, development of a recovery plan, or other guidance, plan components for lynx could change through amendment(s) to this plan.

This plan also retains the decision for managing grizzly bear habitat from the Record of Decision for the Forest Plan Amendments to Incorporate Habitat Management Direction for the Northern Continental Divide Ecosystem Grizzly Bear Population (U.S. Department of Agriculture, 2018). The plan components for the grizzly bear amendment ROD have been incorporated at the end of this wildlife section as their own subsection titled “Northern Continental Divide Ecosystem Grizzly Bear Habitat Management Direction (NCDE)” and are identified with the letters NCDE in the component. The retained grizzly bear management direction includes components related to management of motorized access, recreational developments, livestock, energy and minerals exploration and development largely in the Rocky Mountain Range and Upper Blackfoot GAs. Other forestwide and GA-specific plan vegetation and wildlife plan components address some elements of grizzly bear habitat management as well.

## Wildlife (WL)

### Desired Conditions (FW-WL-DC)

- 01** Habitats for native wildlife species are available throughout those species’ potential natural ranges on NFS lands. Habitats for desired nonnative wildlife species are available on NFS lands where they can be supported by healthy, functioning ecosystems, as described in the vegetation section.
- 02** Vegetation composition, structure, and distribution, including live vegetation and such things as fire or insect-killed trees, provide for the life/natural history requirements of native and desired nonnative wildlife species, for the portion of those species’ life cycles that occur on NFS lands. Also see Vegetation section.
- 03** Vegetation composition, structure, and distribution allow wildlife to move within and between NFS parcels in response to seasonal habitat needs, dispersal needs, vegetation disturbances (such as, fire, insect infestations), and long-term changes (such as climate change). Also see Vegetation sections.
- 04** Large, unroaded areas are distributed and connected forestwide, providing for species with large home ranges that also require seclusion or low level of disturbance by humans.
- 05** Conflicts between humans and wildlife are rare.
- 06** Key seasonal habitat where wildlife are sensitive to human disturbance, such as ungulate winter range, nest and den sites, and other birthing and rearing sites are relatively free of human disturbance during the period in which those species are active in these areas.
- 07** Areas of nonforested vegetation at lower elevations provide forage species for wintering big game and are intermixed with areas of forest that provide hiding and thermal cover for wintering big game.
- 08** Caves, mines, and other underground habitats and known above-ground roost sites, particularly those used as hibernacula or maternity roosts that may be used by native bat species, are relatively free of human disturbance during the period bats are active in those sites (Also see FW-WTR-DC-12).
- 09** In lynx habitat (see glossary), boreal forest and associated matrix habitat provide the mosaic of structural stages necessary (as defined by the best available scientific information) to support the denning, foraging, resting, and travel habitat needs of Canada lynx.

**10** There is low or no risk of disease transmission between domestic animals and wildlife.

### Goals (FW-WL-GO)

- 01** Coordination with Montana Fish, Wildlife, and Parks and other agencies occurs during project planning, in order to allow consideration of the goals and objectives of these agencies regarding wildlife and wildlife habitats.
- 02** Cooperative meetings among Forest Service and Montana Fish, Wildlife, and Parks biologists occur annually, in order to evaluate management direction for wildlife and habitats on NFS and adjoining lands, and to recommend potential adjustments to management for the purposes of maintaining or improving habitats.
- 03** The FS works with community leaders, youth and schools, homeowners, businesses, private organizations, and other agencies to develop and disseminate information about how to live, work, and recreate where wildlife species are present. Also see Public Information, Interpretation and Education section (CONNECT).
- 04** Linkage areas identified through interagency coordination facilitate the movement of wildlife between NFS parcels separated by other ownerships.
- 05** Forest biologists and managers cooperate with other agencies and collaborate on conservation strategies, recovery plans and management of habitat, to achieve recovery of federally listed wildlife species occurring on NFS lands.
- 06** Through cooperation with other agencies, collaboration on conservation strategies and other management plans, and management of habitat, the need for listing of additional wildlife species under the Endangered Species Act is prevented.
- 07** The FS works with the caving community to educate the public about the cave environment and the spread of disease(s) within that environment.

### Standards (FW-WL-STD)

- 01** Herbicides, fertilizers, and spray-application type pesticides shall not be applied to vegetation or substrates within 100 meters of known western toad breeding sites.

### Guidelines (FW-WL-GDL)

- 01** When managing livestock use, forage should be retained in the quantity, quality, and location to support wildlife needs. Also see FW-GRAZ-DC-02; FW-GRAZ-GDL-04; PCA-Z1-NCDE-STD-02; 03, 04; PCA-NCDE-DC-06; PCA-NCDE-STD-10, 11; and PCA-NCDE-GDL-09, 10.
- 02** In order to provide for human safety and minimize risk of impacts to wildlife, particularly threatened, endangered, candidate, proposed, and species of conservation concern (such as grizzly bears), actions should be taken during all management activities to reduce the risk of wildlife becoming habituated to humans or becoming food conditioned. See also FW-REC-GDL-07; FW-NCDE-DC-01, 02; FW-NCDE-STD-02; PCAZ1Z2-NCDE-DC-01; PCAZ1Z2-NCDE-STD-01; PCAZ1Z2-NCDE-GDL-01, 02; PCAZ1-NCDE-STD-01, 06, 08, 11; PCAZ1-NCDE-GDL-01, 06; PCA-NCDE-DC-02; PCA-NCDE-STD-07, 08; and PCA-NCDE-GDL-03, 07, 08.

- 03** New and revised livestock management plans should protect known western toad breeding sites from trampling by livestock. Emergent vegetation should be retained at these sites to provide habitat for breeding activities and cover for tadpoles.
- 04** Management actions (e.g., decontamination measures, public education) should be used to help prevent the spread of pathogens to and among known and potential western toad breeding sites.
- 05** To avoid potential disturbance or displacement of ungulates from key seasonal ranges, management actions should not be carried out in or immediately adjacent to winter ranges during the winter use period, or known calving, lambing, fawning, or kidding areas during the reproductive season. Exceptions may occur when needed for protection of other resources. In such cases, human activities should be concentrated in time and/or space to reduce impacts to native ungulates.
- 06** Vegetation management activities on identified big game winter range should occur only when they will maintain or improve future forage quantity and quality, and should retain intermixed areas of forest, where possible, to provide hiding and thermal cover.
- 07** New fencing installation or reconstruction should be sited and designed to minimize hazards to wildlife and barriers to wildlife movements.
- 08** New or reconstructed water developments or impoundments should be designed to prevent animal entrapment and to facilitate animal escape.
- 09** Management actions should avoid disturbance at known active raptor nests and fledging areas during the breeding season.
- 10** Management actions should avoid disturbance to known roosting, hibernating, or breeding/pup-rearing bats in caves, mines, roost trees, or other features known to be used by bats. Buildings should be inspected prior to removal to identify bat use. If bats are present, the structure should be retained unless human safety is at risk. Removal should not occur until bats are no longer using the structure.
- 11** In order to prevent introduction or spread of disease (e.g. white-nose syndrome) Forest Service employees and agency-authorized personnel such as researchers, contractors, etc. should use precautionary measures (e.g., decontamination procedures, timing restrictions for cave entry, and others) before entering bat roosts or hibernacula.
- 12** To minimize risk of disturbance to bat roosting, hibernating, or breeding/pup-rearing sites, road or trail designs should not visually open new views of a cave entrance. Pull-outs or parking areas near caves that are not managed for public access should not be established, and the use of existing trails that may lead to such caves should not be encouraged. See also FW-ACCESS-DC-04 and FW-REC-DC-04.
- 13** To prevent mortality of both adult and larval amphibians, areas to be treated with piscicides for the removal of unwanted fish species should first be surveyed for the presence of amphibians. Use of piscicides should be avoided during times of the season when amphibian larvae are present, and measures should be taken to avoid exposure of adult amphibians to piscicides.
- 14** Management of habitat for native ungulates (elk, deer, pronghorn, moose, bighorn sheep, and mountain goat) should be consistent with management of similar habitat on adjoining state or federal land where the adjoining habitat is managed to maintain wildlife values. The scale for application of this guideline is dependent on the extent of identified seasonal habitat on NFS land that directly adjoins state or other federal lands with similar identified habitat.

## Northern Continental Divide Ecosystem Grizzly Bear Habitat Management Direction (NCDE)

### Introduction

In December 2018 the Record of Decision for the Forest Plan Amendments to Incorporate Habitat Management Direction for the Northern Continental Divide Ecosystem Grizzly Bear Population was signed and became part of the existing (1986) Helena National Forest and Lewis and Clark National Forest plans. The purpose of the amendments was to “provide consistent direction that will support the continued recovery of the NCDE grizzly population”, and provide a regulatory mechanism for management that will sustain a recovered population (U.S. Department of Agriculture, 2018). The plan components in the amendments are therefore included in their entirety in this forest plan. The original component identifier from the grizzly bear amendment ROD is *italicized* at the end of each component to make it easier for the reader to go back and forth between that ROD and this plan.

The NCDE and adjoining area, including the HLC NF, has been divided into management zones (primary, conservation area, or PCA, and zones 1, 2 and 3 - please refer to the map in appendix A.) with specific plan components that apply to one or more of those zones. The PCA is the same as the existing NCDE Recovery Zone, including all of the Rocky Mountain Range GA and the northern portion of the Upper Blackfoot GA. The PCA expected to function as a source population with continual occupancy by grizzly bears. Zone 1 includes the remainder of the Upper Blackfoot GA, where continual occupancy by grizzly bears is expected but at lower densities than in the PCA. Zone 2 comprises the Divide, Elkhorns, and Big Belts GAs, with an objective of continuing existing types of recreation and resource management while maintaining the opportunity for grizzly bears to move between the NCDE and other ecosystems. Zone 3 comprises the Highwoods, Little Belts, Castles, and Crazyes GAs; long-term survival and occupancy of grizzly bears is not expected to occur in Zone 3 due to lack of sufficient suitable habitat.

The components are arranged by the following management zones (and include those abbreviations in their components identifiers):

FW – forestwide

PCAZ1Z2 – Primary conservation area plus zones 1 and 2

PCAZ1 – Primary conservation area plus zone 1

Z2 – Zone 2 (DI, EH, and BB GAs)

Z1 – Zone 1 (south half of the UB GA)

PCA – Primary Conservtion Area

### NCDE Forestwide Plan Components

#### Desired Conditions (FW-NCDE-DC)

- 01** The risk of grizzly bear-human conflict is reduced by information, education, and design features or criteria for management activities. *NCDE-DC-WL-03*
- 02** National forest system lands provide a variety of public services and special forest products (such as mushrooms, huckleberries, firewood) while minimizing the risk of grizzly bear-human conflicts on NFS lands in the NCDE. *NCDE-DC-SFP-01*

- 03** Mineral materials are available based upon public interest, in-service needs, material availability, and valid existing rights, where consistent with desired conditions for other resources. *NCDE-DC-MIN-01*

### Standards (FW-NCDE-STD)

- 01** Grizzly bear habitat on NFS lands in the NCDE shall be delineated and managed as primary conservation area, zone 1, zone 2, or zone 3 (see appendix A, map FW-3). *NCDE-STD-WL-01*
- 02** Special-use permits for apiaries (beehives) located on NFS lands shall incorporate measures including electric fencing to reduce the risk of grizzly bear-human conflicts, as specified in the food/wildlife attractant storage special order. *NCDE-STD-SFP-01*

## NCDE PCAZ1Z2 Plan Components

### Desired Conditions (PCAZ1Z2-NCDE-DC)

- 01** Within the NCDE primary conservation area, zone 1, and zone 2, bear attractants on NFS lands are stored in a manner that reduces the risk of grizzly bear-human conflicts in the NCDE. *NCDE-DC-WL-01*

### Standards (PCAZ1Z2-NCDE-STD)

- 01** Within the NCDE primary conservation area, zone 1, and zone 2, food/wildlife attractant storage special order(s) shall apply to NFS lands. *NCDE-STD-WL-02*

### Guidelines (PCAZ1Z2-NCDE-GDL)

- 01** Within the NCDE primary conservation area, zone 1, and zone 2, contractors, permittees, lessees, operators, and their employees should be informed of food/wildlife attractant storage special order(s) and procedures for safely working and recreating in grizzly bear country, prior to turnout of livestock or beginning work and annually thereafter, in order to reduce the risk of grizzly bear-human conflicts. *NCDE-GDL-WL-01*
- 02** Within the NCDE primary conservation area, zone 1, and zone 2, if a contractor, permittee, lessee, or operator or their employees elect to camp on NFS lands other than in a developed recreation site, the site should be evaluated and written authorization (i.e., a campsite agreement that includes the food/wildlife attractant storage special order) should be provided before the campsite is established. The purpose is to reduce the risk of grizzly bear-human conflicts. *NCDE-GDL-WL-02*

## NCDE PCAZ1 Plan Components

### Desired Conditions (PCAZ1-NCDE-DC)

- 01** Within the NCDE primary conservation area and zone 1, grizzly bear habitat on NFS lands contributes to sustaining the recovery of the grizzly bear population in the NCDE and contributes to connectivity with neighboring grizzly bear recovery zones. *NCDE-DC-WL-02*

### Standards (PCAZ1-NCDE-STD)

- 01** Within the NCDE primary conservation area and zone 1, new or reauthorized livestock grazing permits and annual operating plans shall incorporate requirements to reduce the risk of grizzly bear-human conflicts (e.g., a food/wildlife attractant storage special order). New or reauthorized permits shall include a clause providing for modification, cancellation, suspension, or temporary cessation of activities, if needed, to resolve a grizzly bear-human conflict situation. *NCDE-STD-GRZ-01*

**02** Within the NCDE primary conservation area and zone 1, permits for livestock grazing shall include a provision that requires the reporting of livestock carcasses within 24 hours of discovery, which shall be followed by proper disposal of the carcass. Boneyards shall not be established on NFS lands. *NCDE-STD-GRZ-03*

**03** Within the NCDE primary conservation area and zone 1, there shall be no increase in the number of active sheep allotments or in permitted sheep animal unit months above the baseline (see glossary) on NFS lands. Allowable animal unit months shall not be increased for inactive allotments.

Note: Existing allotments may be combined or divided as long as doing so does not result in grazing allotments in currently unallotted lands or an increase in animal unit months. *NCDE-STD-GRZ-04*

**04** Within the NCDE primary conservation area and zone 1, temporary permits for grazing by small livestock for purposes such as controlling invasive plants, reducing fire risk, or trailing of small livestock across NFS lands shall not result in an increase in bear-small livestock conflicts. *NCDE-STD-GRZ-06*

**05** Within the NCDE primary conservation area and zone 1, mining activities (as authorized under the Mining Law of 1872) and oil and gas activities (as authorized under the Federal Onshore Oil and Gas Leasing Reform Act of 1987) occurring on NFS lands, where feasible shall avoid, minimize, and/or mitigate environmental impacts to grizzly bears or their habitat, subject to valid existing rights. Stipulations or mitigation measures already included in existing leases, permits, or plans of operation on NFS lands shall not be changed, nor will additional stipulations or mitigation measures be added, without the lease, permit, or plan of operation holder's agreement. *NCDE-STD-MIN-01*

**06** Within the NCDE primary conservation area and zone 1, new or reauthorized permits, leases, and/or plans of operation shall include a provision for modification or temporary cessation of activities if needed to resolve a grizzly bear-human conflict situation. *NCDE-STD-MIN-02*

**07** Within the NCDE primary conservation area and zone 1, new plans of operation, permits, and/or leases for mineral activities shall include measures to reasonably mitigate potential impacts of mineral development for the following:

- land surface and vegetation disturbance;
- water table alterations that affect bear foods on the surface; and
- construction, operation, and reclamation of mine-related facilities such as impoundments, rights of way, motorized routes, pipelines, canals, transmission lines, or other structures.

*NCDE-STD-MIN-03*

**08** Within the NCDE primary conservation area and zone 1, in addition to measures included in the food/wildlife attractant special order(s), new plans of operation, permits, and/or leases for mineral activities shall include the following measures regarding grizzly bear attractants:

- bear-resistant food storage and garbage containers shall be used at development sites and at any campgrounds or dispersed sites where exploration or production-related human occupancy is anticipated;
- garbage shall be removed in a timely manner;
- road kills shall be removed daily during active operating periods to a designated location determined in close coordination with Montana Fish, Wildlife and Parks;



- feeding of wildlife shall not be allowed; and
- locations of work camps shall be approved in advance of operations. Food storage requirements shall be strictly adhered to in any work camps.

*NCDE-STD-MIN-04*

**09** Within the NCDE primary conservation area and zone 1, if minerals activities have the potential to adversely affect grizzly bears or their habitat as determined by a site-specific analysis, new plans of operation, permits, and/or leases for mineral activities shall include the following mitigation measures, stipulations, or surface use criteria regarding grizzly bear habitat:

- ground-disturbing activities in identified grizzly bear spring habitat (as identified in a site-specific biological evaluation or other environmental document) shall be avoided between April 1 and June 30. If timing restrictions are not practicable, other measures shall be taken to reasonably mitigate negative impacts of mineral activity to grizzly bears;
- seismic activity in identified grizzly bear denning habitat (as identified in a site-specific biological evaluation or other environmental document) shall be avoided during the denning season (see glossary). If timing restrictions are not practicable, other measures shall be taken to reasonably mitigate negative impacts to the grizzly bear;
- cumulative impacts of multiple concurrent seismic and/or drilling operations shall be limited by timing restrictions. If timing restrictions are not practicable, reasonable and appropriate measures shall be taken to mitigate negative impacts to the grizzly bear;
- reasonable and appropriate measures regarding the maintenance, rehabilitation, restoration, or mitigation of functioning aquatic systems and riparian habitat conservation areas shall identify how reclamation will occur, plant species to be used in reclamation, a timeframe of when reclamation will be completed, and monitoring criteria; and
- reclamation and revegetation of motorized routes, drilling pads, and other areas disturbed by mineral activities shall be completed as soon as practicable by the operator.

*NCDE-STD-MIN-05*

**10** Within the NCDE primary conservation area and zone 1, if mineral activities have the potential to adversely affect grizzly bears or their habitat as determined by a site-specific analysis, new plans of operation, permits, and/or leases shall include the following mitigation measures regarding motorized access:

- public motorized use that is not associated with minerals activities shall be prohibited on motorized routes constructed for exploration and/or development;
- a traffic management plan shall be developed as part of the proposed activity to identify when and how motorized routes will be used, maintained, and monitored (if required) and how motorized route standards and guidelines will be implemented after activities have ended;
- helicopter use associated with seismic activity, exploration, drilling, or development must follow an approved plan or permit; and
- speed limits shall be adopted on motorized routes if needed to prevent or reduce collisions with grizzly bears.

*NCDE-STD-MIN-06*

- 11** Within the NCDE primary conservation area and zone 1, minerals contractors and lessees shall require employees to attend training related to safely living near and working in grizzly bear habitat prior to starting work and on an annual basis thereafter. *NCDE-STD-MIN-07*

### Guidelines (PCAZ1-NCDE-GDL)

- 01** Within the NCDE primary conservation area and zone 1, clover should not be used in seed mixes on NFS lands. Native seed mixes or those that are less palatable to grizzly bears should be used so that seeded areas do not become an attractant. *NCDE-GDL-WL-03*
- 02** Within the NCDE primary conservation area and zone 1, in addition to Forestwide guidelines, the following guidelines apply to new leasable minerals activities, including leases, surface use plans for proposed wells or operations, and permits to conduct seismic exploration or drilling. To reduce potential grizzly bear disturbance or displacement, helicopter use plans should:
- avoid establishing recurring helicopter use (see glossary), especially in spring habitats or other known important grizzly bear habitats or use areas; and
  - avoid establishing landing zones, especially in spring habitats or other known important grizzly bear habitats or use areas. If a landing zone is deemed necessary for safe implementation of the seismic or surface use plan or permit to drill, the landing zone should be constructed only in an area that has had site-specific analysis and approval.

#### *NCDE-GDL-MIN-01*

- 03** Within the NCDE primary conservation area and zone 1, leasable energy activities should use the best available noise-reduction technology on equipment and motorized vehicles to reduce potential disturbance or displacement of grizzly bears, whenever possible. *NCDE-GDL-MIN-02*
- 04** Within the NCDE primary conservation area and zone 1, along motorized routes, seismic corridors, and pipelines constructed for leasable energy activities, wildlife cover should be maintained at regular intervals where present (this varies on a site-specific basis) in order to provide habitat connectivity for grizzly bears. *NCDE-GDL-MIN-03*
- 05** Within the NCDE primary conservation area and zone 1, for locatable and non-energy leasable minerals activities with the potential to adversely affect the grizzly bear or its habitat (this varies on a site-specific basis), the following tiered measures should be considered to mitigate impacts to grizzly bear habitat. Beginning at step 1, any subsequent steps would be implemented only if the prior steps are not possible or achievable.
- Step 1: The operator should reclaim the affected area back to suitable bear habitat that has similar or improved characteristics and qualities compared to the original habitat (such as the same native vegetation).
  - Step 2: If step 1 is not attainable, operators should either acquire a perpetual conservation easement (or easements) or purchase comparable or better replacement grizzly bear habitat within the primary conservation area. Acquisition of habitat within connectivity corridors could also be considered for mitigation, when appropriate. Habitat acquired for mitigation may require a purchase rate of > 1:1 on an acreage basis, depending on the quality of habitat degraded and habitat available for acquisition.
  - Step 3: If steps 1 and 2 are not achievable, the next option is to offset negative effects to bears and grizzly bear habitat with other appropriate types of actions.

*NCDE-GDL-MIN-04*

- 06** Within the NCDE primary conservation area and zone 1, carrying bear deterrent spray should be recommended to mineral permittees, lessees and operators to reduce the risk of grizzly bear-human conflicts. *NCDE-GDL-MIN-05*
- 07** Within the NCDE primary conservation area and zone 1, available resources at existing gravel pits should be used before constructing new pits to reduce the risk of grizzly bear disturbance or displacement associated with blasting of rock or crushing of gravel. *NCDE-GDL-MIN-06*

**NCDE Z1 Plan Components****Desired Conditions (Z1-NCDE-DC)**

- 01** Within zone 1 on the Helena-Lewis and Clark National Forest (see appendix A, map FW-3), roads and trails provide for public and administrative access to NFS lands. Grizzly bear habitat in zone 1 contributes to sustaining the recovery of the grizzly bear population in the NCDE and providing the opportunity for movement of male bears to provide genetic connectivity with the Greater Yellowstone Ecosystem. *NCDE-HNF Zone 1-DC-01*
- 02** On the Helena-Lewis and Clark National Forest, within zone 1 and the portion of zone 2 west of Interstate 15, NFS lands adjacent to highways are consolidated and other efforts to reduce barriers to genetic connectivity of grizzly bear populations are supported. *NCDE-HNF Zone 1&2-DC-02*

**Standards (Z1-NCDE-STD)**

- 01** Within zone 1 on the Helena-Lewis and Clark National Forest (see appendix A, map FW-3), there shall be no net increase above the baseline in density of motorized routes (roads and trails) open to public motorized use during the non-denning season on NFS lands. Open motorized route density is calculated by dividing the total miles of open motorized routes on NFS lands in zone 1 by the total square miles of NFS land area in that same area (see figure 1-2). This standard does not apply to the following:
- motorized use by agency personnel or others authorized by the appropriate agency personnel;
  - temporarily opening a road for a short period of time to allow for public firewood gathering and other authorized use;
  - updated or improved road data without an actual change on the ground;
  - changes in technology or projections that result in changed calculations without actual change on the ground (e.g., a switch in geodetic systems from the North American Datum of 1927 to the North American Datum of 1983);
  - a road closure location is moved a short distance to a better location (e.g., to the nearest intersection or turnout) to allow a turn-around providing for public safety, to reduce vandalism, or to improve enforcement of the road closure;
  - the agency exchanges, acquires, buys, or sells lands with motorized routes;
  - a change in an open road necessary to comply with federal laws;
  - motorized use for mining activities (as authorized under the Mining Law of 1872) and oil and gas activities (as authorized under the Federal Onshore Oil and Gas Leasing Reform Act of 1987) conducted in accordance with valid existing rights and applicable standards and guidelines;

- a change in a motorized route necessary to address grizzly bear-human conflicts, resource damage, or human safety concerns;
- use of motorized routes in emergency situations as defined by 36 CFR 218.21; and
- temporary roads (see glossary).

*NCDE-HNF Zone 1-STD-01*

## NCDE PCA Plan Components

### Desired Condition (PCA-NCDE-DC)

- 01** Within the NCDE primary conservation area, motorized access provides for multiple uses (such as harvesting of timber and non-timber forest products; hunting, fishing, and recreation opportunities) on NFS lands while providing open motorized route density, total motorized route density, and secure core levels that contribute to sustaining the recovery of the grizzly bear population in the NCDE. *NCDE-DC-AR-01*
- 02** Within the NCDE primary conservation area, the number, capacity, and improvements of developed recreation sites provide for user comfort and safety while minimizing the risk of grizzly bear-human conflicts on NFS lands. *NCDE-DC-AR-02*
- 03** Within each bear management unit in the primary conservation area, increases in the number and capacity of developed recreation sites on NFS lands that are designed and managed for overnight use during the non-denning season are at levels that contribute to sustaining the recovery of the grizzly bear population in the NCDE. *NCDE-DC-AR-03*
- 04** Within the NCDE primary conservation area, the amount, type, and distribution of vegetation provide for the ecological, social, and economic sustainability of NFS lands while providing habitat components that contribute to sustaining the recovery of the grizzly bear population in the NCDE. *NCDE-DC-VEG-01*
- 05** Within the NCDE primary conservation area, there is a mosaic of successional stages to provide for grizzly bear habitat needs over the long term. *NCDE-DC-VEG-02*
- 06** Within the NCDE primary conservation area, the number, capacity of, and improvements on cattle and sheep grazing allotments support ecologically sustainable grazing, and temporary grazing permits are used effectively for management of noxious weeds while minimizing the risk of grizzly bear-human conflicts on NFS lands. *NCDE-DC-GRAZ-01*

### Standards (PCA-NCDE-STD)

- 01** In each bear management subunit within the NCDE primary conservation area, temporary changes in the open motorized route density, total motorized route density, and secure core shall be calculated for roads used for projects (as defined by “project (in grizzly bear habitat in the NCDE)”) during the non-denning season (see glossary). Calculations will include estimated changes for each year of the anticipated duration of the project and shall be incorporated into the 10-year running average required by standard PCA-NCDE-STD-04. *NCDE-STD-WL-03*
- 02** Within the NCDE primary conservation area, motorized use of roads with public restrictions shall be permitted for administrative use (see glossary) as long as doing so does not exceed either six trips (three round trips) per week or one 30-day unlimited use period during the non-denning season (see glossary). The exception to this standard is:

- emergency situations as defined by 36 Code of Federal Regulations (CFR) 218.21.

Note: Administrative use is not included in baseline calculations and is not included in calculations of net increases or decreases. If the level of administrative use exceeds this standard, the use is counted as a project (see “project (in grizzly bear habitat in the NCDE)” in the glossary). *NCDE-STD-AR-01*

**03** In each bear management subunit within the NCDE primary conservation area, there shall be no net decrease to the baseline (see glossary) for secure core and no net increase to the baseline for open motorized route density or total motorized route density on NFS lands during the non-denning season (see glossary). The following conditions are not considered a net increase/decrease from the baseline:

- administrative use (see glossary);
- temporary use of a motorized route for a project (see “project (in grizzly bear habitat in the NCDE)” in the glossary) that meets the conditions stipulated in PCA-NCDE-STD-04;
- mining activities (as authorized under the Mining Law of 1872) and oil and gas activities (as authorized under the Federal Onshore Oil and Gas Leasing Reform Act of 1987) conducted in accordance with valid existing rights and with all applicable standards and guidelines listed in this section and elsewhere in the 2020 Forest Plan;
- updated or improved data on a motorized route without an actual change on the ground;
- changes in technology or projections that result in changed open motorized route density, total motorized route density, or secure core values without actual change on the ground (e.g., a switch from the North American Datum of 1927 to the North American Datum of 1983 geodetic reference system);
- a road closure location is moved a short distance to a better location (e.g., to the nearest intersection or turnout) to allow a turn-around providing for public safety, to reduce vandalism, or to improve enforcement of the road closure;
- the agency exchanges, acquires, buys, or sells lands with motorized routes;
- a change in a motorized route necessary to comply with federal laws;
- a change in a motorized route necessary to address grizzly bear-human conflicts, human safety concerns, or resource damage or concerns (e.g., a road paralleling a stream may be decommissioned and replaced by a new upslope road to reduce water quality impacts);
- a change made by an adjacent landowner that decreases the percentage of secure core or increases open motorized route density or total motorized route density values on an adjacent national forest;
- use of a motorized route for emergency situations as defined by 36 CFR 218.21;
- temporary roads (see glossary).

*NCDE-STD-AR-02*

**04** In each bear management subunit within the NCDE primary conservation area, temporary changes in open motorized route density, total motorized route density, and secure core shall be allowed for projects (as defined by “project (in grizzly bear habitat in the NCDE)” in the glossary). The 10-year running average for open motorized route density, total motorized route density, and secure core shall not exceed the following limits during the non-denning season (see glossary):

- 5 percent temporary increase in open motorized route density in each bear management subunit (i.e., open motorized route density baseline plus 5 percent);

- 3 percent temporary increase in total motorized route density in each bear management subunit (i.e., total motorized route density baseline plus 3 percent); and
- 2 percent temporary decrease in secure core in each bear management subunit (i.e., secure core baseline minus 2 percent).

Exceptions to this standard include

- temporary changes for emergency situations as defined by 36 CFR 218.21
- temporary changes for actions where valid existing rights preclude or constrain agency discretion (e.g., certain contracts, permits, leases).

*NCDE-STD-AR-03*

**05** Within the NCDE primary conservation area, a restricted road may be temporarily opened for public motorized use to allow authorized uses (such as firewood gathering), provided the period of use does not exceed 30 consecutive days during one non-denning season and occurs outside of spring and fall bear hunting seasons. However, temporary public use of a restricted road shall not be authorized in secure core (see glossary). *NCDE-STD-AR-04*

**06** Within the NCDE primary conservation area, the number and capacity of developed recreation sites on NFS lands that are designed and managed for overnight use by the public during the non-denning season (e.g., campgrounds, cabin rentals, huts, guest lodges, recreation residences) shall be limited to one increase above the baseline (see glossary) in the number or capacity per decade per bear management unit. The following conditions are not considered an increase from the baseline:

- the agency obtains better information or updated information in its database(s);
- the agency acquires land that contains developed recreation sites;
- the agency increases the number or capacity of a developed recreation site in order to comply with federal laws;
- the agency maintains or modifies an existing overnight developed or dispersed recreation site in such a way that does not increase the number or capacity of the site (e.g., installing a pit toilet to avoid damage to water resources or installing a bear-resistant food storage structure to reduce grizzly bear-human conflicts);
- the agency modifies an existing developed recreation site to enhance human safety (e.g., enlarging a road pullout to allow trailers to safely turn around);
- the agency operates a developed recreation site to allow overnight use only during the denning season (see glossary); and
- the agency makes a corresponding reduction in the number or capacity of overnight developed recreation sites in the same bear management unit through any of the following means: (1) equal reduction in capacity at another site; (2) closure of a developed site(s); or (3) consolidation and/or elimination of dispersed camping, when and where it can be enforced effectively and it is reasonably assured that new dispersed sites will not develop nearby. If these measures are used to offset an increase in number or capacity, they must be in place before the initiation of the increase. If the agency reduces the number or capacity of developed sites below baseline levels, these reductions may be used at a future date to mitigate equivalent impacts of an increase, expansion, or change of use in developed sites within that bear management unit.

Note: This standard does not apply to dispersed recreation sites or to developed recreation sites managed for day use only (e.g., outfitter camps, roadside trail crossings, or interpretive pullouts);

trailheads, picnic areas, or boat launches that are closed at night; ski areas that do not have overnight lodging). *NCDE-STD-AR-05*

- 07** Within the NCDE primary conservation area, new or reauthorized recreation permits shall include a clause providing for modification, cancellation, suspension, or temporary cessation of activities if needed to resolve a grizzly bear-human conflict situation. *NCDE-STD-AR-06*
- 08** Within the NCDE primary conservation area, new or reauthorized permits for ski areas on NFS lands that operate during the non-denning season shall include requirements to limit the risk of grizzly bear-human conflicts (e.g., to store garbage in a bear-resistant manner). *NCDE-STD-AR-07*
- 09** Within modeled grizzly bear denning habitat in the NCDE primary conservation area, there shall be no net increase in the percentage of area or miles of routes designated for motorized over-snow vehicle use on NFS lands during the den emergence time period (see glossary). *NCDE-STD-AR-08*
- 10** Within the NCDE primary conservation area, a sheep grazing permit in non-use status shall not be allowed to increase allowable animal unit months beyond what was previously permitted prior to being in non-use when it is returned to use. *NCDE-STD-GRZ-02*
- 11** Within the NCDE primary conservation area, there shall be no net increase in the number of active cattle grazing allotments above the baseline (see glossary) on NFS lands. Note: Existing allotments may be combined or divided as long as doing so does not result in grazing allotments in currently unallotted lands. *NCDE-STD-GRZ-05*
- 12** Within the NCDE primary conservation area, new leases for leasable minerals shall include a no surface occupancy stipulation (see glossary). *NCDE-STD-MIN-08*

### Guidelines (PCA-NCDE-GDL)

- 01** In each bear management subunit within the NCDE primary conservation area, each project (as defined by “project (in grizzly bear habitat in the NCDE)” in the glossary) should be designed so that on-the-ground implementation does not exceed 5 years to reduce the potential for grizzly bear disturbance or displacement. Exceptions may be made where necessary, for example to accommodate:
  - actions where existing rights preclude or constrain agency discretion (e.g., certain contracts, permits, leases);
  - prescribed burning (including slash disposal), best management practices to protect water quality, or required reforestation activities; or
  - emergency situations as defined by 36 CFR 218.21.

If an extension to the five-year time limitation is required (e.g., to meet contractual obligations or to complete on-the-ground treatments), the reasons should be documented in writing prior to authorization of the extension. *NCDE-GDL-AR-01*

- 02** Within the NCDE primary conservation area, secure core, open motorized route density, and total motorized route density should be restored to pre-project levels (as defined by “project (in grizzly bear habitat in the NCDE)” in the glossary) within 1 year after completion of the project to reduce the potential duration of grizzly bear disturbance due to project-related activities. Exceptions may be made where necessary, for example to accommodate:

- actions where existing rights preclude or constrain agency discretion (e.g., certain contracts, permits, leases);
- prescribed burning (including slash disposal), best management practices to protect water quality, or required reforestation activities; or
- emergency situations as defined by 36 CFR 218.21.

If an extension to the 1-year time limitation is made (e.g., to meet contractual obligations or to complete on-the-ground treatments), the reasons should be documented in writing prior to authorization of the extension. *NCDE-GDL-AR-02*

- 03** Within the NCDE primary conservation area, if the number or capacity of day-use or overnight developed recreation sites is increased, the project should include one or more measures to reduce the risk of grizzly-bear human conflicts in that bear management unit. The measure(s) should be in place prior to completion of the project or be included as one of the design criteria. Measures can include but are not limited to additional public information and education; providing backcountry food-hanging poles or bear-resistant food or garbage storage devices; project design criteria that would limit capacity increases to those needed for public health and safety; and increasing law enforcement and patrols. *NCDE-GDL-AR-03*
- 04** Within the NCDE primary conservation area, measures to reduce the risk of disturbance to the grizzly bear population should be incorporated into vegetation and fuels project design criteria, which vary on a site-specific basis (e.g., some activities should be restricted in spring habitat during the spring; areas with low levels of human activity should be provided adjacent to areas with high levels of disturbance). Note: Management activities such as pre-commercial thinning, burning, weed spraying, and implementation of road best management practices may need to be completed during the spring in order to meet resource objectives (especially if needed to prevent resource damage), in which case other measures should be used to reduce the risk of disturbance (e.g., limiting the duration of the activity or limiting the use of closed roads). *NCDE-GDL-VEG-01*
- 05** Within the NCDE primary conservation area, vegetation management activities should be designed to avoid detrimental effects on the grizzly bear population and to include one or more measures to protect, maintain, increase, and/or improve grizzly habitat quantity or quality (e.g., promoting growth of berry-producing shrubs, forbs, or grasses known to be bear foods) in areas where it would not increase the risk of grizzly bear-human conflicts. *NCDE-GDL-VEG-02*
- 06** Within the NCDE primary conservation area, measures to retain cover (where present) along a portion of grass/forb/shrub openings, riparian wildlife habitat, or wetlands should be incorporated in project design criteria (this varies on a site-specific basis). *NCDE-GDL-VEG-03*
- 07** Within the NCDE primary conservation area, vegetation management projects (including timber sales and other non-commercial vegetation management contracts) should include a provision for modification, cancellation, suspension, or temporary cessation of activities, if needed, to resolve a grizzly bear-human conflict situation. *NCDE-GDL-VEG-04*
- 08** To reduce the risk of grizzly-bear human conflicts within the NCDE primary conservation area, vegetation management activities designed to enhance grizzly habitat (e.g., to increase huckleberry production) should not occur in or next to campgrounds, administrative facilities, or other developed recreation sites that operate during the non-denning season. *NCDE-GDL-VEG-05*



- 09 On NFS lands within the NCDE primary conservation area, the number of open or active sheep grazing allotments should be reduced if an opportunity exists with a willing permittee, to reduce the risk of conflicts with grizzly bears. *NCDE-GDL-GRZ-01*
- 10 Within the NCDE primary conservation area, an allotment management plan and plan of operation should specify any needed measures to protect key grizzly bear food production areas (e.g., wet meadows, stream bottoms, aspen groves, and other riparian wildlife habitats) from conflicting and competing use by livestock (this varies on a site-specific basis). *NCDE-GDL-GRZ-02*

## Recreation Settings, Opportunities, Special Uses, Access, and Scenery

### Introduction

Recreation is recognized as a critical resource on the HLC NF due to its contributions to the local economy, its influence in connecting people to the land, its impact on public understanding of natural and cultural resources, and its role as a catalyst for public stewardship.

The FS strives to provide a set of recreation settings, opportunities, and benefits that are sustainable over time. Sustainable recreation is defined as the set of recreation settings and opportunities on the NF that are ecologically, economically, and socially sustainable for present and future generations. For best effect, all aspects of recreation should include the principles of sustainability.

The following plan components are aimed at providing direction for a sustainable recreation program. Included is direction for Recreation Settings, Recreation Opportunities, Recreation Special Uses, Recreation Access, and Scenic Character. Plan components for other activities, including public information, interpretation, education, and hunting and fishing can be found in the Benefits to People section.

### Recreation Settings (ROS)

#### Introduction

Recreation settings are the social, managerial, and physical attributes of a place that, when combined, provide a distinct set of recreation opportunities and access options. These settings provide the framework where specific recreation opportunities, activities, and expected experiences are integrated to ensure compatibility with the landscape's natural, social, and cultural resource values. By identifying recreation settings, the Forest can ensure a sustainable set of recreation opportunities for future generations and visitors can select where they recreate based on what they want to do, what equipment they want to bring, and the type of experience they want.

The FS uses the recreation opportunity spectrum to define recreation settings. The recreation opportunity spectrum is categorized into six distinct classes: primitive, semi-primitive nonmotorized, semi-primitive motorized, roaded natural, rural, and urban (36 CFR 219.19). See the glossary for detailed definitions of each recreation opportunity class. The plan components for ROS are grouped below for ease of understanding.

ROS Plan Components (FW-ROS-DC, FW-ROS-OBJ, FW-ROS-STD, FW-ROS-GDL, and FW-ROS-SUIT)

**01 (FW-ROS-DC-01)** Outdoor recreation opportunities and experiences are available year-round in a range of settings as described by the desired recreation opportunity spectrum. These settings reflect the integration of other resource values with the desired recreation opportunities, access, facilities, and infrastructure provided within those settings.

The desired distribution of forestwide recreation opportunity settings are described in Table 14. Specific locations and distribution of desired recreation opportunity spectrum settings are mapped for each GA and are in appendix A.

**Table 14. Desired recreation opportunity spectrum settings**

Desired recreation opportunity spectrum settings	ROS		Winter ROS	
	Acres	Percent of total forest <sup>1</sup>	Acres	Percent of total forest <sup>1</sup>
Primitive	1,034,673	36	1,018,346	35
Semi-primitive nonmotorized	749,649	26	856,841	30
Semi-primitive motorized	375,866	13	725,625	25
Roaded natural	694,044	24	253,979	9
Rural	28,982	1	28,432	1
Urban	0	0	0	0

<sup>1</sup> Percentage of the total NFS lands, rounded to the nearest whole number.

Table 15 describes desired conditions, objectives, standards, guidelines, and suitability for each of the recreation opportunity spectrum settings.

**Table 15. Recreation opportunity spectrum plan components**

Desired conditions	Associated plan components to achieve desired recreation opportunity spectrum settings	
<p><b>(FW-ROS-DC-02) Primitive ROS settings</b> encompass large, wild, remote, and predominately unmodified landscapes. These settings often coincide with designated wilderness. Additional primitive ROS settings are scattered across the forest, often surrounded by SPNM settings. Primitive ROS settings contain no motorized recreation and little probability of seeing other people. They provide quiet solitude away from roads and people, are generally free of human development, and facilitate self-reliance and discovery. Historic structures such as log ranger stations and fire lookouts are occasionally present. Signing and other infrastructure is minimal and constructed of rustic, native materials.</p> <p><b>(FW-ROS-DC-03) Primitive ROS settings (winter)</b> are large, remote, wild, and predominately unmodified. Winter primitive ROS settings provide quiet solitude away from roads, and people. There is no motorized activity and little probability of seeing other people. Constructed trails that are evident in the summer months are covered by snow, making these settings appear even more natural and untouched by human management.</p>	<b>Objective</b>	NA
	<b>Standards</b>	<p><b>(FW-ROS-STD-01)</b> Motorized routes (road, trails, and waterways) and motorized play areas shall not be constructed or authorized in desired primitive settings. Exceptions may be granted for administrative access needs.</p> <p><b>(FW-ROS-STD-02)</b> Airstrips shall not be constructed in desired Primitive settings.</p>
	<b>Guidelines</b>	<p><b>(FW-ROS-GDL-01)</b> To maintain the unmodified character of the area, permanent structures should not be constructed in desired primitive ROS settings. Exceptions may be granted for administrative uses, including those needed for safety of employees and the public.</p> <p><b>(FW-ROS-GDL-02)</b> To maintain the scenic quality of these wild and remote landscapes, scenery should be managed for very high scenic integrity objectives. Also see FW-SCENERY-GDL-01.</p> <p><b>(FW-ROS-GDL-03)</b> Vegetation management practices should maintain the natural vegetation, ecosystem processes, and functions of these areas.</p>
	<b>ROS suitability</b>	<p><b>(FW-ROS-SUIT-01)</b> Nonmotorized trails and cross-country nonmotorized travel are suitable in desired primitive settings.</p> <p><b>(FW-ROS-SUIT-02)</b> Mechanized means of transportation and mechanized equipment are suitable on designated trails in desired primitive settings, unless prohibited by law, forest plan direction, or forest closure order.</p> <p><b>(FW-ROS-SUIT-03)</b> Motorized recreation travel is not suitable in desired primitive settings.</p> <p><b>(FW-ROS-SUIT-04)</b> Airstrips are not suitable in primitive ROS settings.</p>
	<b>Winter ROS suitability</b>	<p><b>(FW-ROS-SUIT-05)</b> Motorized over snow vehicle travel is not suitable in desired primitive settings.</p>
<p><b>(FW-ROS-DC-04) Semi-Primitive Non-Motorized settings</b> provide opportunities for exploration, challenge, and self-reliance. Rustic structures such as signs and foot bridges are occasionally present to direct use and/or protect the setting's natural and cultural resources. These rustic constructed features are built from native materials or those that mimic native materials. Historic structures such as log ranger stations and fire lookouts are occasionally present. Closed roads may be present but do not dominate the landscape or detract from the SPNM experience of visitors.</p>	<b>Objective</b>	NA
	<b>Standards</b>	<p><b>(FW-ROS-STD-03)</b> Motorized routes (road, trails, and waterways) and motorized play areas shall not be constructed or authorized in desired semi-primitive nonmotorized settings. Temporary roads may be allowed if fully rehabilitated after use.</p> <p><b>(FW-ROS-STD-04)</b> Airstrips shall not be constructed in desired semi-primitive nonmotorized settings.</p>
	<b>Guidelines</b>	<p><b>(FW-ROS-GDL-04)</b> To maintain the scenic quality of these wild and semi-remote landscapes, scenery should be managed for high scenic integrity objectives in semi-primitive nonmotorized settings. Also see FW-SCENERY-GDL-01.</p>

Desired conditions	Associated plan components to achieve desired recreation opportunity spectrum settings	
<p>These settings are free of motorized recreation travel but mechanized travel may be present.</p> <p><b>(FW-ROS-DC-05) Semi-Primitive Non-Motorized settings (winter)</b> provide backcountry skiing, snowboarding, and snowshoeing opportunities. Trails are ungroomed and often not marked. Rustic facilities, such as historic cabins and yurts may exist but are rare.</p>		<p><b>(FW-ROS-GDL-05)</b> Where vegetation management occurs in this setting, treatments should promote natural resilient vegetation.</p>
	<p><b>ROS suitability</b></p>	<p><b>(FW-ROS-SUIT-06)</b> Nonmotorized trails and cross-country nonmotorized travel are suitable in desired semi-primitive nonmotorized settings.</p> <p><b>(FW-ROS-SUIT-07)</b> Mechanized means of transportation and mechanized equipment are suitable on FS authorized routes and areas in desired semi-primitive nonmotorized settings, unless prohibited by law, forest plan direction, or forest closure order.</p> <p><b>(FW-ROS-SUIT-08)</b> Motorized recreation travel is not suitable in desired semi-primitive nonmotorized settings.</p> <p><b>(FW-ROS-SUIT-09)</b> Airstrips are not suitable in semi-primitive ROS settings.</p>
	<p><b>Winter ROS suitability</b></p>	<p><b>(FW-ROS-SUIT-10)</b> In winter, motorized recreation travel is not suitable in desired semi-primitive nonmotorized settings.</p>
<p><b>(FW-ROS-DC-06) Semi-Primitive Motorized ROS settings</b> provide motorized recreation opportunities in backcountry settings. Routes are designed for off highway vehicles (OHVs) and high clearance vehicles that connect to local communities, access key destinations and vantage points, provide short day trips on scenic loops or facilitate longer and even overnight, expeditions. Visitors challenge themselves as they explore vast, rugged landscapes. Mountain bikes and other mechanized equipment may also be present. Facilities are rustic and are used for the purpose of protecting the setting’s natural and cultural resources. Bridges are sometimes present to accommodate foot, horse and ATV traffic but are built from native or natural appearing materials that blend with the surrounding landscape and maintain the semi-primitive character of the setting. There may also be nodes that function as portals for visitors to park their ATVs and explore adjacent Semi-Primitive Non-Motorized and Primitive settings on foot.</p> <p><b>(FW-ROS-DC-07) Semi-Primitive Motorized settings (winter)</b> provide backcountry skiing and snowmobiling opportunities. Snowmobile trails are groomed but trails for backcountry skiing opportunities are ungroomed. Trails are often signed and marked. There are vast areas to travel cross-country, offering visitors an opportunity for exploration and challenge. Occasionally,</p>	<p><b>Objective</b></p>	<p>NA</p>
	<p><b>Standard</b></p>	<p><b>(FW-ROS-STD--05)</b> Permanent roads shall not be constructed in desired semi-primitive motorized settings. Temporary roads may be allowed if fully rehabilitated after use.</p>
	<p><b>Guideline</b></p>	<p><b>(FW-ROS-GDL-06)</b> To maintain the scenic quality of these wild and semi-remote landscapes, scenery should be managed for high to moderate scenic integrity objectives in semi-primitive motorized settings. Also see FW-GDL-SCENERY-01.</p> <p><b>(FW-ROS-GDL-07)</b> Where vegetation management occurs in this setting, treatments should promote natural resilient vegetation.</p>
	<p><b>ROS suitability</b></p>	<p><b>(FW-ROS-SUIT-11)</b> Motorized use is suitable on designated roads, trails, and areas in desired semi-primitive motorized settings.</p> <p><b>(FW-ROS-SUIT-12)</b> Airstrips are suitable in desired semi-primitive motorized settings.</p> <p><b>(FW-ROS-SUIT-13)</b> Non-motorized trails and cross-country non-motorized travel are suitable in desired semi-primitive motorized settings.</p> <p><b>(FW-ROS-SUIT-14)</b> Mechanized means of transportation is suitable on designated routes and areas in desired semi-primitive motorized settings.</p>
	<p><b>Winter ROS suitability</b></p>	<p><b>(FW-ROS-SUIT-15)</b> Ungroomed but marked over snow vehicle routes and areas and ungroomed ski trails are suitable in desired semi-primitive motorized settings.</p> <p><b>(FW-ROS-SUIT-16)</b> Motorized vehicles, other than those designed for over-snow use, are not suitable in desired semi-primitive motorized settings.</p>

Desired conditions	Associated plan components to achieve desired recreation opportunity spectrum settings		
historic cabins or warming huts are available for short breaks or overnight use.			
<p><b>(FW-ROS-DC-08) Roded Natural ROS settings</b> are often referred to as front country recreation areas. This setting is managed as natural appearing with nodes and corridors of development that support higher concentrations of use, user comfort, and social interaction. The road system is well defined and can typically accommodate sedan travel. Sanitation, potable water, interpretive signing, and other amenities are strategically placed to serve as destination points and/or portals to adjacent backcountry settings. Signing, facilities, bridges and other infrastructure are constructed of native materials or natural appearing materials that blend with and complement the surrounding natural setting.</p> <p><b>(FW-ROS-DC-09) Roded Natural ROS settings (winter)</b> support higher concentrations of use, user comfort, and social interaction. The road system is plowed and accommodates sedan travel. Winter trails are routinely groomed and may have ancillary facilities such as warming huts and restrooms. System roads and trails often provide staging to adjacent backcountry settings (primitive, SPNM and SPM). Guided snowmobiling, dog sledding, skiing, and snowshoeing may also be present.</p>	<b>Objective</b>	NA	
	<b>Standard</b>	NA	
	<b>Guideline</b>	<b>(FW-ROS-GDL-08)</b> To maintain the scenic quality of natural appearing landscapes, scenery should be managed for high, moderate and low scenic integrity objectives. Also see FW-SCENERY-GDL-01.	
	<b>ROS suitability</b>	<p><b>(FW-ROS-SUIT-17)</b> Motorized use is suitable on designated roads, trails, and areas in desired roded natural ROS settings.</p> <p><b>(FW-ROS-SUIT-18)</b> Mechanized means of transportation is suitable on designated routes and areas in desired roded natural settings.</p> <p><b>(FW-ROS-SUIT-19)</b> Airstrips are suitable in desired roded natural settings.</p>	
	<b>Winter ROS suitability</b>	<p><b>(FW-ROS-SUIT-20)</b> Plowed roads, groomed trails and motorized snow play areas are suitable in desired roded natural settings.</p> <p><b>(FW-ROS-SUIT-21)</b> In winter, motorized vehicles, other than those designed for over-snow use, are not suitable in desired roded natural ROS settings.</p>	
<p><b>(FW-ROS-DC-10) Rural ROS settings</b> often serve as a recreation destination and sometimes provide access to adjacent roded natural and semi-primitive settings and opportunities. These areas are accessed from paved roads and are generally close to communities. Developed recreation facilities are designed for large groups and provide opportunities to socialize in both day-use and overnight sites.</p> <p><b>(FW-ROS-DC-11) Rural ROS settings (winter)</b> provide staging to adjacent winter settings and opportunities. These areas are accessed from paved and plowed roads and are generally close to population centers. Warming huts or other shelters, sanitation, and information and education are commonly present. Parking areas are large and plowed. Entry points and routes are</p>	<b>Objective</b>	NA	
	<b>Standard</b>	NA	
	<b>Guideline</b>	<b>(FW-ROS-GDL-9)</b> To maintain the scenic quality of natural appearing landscapes, scenery should be managed for High, Moderate and Low scenic integrity objectives. Also see FW-SCENERY-GDL-01.	
	<b>ROS suitability</b>	<p><b>(FW-ROS-SUIT-22)</b> Motorized use is suitable on designated roads, trails, and areas in desired rural ROS settings.</p> <p><b>(FW-ROS-SUIT-23)</b> Mechanized means of transportation is suitable on designated routes and areas in desired rural settings.</p> <p><b>(FW-ROS-SUIT-24)</b> Airstrips are suitable in desired rural ROS settings.</p>	
	<b>Winter ROS suitability</b>	<b>(FW-ROS-SUIT-25)</b> In winter, motorized vehicles, other than those designed for over-snow use, are not suitable in desired rural ROS settings.	

Desired conditions	Associated plan components to achieve desired recreation opportunity spectrum settings	
<p>signed and lead snowmobiles to adjacent RN and SPM settings. Nonmotorized trails are also typically groomed for skate skiing, and x-country skiing. Rural winter settings provide quick and convenient access for communities and families to celebrate holidays, conduct racing events, walk the dog, and more.</p>		<p><b>(FW-ROS-SUIT-26)</b> Plowed roads, groomed trails and motorized snow play areas are suitable in desired rural settings.</p>
<p><b>(FW-ROS-DC-12) Urban ROS settings</b> These highly developed areas are accessed from paved roads and highways. They are typically close to communities. Developed recreation facilities are designed for large groups and provide opportunities to gather and socialize. Recreation sites are often destinations for day use. Visitor centers and interpretive exhibits are often present. Resorts may be present and offer overnight accommodations.</p> <p><b>(FW-ROS-DC-13) Urban ROS settings (winter)</b> These areas are accessed from plowed roads and are generally close to population centers. Warming huts or other shelters, restrooms, and I&amp;E (information and education) are commonly present. Parking areas are large and plowed. Entry points and routes are signed and lead snowmobiles to adjacent RN and SPM settings. Non-motorized trails are also typically groomed for skate skiing, and x-country skiing. Winter Urban settings may also contain ski resorts with groomed down-hill skiing and snowboarding opportunities.</p>	<p><b>Objective</b></p>	<p>NA</p>
	<p><b>Standard</b></p>	<p>NA</p>
	<p><b>Guideline</b></p>	<p><b>(FW-ROS-GDL-10)</b> To maintain the scenic quality of these wild and semi-remote landscapes, scenery should be managed for High, Moderate and Low scenic integrity objectives in urban settings. Also see FW-SCENERY-GDL-01.</p>
	<p><b>ROS suitability</b></p>	<p><b>(FW-ROS-SUIT-27)</b> Highly developed recreation sites and highly structured interpretation, education, and recreation activities are suitable in urban ROS settings.</p> <p><b>(FW-ROS-SUIT-28)</b> Motorized use is suitable on designated roads, trails, and areas in desired urban ROS settings.</p> <p><b>(FW-ROS-SUIT-29)</b> Mechanized means of transportation is suitable on designated routes and areas in desired urban settings.</p> <p><b>(FW-ROS-SUIT-30)</b> Airstrips are suitable in desired urban ROS settings.</p>
<p><b>Winter ROS suitability</b></p>	<p><b>(FS-ROS-SUIT-31)</b> Developed recreation sites, including visitor centers, ski areas, and other resorts are open and suitable in desired winter urban settings.</p> <p><b>(FW-ROS-SUIT-32)</b> In winter, motorized vehicles, other than those designed for over-snow use, are not suitable in desired urban ROS settings.</p> <p><b>(FW-ROS-SUIT-33)</b> Plowed roads, groomed trails, and motorized snow play areas are suitable in desired winter urban ROS settings.</p> <p><b>(FW-ROS-SUIT-34)</b> Groomed ski trails are suitable in desired urban ROS settings.</p>	

## Recreation Opportunities (REC)

### Introduction

Recreation is recognized as a critical resource due to: (1) its contributions to economic and social sustainability, (2) its influence in connecting people to the land, (3) its impact on public understanding of natural and cultural resources, and (4) its role as a catalyst for public stewardship. To address both the challenges and opportunities in recreation management, the FS strives to provide a set of recreation settings, opportunities, and benefits that are sustainable over time.

Recreation sites are generally managed on a continuum based on a development scale ranging from 1 to 5. Recreation sites with minimum to low or few site modifications are lower on the development scale (1-2) and are considered “dispersed” recreation sites. Recreation sites with higher site modification and infrastructure on the development scale (3-5) are considered “developed” recreation sites. Table 16 explains the development scale and provides a definition of each.

**Table 16. Recreation site development scales**

Development scale	Definition	Developed or dispersed
1	<b>Recreation sites with minimum site modification.</b> Rustic or rudimentary improvements designed for protection of the site rather than comfort of the users. Use of synthetic materials excluded. Minimum controls are subtle. No obvious regimentation. Spacing informal and extended to minimize contacts between users. Access primarily by nonmotorized trails.	Dispersed
2	<b>Recreation sites with little site modification.</b> Rustic or rudimentary improvements designed primarily for protection of the site rather than the comfort of the users. Use of synthetic materials avoided. Minimum controls are subtle. Little obvious regimentation. Spacing informal and extended to minimize contacts between users. Primary access over primitive roads and both primitive and formalized trail systems. Interpretive services informal.	Dispersed
3	<b>Recreation sites with moderate modification.</b> Facilities about equal for protection of natural site and comfort of users. Contemporary/rustic design of improvements is usually based on use of native materials. Inconspicuous vehicular traffic controls usually provided. Roads may be hard surfaced and trails formalized. Development density about three family units per acre. Primary access may be over high standard roads. Interpretive services informal, but generally direct.	Developed
4	<b>Recreation sites that are heavily modified.</b> Some facilities designed strictly for comfort and convenience of users. Luxury facilities not provided. Facility design may incorporate synthetic materials. Extensive use of artificial surfacing of roads and trails. Vehicular traffic control usually obvious. Primary access usually over paved roads. Development density about three to five family units per acre. Plant materials usually native. Interpretive services often formal or structured.	Developed
5	<b>Recreation sites with a high degree of site modification.</b> Facilities mostly designed for comfort and convenience of users and usually include flush toilets; may include showers, bathhouses, laundry facilities, and electrical hookups. Synthetic materials commonly used. Formal walks or surfaced trails. Regimentation of users is obvious. Access usually by high-speed highways. Development density about five or more family units per acre. Plant materials may be foreign to the environment. Formal interpretive services usually available. Designs formalized and architecture may be contemporary. Mowed lawns and clipped shrubs not unusual.	Developed

### Desired Conditions (FW-REC-DC)

- 01** Recreation opportunities enable visitors to connect with the unique natural environments and historic and cultural occurrences that have taken place throughout the area and instill a culture of stewardship and appreciation.
- 02** Activities associated with recreational opportunities contribute to jobs and income in the local economy, community stability or growth, and the quality of lifestyles.
- 03** Sustainable levels of developed recreation sites and facilities exist at key locations to accommodate concentrations of recreation use and enhance visitor experiences.
- 04** Recreation facilities, including trails and dispersed sites, and their uses have minimal impacts on resources including wildlife, heritage and cultural sites, water quality, and aquatic species.
- 05** Recreation rental cabins and rental lookouts provide unique and/or historic overnight facilities.
- 06** Vegetation within developed recreation sites is healthy and resilient and provides for the health and safety of the public. Also see FW-VEGT-DC-05.
- 07** Dispersed recreation camping sites (development scale 1-2) provide undeveloped camping opportunities while considering cultural and natural resource concerns, activity and recreation user conflicts, and over-use.
- 08** Environmental and cultural resources at dispersed recreation sites (development scale level 1 and 2) are protected by infrastructure such as trails, barriers, and minimal signage when necessary.

### Goals (FW-REC-GO)

- 01** The operation, maintenance, and delivery of recreation facilities and programs, and information, education, and visitor services are supported by partnerships and volunteer programs.

### Objectives (FW-REC-OBJ)

- 01** Rehabilitate at least five dispersed recreation sites (development scale 1-2) which have erosion or sanitation issues.
- 02** Rehabilitate or relocate at least five existing recreation facilities, including dispersed sites, if they are degrading surface or riparian resources.
- 03** Improve accessibility of facilities or programs at at least five developed recreation sites (development scale 3-5), such as campgrounds, trailheads, cabin rentals, or the Lewis and Clark National Historic Trail Interpretive Center.
- 04** Rehabilitate or refurbish at least five developed recreation sites (development scale 3-5) to meet current and future projected demands.

### Guidelines (FW-REC-GDL)

- 01** Management of developed recreation facilities should be responsive to environmental changes such as but not limited to changes in water flows, snow levels, snow elevation, fish and wildlife habitats, vegetative conditions, and seasonal recreation use.



- 02** To promote scenic values within and adjacent to developed recreation sites, vegetation management activities should be consistent with the scenic integrity objectives of moderate to high.
- 03** To maintain quality and quantity of water flows to, within, or between groundwater dependent ecosystems, groundwater use facilities at recreation and administrative sites should not: a) be developed in RMZs (unless no alternatives exist); b) measurably lower river flows, lake levels, or flows to wetlands or springs (for example change springs from perennial to intermittent, or eliminate springs altogether); and/or c) discharge pollutants directly to groundwater.
- 04** To reduce potential impact to fishery resources, avoid placing new facilities or infrastructure within expected long-term channel migration zone. Where new activities inherently must occur in RMZs (for example road stream crossings, boat ramps, docks, and interpretive trails), locate them to minimize impacts on riparian associated resource conditions.
- 05** Where existing recreation facilities are located within RMZs and degrading aquatic or riparian resources, consider removing or relocating such facilities outside of RMZs or use other means practicable to reduce effects. In RMZs, areas where developed recreation facilities have been removed should be rehabilitated to a natural state.
- 06** To protect resources, new and reconstructed solid and sanitary waste facilities should not be located within inner RMZs.
- 07** To reduce the potential for bear/human conflicts, plantings and seed mixes near roads and developed recreation facilities should not contain plant species that may attract bears. Also see FW-NCDE-DC-01, PCAZ1-NCDE-GDL-01, PCA-NCDE-GDL-08, and NCDE-GDL-VEG-05.
- 08** To preserve the recreation settings of the area, the development scale of new or updated recreation facilities should be consistent with the desired recreation opportunity spectrum settings and with recreation area, river corridor, and/or trail management plans.
- 09** To preserve the recreation settings of the area, dispersed recreation activities should be compatible with desired recreation opportunity spectrum settings.

### Suitability (FW-REC-SUIT)

- 01** Developed recreation sites are not suitable for timber production. However, timber harvest or other vegetation management may occur to address safety concerns or to provide for other multiple use values.
- 02** Developed recreation sites are not suitable for saleable mineral activities, unless the material is used onsite for administrative purposes.
- 03** Developed recreation sites are not suitable for leasable or locatable mineral activity.
- 04** Developed recreation sites are not suitable for livestock grazing, with the general exception of recreational pack animal use such as horses, goats, or llamas.

## Recreation Special Uses (RSUP)

### Introduction

Recreation special use permits provide for occupancy and use of national forests through issuance of permits. Permitted recreation uses provide specific recreational opportunities to the public and deliver

economic benefits to rural economics. There are both commercial and noncommercial recreation special use permits. Commercial special use permits include opportunities such as ski resorts, outfitter and guiding services, lodging resorts, and organizational camps. Noncommercial special use permits are used by individuals and single families, such as permits issued for recreation residences.

### Desired Conditions (FW-RSUP-DC)

- 01** Recreation special uses provide unique opportunities, services, and experiences for the recreating public and/or attend to a demonstrated demand for a specific recreation opportunity.
- 02** Services provided by recreation special uses enhance the recreation experiences of forest visitors, while ensuring public health and safety and protecting natural and cultural resources. Also see FW-CR-DC-03.
- 03** Recreation special uses contribute to jobs and income in the local economy, community stability or growth, and the quality of lifestyles throughout the forest while remaining compatible with ecological and social capacity thresholds.
- 04** Historic buildings associated with recreation special use permits reflect identified historic values while providing for functional use by permit holders. Also see FW-CR-DC-02.
- 05** The vegetation within and nearby recreation special use facilities is healthy and resilient and provides for the health and safety of the public. Also see FW-VEGT-DC-05.

### Guidelines (FW-RSUP-GDL)

- 01** To mitigate conflicts with other users, recreation operations, under (or being considered for) special use authorizations, should include permit measures that address potential conflicts such as, but not limited to: location of the event, timing of the event, party size, and education on the reduction of human-wildlife conflict.

## Recreation Access (ACCESS)

### Introduction

Recreation access to and through the Forest is facilitated in many ways. Most often, main access is provided via public roads and right of ways and through easements with private land holders. Once on forest, direction for recreation access is provided through travel management plans. Roads, motorized trails, nonmotorized trails, rivers, and airstrips provide access for visitors to walk, bike, ride, drive, boat, or fly to their destinations. Recreation through roads and access to the Forest through airstrips generally occurs in motorized ROS settings. Trails occur across all ROS settings, depending upon the mode of transport used for the trail use and whether an area is designated for motorized or nonmotorized uses. Also see Infrastructure, Roads and Trails.

### Desired Conditions (FW-ACCESS-DC)

- 01** Forest system roads and trails provide a variety of motorized, nonmotorized, and mechanized means of transportation access to the Forest, during summer and winter seasons. Routes provide access to key destinations on the forest. Unauthorized recreation routes are not present on the landscape.
- 02** Airstrips provide opportunities for motorized recreation aviation access.

- 03** Forest visitors use the designated system of roads, trails, and airstrips to access recreation activities appropriate within identified recreation opportunity setting locations.
- 04** The facilities associated with forest system roads, trails, trailheads and airstrips enhance the recreation experiences of forest visitors, attend to public health and safety, and protect natural and cultural resources.

### Goals (FW-ACCESS-GO)

- 01** The Forest Service works in cooperation with landowners, other agencies, and partners to provide legal access to public lands.

### Guidelines (FW-ACCESS-GDL)

- 01** To protect natural and cultural resources, projects and other management activities should be designed to prevent the creation and/or use of unauthorized recreation routes, and to rehabilitate existing ones to the extent practicable.
- 02** New trailheads, for both motorized and nonmotorized recreation uses, and airstrips should be strategically located to provide safe and convenient staging for recreation opportunities.

## Scenic Character (SCENERY)

### Introduction

Scenic character is defined as a combination of the physical, biological, and cultural images that give an area its scenic identity and sense of place. The HLC NF's scenery serves as the backdrop to adjacent communities. Historic cabins and fire lookouts and remnants of historic mining districts contribute to the unique scenic character of the GAs of the Forest. Natural disturbance processes such as wildfire, insects, and diseases are dynamic and part of the natural appearing landscape and the described landscape character. Human impacts on the scenic character such as timber removal, prescribed fire, grazing, and special uses such as utility corridors, may or may not create impacts to the natural appearance of the landscape.

Desired scenic integrity objectives are mapped and described for each GA and are in appendix A. Desired scenic integrity objectives are a measure of the degree to which a landscape is visually perceived to be complete when compared to the inherent scenic character of that area. There are five distinct scenic integrity objectives: 1) very high, 2) high, 3) moderate, 4) low, and 5) very low. The desired scenic integrity objective is the minimum level of integrity to be achieved. Table 17 and the glossary provide definitions for each of the five scenic integrity objectives.

Scenic character descriptions and important viewpoints for each GA may be found in appendix G.

**Table 17. Scenic integrity objectives and definitions\***

Scenic integrity objective	Definition
Very high	Landscapes where the valued landscape character "is" intact with minute if any deviations.
High	Landscapes in which the valued landscape character "appear intact."
Moderate	Landscapes in which the valued landscape character "appears slightly altered".
Low	Landscapes in which the valued landscape character "appears altered."
Very low	Landscape where the valued landscape character "appears heavily altered."

The overall scenic integrity objective distribution for the HLC NF is identified in Table 18.

**Table 18. Desired scenic integrity objective percentages for the HLC NF**

Scenic integrity objective	%
Very high	36
High	45
Moderate	12
Low	7
Very low	0

### Desired Conditions (FW-SCENERY-DC)

- 01** The natural and cultural attributes of the Forest's scenery are described in the scenic character descriptions; see appendix G.
- 02** Scenery integrity objectives contribute to and establish the sense of place of local communities.
- 03** Scenic integrity objectives are in harmony with and contribute to desired recreation settings and experiences. See FW-ROS-Table 15.

### Guidelines (FW-SCENERY-GDL)

- 01** To achieve or maintain the identified scenic integrity objectives on the forest:
  - Vegetative management activities should reflect natural disturbance regimes and processes.
  - Desired scenic integrity objectives should be met during management activities to ensure scenery continues to contribute to the sense of place of the Forests' landscapes.
  - The construction or reconstruction of FS facilities should harmonize with or complement the character of the landscape settings. Also see FW-ROS-DC-01.

## Designated Areas

### Introduction

A designated area is defined as an area or feature identified and managed to maintain its unique special character or purpose. Some categories of designated areas may be congressionally designated and some may be established administratively. Examples of congressionally designated areas include, but are not limited to, designated wilderness areas, national scenic trails, and wilderness study act areas. Examples of administratively designated areas include, but are not limited to, recommended wilderness areas, eligible wild and scenic rivers, research natural areas, scenic byways, experimental forests, recreation areas, and cultural areas. Typically, these areas are not suitable for timber production, but in some cases timber harvest may be appropriate to achieve desired conditions that address recreational values, public safety, or ecological restoration.

Where multiple designations overlap, the plan components associated with the most restrictive designation apply.

## Designated Wilderness (WILD)

### Introduction

The Wilderness Act of 1964 set up a system of wilderness areas across the United States to assure that an increasing population, accompanied by expanding settlement and growing mechanization, did not occupy and modify all areas within the United States and its possessions. These areas are to be administered for the use and enjoyment of the American people and for the preservation of their wilderness character. In addition to the Wilderness Act, the FS provides direction for the management of wilderness through Forest Service Manual 2320, as well as through wilderness management plans which provide wilderness-specific management direction and guidance.

Three designated wilderness areas are located within the Forest either in part or in whole. These wilderness areas are portions of the Bob Marshall and the Scapegoat wilderness' and the entire Gates of the Mountains wilderness. These designated wilderness areas comprise roughly 565,158 acres, which is approximately 20% of the entire forest. Table 19 displays each of these wilderness areas, the GAs each is located within, and the approximate number of acres of each wilderness within the HLC NF.

**Table 19. Designated wilderness areas**

Wilderness	Geographic area	Total wilderness acres within the plan area <sup>1</sup>
Gates of the Mountains	Big Belts	28,440
Bob Marshall	Rocky Mountain Range	351,621
Scapegoat	Upper Blackfoot and Rocky Mountain Range	184,054
Total acres of wilderness in the plan area		564,115

<sup>1</sup>Acres include new additional acres from the National Defense Authorization Act of 2015.

### Desired Conditions (FW-WILD-DC)

- 01** Designated wilderness areas provide for wilderness character as defined by the Wilderness Act and the wilderness areas' enabling legislation.
- 02** Natural ecological processes (e.g., plant succession) and disturbances (e.g., wildfire, insects, and disease) are the primary forces affecting the composition, structure, and pattern of vegetation. Fire plays a role as a natural disturbance agent within designated wilderness areas.
- 03** The large remote areas within designated wilderness areas contribute habitats for species with large home ranges such as wide-ranging carnivores (e.g., grizzly bear) and species found primarily in these habitats, such as mountain goats. Habitat conditions in designated wilderness contribute to wildlife movement within and across the Forest.
- 04** Water bodies and riparian areas provide undisturbed quality habitat for fish, amphibians, and other aquatic-associated species.
- 05** Facilities within designated wilderness provide for the management, protection, and use of the wilderness. Facilities and structures with significant historic values contribute to the wilderness character. Facilities, trails, and signage within wilderness areas are minimal and constructed of rustic, native, or natural-appearing materials.
- 06** Outfitter and guide opportunities provide services that respond to relevant public need.

- 07** The Bob Marshall, Scapegoat, and Gates of the Mountains Wilderness Areas are maintained as Class I Air Quality areas. See also FW-AQ-DC-01.

### Goals (FW-WILD-GO)

- 01** The HLC NF works in collaboration with adjacent national forests to manage the Bob Marshall Wilderness Complex, which includes the Great Bear, Bob Marshall, and Scapegoat Wilderness Areas.

### Guidelines (FW-WILD-GDL)

- 01** To protect water quality and aquatic habitats, grazing of recreational livestock should not be permitted within 100 feet of water sources.
- 02** To protect cave resources, known caves and new cave discoveries should not be signed, disclosed on maps, mentioned in brochures, or have permanent reference marking except when necessary for resource protection.

### Suitability (FW-WILD-SUIT)

- 01** Designated wilderness areas are suitable for existing livestock grazing allotments, but they are not suitable for new or expanded livestock grazing allotments.
- 02** Designated wilderness areas are not suitable for motorized uses or mechanized means of transportation (including bicycles) except as allowed by enabling legislation.
- 03** Designated wilderness areas are not suitable for timber production or timber harvest.
- 04** Designated wilderness areas are not suitable for commercial use of non-timber forest products (e.g., firewood, mushrooms, huckleberries), but are suitable for personal and agency use.
- 05** Designated wilderness areas are not suitable for permanent structures unless they are necessary to meet minimum requirement for the administration of the area.

## Recommended Wilderness Areas (RECWILD)

### Introduction

During plan development or revision, the responsible official is required to “identify and evaluate lands that may be suitable for inclusion in the National Wilderness Preservation System and determine whether to recommend to the Chief of the Forest Service any such lands for wilderness designation” (36 CFR Part 219 and Forest Service Land Management Planning Handbook 1909.12). The process by which lands are recommended for inclusion in the National Wilderness Preservation System is described in 2012 Forest Service Planning Rule and Chapter 70 of the Forest Service Land Management Planning Handbook 1909.12. For detailed information regarding the inventory and evaluation steps the HLC NF followed during this process, including maps and documentation, please see appendix E of the FEIS.

Recommended wilderness areas are only preliminary administrative recommendations; Congress has reserved the authority to make final decisions on wilderness designation. Until such time that Congress designates these areas by law, the following plan components will apply to the identified recommended wilderness areas on the HLC NF.

Table 20 identifies the seven recommended wilderness areas in the 2020 Forest Plan, the GAs they are located within, and the acreage associate with each.

**Table 20. Recommended wilderness acres<sup>1</sup>**

<b>Recommended wilderness area</b>	<b>Geographic area</b>	<b>Acres</b>	<b>Percent of forestwide total</b>
Big Log	Big Belts	7,035	<1
Mount Baldy	Big Belts	8,141	<1
Electric Peak	Divide	18,239	<1
Big Snowies	Snowies	66,894	2
Silver King	Upper Blackfoot	18,568	1
Red Mountain	Upper Blackfoot	2,500	<1
Nevada Mountain <sup>2</sup>	Divide and Upper Blackfoot	31,948	1
Total		153,325	5

<sup>1</sup>Acres are approximate

<sup>2</sup>Portions of the Nevada Mountain RWA are located within both the Divide and Upper Blackfoot GA's.

### Desired Conditions (FW-RECWILD-DC)

- 01** Recommended wilderness areas preserve opportunities for inclusion in the National Wilderness Preservation System. The ecological and social characteristics that provided the basis for each area's suitability for wilderness recommendation are protected and maintained.
- 02** Recommended wilderness areas are characterized by a natural environment where ecological processes such as natural succession, wildfire, avalanches, insects and disease function as the primary forces affecting the environment.
- 03** Recommended wilderness areas provide outstanding opportunities for solitude or primitive and unconfined recreation.

### Standards (FW-RECWILD-STD)

- 01** Within recommended wilderness areas new leases for leasable minerals shall include a no surface occupancy stipulation.

### Suitability (FW-RECWILD-SUIT)

- 01** Motorized and mechanized means of transportation are not suitable in recommended wilderness areas. Exceptions may be made for authorized permitted uses, valid existing uses, or in emergencies involving public health and safety that are determined on a case by case basis.
- 02** Recommended wilderness areas are suitable for restoration activities (such as management ignited fires, active weed management) to protect and/or enhance the wilderness characteristics of these areas.
- 03** Motorized and mechanized equipment (such as chain saws to clear trails) are suitable for accomplishing restoration activities and/or administrative work.
- 04** Recommended wilderness areas are not suitable for timber production or timber harvest.
- 05** Recommended wilderness areas are not suitable for new commercial communication sites and new utility corridors.
- 06** Recommended wilderness areas are not suitable for road construction or reconstruction.

- 07 Recommended wilderness areas are not suitable for new developed recreation sites and/or facilities.
- 08 Recommended wilderness areas are suitable for existing livestock grazing allotments, but they are not suitable for new or expanded livestock grazing allotments.

## Wilderness Study Areas (WSA)

### Introduction

On November 1, 1977, Congress passed the Montana Wilderness Study Act. This Act required the Secretary of Agriculture to study and make recommendations to Congress on the “suitability for preservation as wilderness” of nine separate areas within the national forests in Montana. The Middle Fork Judith and the Big Snowies are two of the areas identified in this legislation that lie within the HLC NF. Wilderness study areas are to be administered by the Secretary of Agriculture “so as to maintain their presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System”.

Until Congress makes a final decision on wilderness or nonwilderness designation, these areas will be managed per the plan direction identified for Wilderness Study Areas in this section. If Congress acts to designate one or both areas as wilderness, the Wilderness Study Area direction would no longer apply and Designated Wilderness plan direction would apply. If Congress acts to release one or both areas from the Act, the Wilderness Study Area direction will no longer apply and management of the released areas would continue under forestwide, and applicable GA and designated area plan direction. See Table 21 for a description of the primary management direction for these areas should Congress act to release these areas without designating as wilderness.

**Table 21. Montana wilderness study areas**

Wilderness study area	GA	Acres <sup>1</sup>	Primary management direction <sup>2</sup> if Congress releases WSAs
Middle Fork Judith	Little Belts	82,127	IRA
Big Snowies	Snowies	87,968	IRA/RWA
Total acres		170,095	

<sup>1</sup>Acres are approximate

<sup>2</sup>Additional forestwide and GA direction would apply

### Desired Conditions (FW-WSA-DC)

- 01 Wilderness study areas are characterized by a natural environment where ecological processes such as natural succession, wildfire, avalanches, insects and disease function as the primary forces affecting the environment.
- 02 Wilderness study areas primarily offer opportunities for primitive recreation, although uses established and allowed prior to the enabling legislation are retained if they maintain the wilderness character and the potential for inclusion in the National Wilderness Preservation System that existed in 1977.

### Standards (FW-WSA-STD)

- 01 Within the wilderness study areas new leases for leasable minerals shall include a no surface occupancy stipulation.



## Suitability (FW-WSA-SUIT)

- 01** Wilderness study areas are not suitable for timber production or timber harvest.
- 02** Wilderness study areas are not suitable for new commercial communication sites or new utility corridors.
- 03** Wilderness study areas are suitable for restoration activities (such as management ignited fires, active weed management) to protect and/or enhance the wilderness characteristics of these areas.
- 04** Motorized and mechanized equipment (such as chain saws to clear trails) is suitable for accomplishing restoration activities and/or administrative work.
- 05** New road construction or reconstruction is not suitable in wilderness study areas. However, reconstruction or rerouting existing roads to eliminate impacts to natural or cultural resources is suitable provided abandoned routes are fully rehabilitated.
- 06** Wilderness study areas are not suitable for new developed recreation facilities.
- 07** Wilderness study areas are suitable for existing livestock grazing allotments, but they are not suitable for new or expanded livestock grazing allotments.
- 08** Wilderness study areas are suitable for motorized and mechanized means of transportation if allocated by forest travel plans, not precluded by other designations or policy, and retained the wilderness character and the potential for inclusion in the National Wilderness Preservation System that existed in 1977.

## Inventoried Roadless Areas (IRA)

### Introduction

The 2001 Roadless Area Conservation Rule (Roadless Rule) established prohibitions and permissions on road construction, road reconstruction, and timber harvesting on 58.5 million acres of NFS lands across the United States. This includes approximately 1.5 million acres of inventoried roadless areas on the HLC NF. The intent of the Roadless Rule is to provide lasting protection for inventoried roadless areas within the NFS in the context of multiple-use management. Specifically, the Roadless Rule prohibits activities that have the greatest likelihood of altering and fragmenting landscapes, resulting in immediate, long-term loss of roadless area values and characteristics, eliminates permanent road construction and reconstruction, thereby reducing fiscal demands and responsibilities, and reduces controversy over management of roadless areas. The unique contribution of inventoried roadless areas is important in maintaining habitats, natural processes, and remote recreation opportunities in the regional and national network of protected lands. Management activities shall follow direction found in the 2001 Roadless Rule (36 CFR 294 Subpart B, published at 66 Fed Reg. 3244-3273).

Inventoried roadless areas are identified in a set of inventoried roadless area maps, contained in the Forest Service Roadless Area Conservation Rule, Volume 2, dated November 2000, or any subsequent update or revisions of those maps (36 CFR 294 Subpart B, published at 66 Fed Reg. 3244-3273). They are held at the national headquarters office of the FS.

Currently, there are approximately 1,499,181 acres of lands within inventoried roadless areas on the HLC NF. Maps of the inventoried roadless areas can be found in appendix A. These inventoried roadless areas constitute approximately 50 percent of the entire land administered by the Forest. Table 22 identifies each

inventoried roadless area, its location within the planning area, and the number of acres of the inventoried roadless area.

**Table 22. Inventoried roadless areas within the plan area**

Inventoried roadless area by GA	Acres <sup>1</sup>
<b>Big Belts GA</b>	
Big Log	8,948
Camas Creek	29,168
Cayuse Mountain	20,131
Devils Tower	7,139
Ellis Canyon	5,574
Grassy Mountain	6,734
Hellgate Gulch	16,809
Holter	1,964
Irish Gulch	7,315
Middleman Mtn./Hedges Mtn.	32,282
Mount Baldy	16,349
<b>Total acres in the Big Belts GA</b>	<b>152,413</b>
<b>Castles GA</b>	
Castle Mountains	29,386
<b>Total acres in the Castles GA</b>	<b>29,386</b>
<b>Crazies GA</b>	
Box Canyon	12,574
Crazy Mountains	24,924
<b>Total acres in the Crazies GA</b>	<b>37,498</b>
<b>Divide GA</b>	
Electric Peak <sup>3</sup>	27,858
Jericho Mountain	8,440
Lazyman Gulch	11,608
Nevada Mountain <sup>2</sup>	16,085
<b>Total acres in the Divide GA</b>	<b>63,991</b>
<b>Elkhorns GA</b>	
Elkhorns	75,415
<b>Total acres in the Elkhorns GA</b>	<b>75,415</b>
<b>Highwoods GA</b>	
Highwood Baldy	15,293
Highwoods	24,360
<b>Total acres in the Highwoods GA</b>	<b>39,653</b>
<b>Little Belts GA</b>	
Big Baldy	43,102
Bluff Mountain	38,033
Calf Creek	10,100

<b>Inventoried roadless area by GA</b>	<b>Acres<sup>1</sup></b>
Eagle Park	5,908
Granite Mountain	10,330
Middle Fork Judith	9,707
Middle Fork Judith WSA	81,069
Mount High	33,461
North Fork Smith	8,438
Paine Gulch	7,869
Pilgrim Creek	44,572
Sawmill Creek	11,578
Spring Creek	17,827
Tenderfoot-Deep Creek	85,546
Tollgate-Sheep	24,026
TW Mountain	8,381
<b>Total acres in the Little Belts GA</b>	<b>439,947</b>
<b>Rocky Mountain Range GA</b>	
Bear-Marshall-Scapegoat-Swan <sup>2</sup>	395,248
Sawtooth	15,687
<b>Total acres in the Rocky Mountain Range GA</b>	<b>359,596</b>
<b>SnowiesGA</b>	
Big Snowies	9,254
Big Snowy Mountains WSA	87,965
<b>Total acres in the Snowies GA</b>	<b>97,219</b>
<b>Upper Blackfoot GA</b>	
Anaconda Hill	18,536
Bear-Marshall-Scapegoat-Swan <sup>2</sup>	51,339
Crater Mountain	9,261
Lincoln Gulch	8,247
Nevada Mountain <sup>2</sup>	34,027
Ogden Mountain	12,144
Silver King-Falls Creek	6,808
Specimen Creek	12,362
<b>Total acres in the Upper Blackfoot GA</b>	<b>152,724</b>
<b>Total inventoried roadless area acres in the HLC NF planning area</b>	<b>1,499,181</b>

<sup>1</sup>All acreages are approximate

<sup>2</sup>Located in more than one GA; acres reflected are what are in that particular GA.

## Desired Conditions (FW-IRA-DC)

- 01** Inventoried roadless areas provide large, undisturbed, and unfragmented areas of land. These large land areas sustain high quality or undisturbed soil, water, and air and a diversity of plant and animal communities. They also provide for secure habitats for a variety of fish and wildlife species that are dependent upon large, undisturbed, unfragmented areas of land.

- 02** Within inventoried roadless areas, natural, ecological processes and disturbances (such as wildfire, insects, and disease) are the primary forces affecting the composition, structure, and pattern of vegetation. Inventoried roadless areas contribute to reference landscapes for future study and understanding of natural ecological processes.
- 03** Landscapes in inventoried roadless areas are naturally appearing with high scenic quality.
- 04** Inventoried roadless areas provide remote primitive and semiprimitive recreation opportunities in natural settings.
- 05** Inventoried roadless areas protect sources of public drinking water, traditional cultural properties and sacred sites, and locally identified unique characteristics, where they exist.

### Suitability (FW-IRA-SUIT)

- 01** Inventoried roadless areas are unsuitable for timber production. However, timber harvest is suitable within inventoried roadless areas outside of wilderness study areas and recommended wilderness areas to provide for other multiple use values when consistent with the 2001 Roadless Area Conservation Rule.
- 02** Forest system roads (that are managed as part of the forest transportation system) in inventoried roadless areas are suitable for motorized and mechanized means of transportation.
- 03** Inventoried roadless areas are suitable for restoration activities (such as management ignited fires, active weed management) to protect and/or enhance the roadless area values and characteristics of these areas.

### Eligible Wild and Scenic Rivers (WSR)

#### Introduction

Congress passed the Wild and Scenic Rivers Act in 1968 for the purpose of preserving rivers with outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values in a free-flowing condition for the enjoyment of present and future generations. This act is recognized for safeguarding the special character of these rivers while also allowing for their appropriate use and development. Eligible and/or suitable wild, scenic, or recreational rivers retain their free-flowing status, their preliminary classification, and the outstandingly remarkable values for which they have been identified. Eligible river segments are classified as wild, scenic, or recreational.

The designation of eligible wild and scenic rivers pertains only to federally owned lands. Rivers and segments of rivers that pass through private lands were not considered in the eligibility study. Wild and scenic river eligibility is only a preliminary administrative recommendation; Congress has reserved the authority to make final decisions on wild and scenic river designation. A wild and scenic river suitability study has not been conducted on these rivers, so all eligible rivers will be protected until such time as a suitability study is completed, or until such time that Congress makes a designation decision. The plan components are based off FSH 1909.12 Chapter 80 which provides guidance on the protection of eligible wild and scenic rivers.

Based on the eligibility study, the HLC NF identified 45 rivers as eligible for inclusion as Wild and Scenic Rivers. Table 23 identifies those rivers, the GAs they are located within, and the mileage associated with each river. For detailed information about the eligibility study, including maps and documentation, please see appendix F of the FEIS.

**Table 23. Eligible river segments by GA**

River name	Segment description	Miles	Classification	Outstanding remarkable values	Past eligibility notes
<b>Big Belts GA</b>					
Beaver Creek	<u>Segment 1:</u> From mouth to private land boundary.	3.4	Recreational	Recreation Geology Cultural	Eligible in 1989 for Fish.
	<u>Segment 2:</u> From private boundary to private boundary.	0.7	Recreational		
	<u>Segment 3:</u> From private boundary to Bridge Creek, west of Nelson.	1.4	Recreational		
	<u>Segment 4:</u> From Sheep Gulch to Pike Creek.	3.7	Recreational		
White Creek	From FS boundary west to private boundary.	3.0	Recreational	Fish	
Missouri River	From Hauser Dam to Cochran Gulch.	2.2	Recreational	Recreation (Fishing) Geology Wildlife	Eligible in 1989 for Rec, Geology, Fish, Wildlife, and Natural.
Ray Creek	From FS boundary to headwaters.	3.4	Scenic	Fish	
<b>Divide GA</b>					
Little Blackfoot River	<u>Segment 1:</u> From private boundary to private boundary near Charter Oaks.	0.8	Recreational	Fish Cultural	Eligible in 1989 for Fish.
	<u>Segment 2:</u> From private land boundary south to the next private land boundary.	0.5	Recreational		
	<u>Segment 3:</u> From private land boundary south and west to the private land boundary north of Kading campground.	4.4	Recreational		
	<u>Segment 4:</u> From private land boundary near Kading campground south to the confluence with a no name stream near the intersection of Trail 329 with Trail 326.	1.3	Recreational		
	<u>Segment 5:</u> From the confluence with a no name stream near the intersection of Trail 329 with Trail 326 to the headwaters.	7.7	Wild		
High Ore Creek	From FS boundary to headwaters.	1.0	Scenic	Fish	

River name	Segment description	Miles	Classification	Outstanding remarkable values	Past eligibility notes
Kady Gulch	From FS boundary to mining claim boundary.	1.1	Recreational	Fish	
South Fork Quartz	From mouth to mining claim boundary.	2.2	Recreational	Fish	
Skelly Gulch	From FS boundary to headwaters.	2.5	Scenic	Fish	
<b>Elkhorns GA</b>					
Staubach Creek	From FS boundary to headwaters.	2.4	Scenic	Fish	
<b>Highwoods GA</b>					
North Fork Highwood Creek	From fish barrier to headwaters.	3.4	Scenic	Fish	
Big Coulee Creek	<u>Segment 1:</u> From the natural cascade fish barrier to the confluence with a no name stream from the east.	0.4	Scenic	Fish	
	<u>Segment 2:</u> From the confluence with the no name creek to the upper tributary fork.	1.6	Wild	Fish	
Cottonwood Creek	From FS boundary to headwaters.	2.5	Scenic	Fish	
North Fork Little Belt Creek	From FS boundary to headwaters.	2.1	Wild	Fish	
<b>Little Belts GA</b>					
Pilgrim Creek	<u>Segment 1:</u> From cascade fish barrier to private land boundary.	7.0	Scenic	Fish	
	<u>Segment 2:</u> From private land boundary to the headwaters.	3.7	Scenic	Fish	
Middle Fork Judith River	<u>Segment 1:</u> From FS boundary to private land boundary.	1.6	Recreational	Cultural	Eligible in 1989 for Cultural.
	<u>Segment 2:</u> From private land boundary to Arch Coulee.	3.0	Recreational		
South Fork Judith River	<u>Segment 1:</u> From Bower Creek to Dry Pole Creek.	3.6	Recreational	Fish Cultural	
	<u>Segment 2:</u> From Bluff Mountain Creek to a no name creek.	7.4	Scenic		
	<u>Segment 3:</u> From no name creek to the headwaters.	3.9	Recreational		

River name	Segment description	Miles	Classification	Outstanding remarkable values	Past eligibility notes
Smith River <i>(NFS lands only)</i>	The Smith River is comprised of 17 small segments of Forest Service lands interspersed with private lands. Only Forest Service lands are considered for eligibility. To view individual segments, see detail maps located in the summary.	17.9	Scenic	Scenic Recreation Geology Wildlife Cultural	Eligible in 1989 for Rec, Scenery, Geology, Fish, Wildlife and Cultural.
Tenderfoot Creek	<u>Segment 1:</u> From FS boundary to private land boundary.	14.6	Scenic	Recreation Fish	Eligible in 1989 for Fish.
	<u>Segment 2:</u> From private land boundary to private land boundary	0.7	Scenic		
	<u>Segment 3:</u> From private land boundary to private land boundary.	0.1	Scenic		
	<u>Segment 4:</u> From private land boundary to Iron Mines Creek.	4.9	Scenic		
<b>Rocky Mountain Range GA</b>					
South Fork Two Medicine River	<u>Segment 1:</u> From FS boundary to Box Creek.	3.4	Wild	Scenery Cultural	
	<u>Segment 2:</u> From private land boundary to headwaters.	9.5	Wild		
Badger Creek	From FS boundary to confluence with North and South Badger Creeks.	7.3	Wild	Cultural Scenery	
North Badger Creek	From confluence with main Badger and South Badger Creeks to headwaters.	10.4	Wild	Fish Cultural	Eligible in 1989 for Fish.
South Badger Creek	From confluence with main Badger and North Badger Creek to headwaters.	10.9	Wild	Cultural	
Lee Creek	From mouth to headwaters.	4.6	Wild	Fish	
Badger Cabin Creek	From mouth to headwaters.	3.2	Wild	Fish	
Red Poacher Creek	From confluence with North Badger Creek to headwaters.	3.1	Wild	Fish	
North Fork Birch Creek	From FS boundary to headwaters.	7.8	Wild	Cultural Scenery	Eligible in 1989 for Scenery and Geology.
Middle Fork Birch Creek	From confluence to the headwaters.	5.2	Wild	Scenery Cultural	

River name	Segment description	Miles	Classification	Outstanding remarkable values	Past eligibility notes
South Fork Birch Creek	From mouth of Swift Reservoir to the headwaters.	9.8	Wild	Scenery Recreation Fish Wildlife Cultural	
North Fork Deep Creek	From FS boundary to headwaters.	5.5	Wild	Scenery	
North Fork Teton River	Segment 1: From FS Boundary to road crossing above Elko Campground (bottom of the box canyon).	5.5	Recreation	Recreation Scenery Wildlife Fish	
	Segment 2: From road crossing above Elko Campground to the wilderness boundary (through the box canyon).	5.3	Scenic		
	Segment 3: From the wilderness boundary to the headwaters.	6.4	Wild		
Middle Fork North Fork Teton River	From the confluence with North Fork Teton River to headwaters.	6.8	Scenic	Fish	
Waldron Creek	From the confluence with North Fork Teton River to headwaters.	4.3	Recreational	Fish	
North Fork Sun River	From wilderness boundary to the headwaters.	26.1	Wild	Scenery Recreation	
South Fork Sun River	From wilderness boundary to headwaters.	26.2	Wild	Recreation Wildlife	
West Fork South Fork Sun River	From mouth to junction with Ahorn Creek.	8.4	Wild	Recreation Wildlife	
Green Fork Straight Creek	From mouth to headwaters.	5.9	Wild	Scenery Geology	Eligible in 1989 for Scenery and Geology.
Wood Creek	From below the dam on Wood Lake to the confluence with Straight Creek.	7.1	Recreational	Wildlife	
Dearborn River	From FS boundary to Whitetail Creek.	6.5	Wild	Scenery	Eligible in 1989 for Scenery.
<b>Snowies GA</b>					
Swimming Woman Creek	From FS boundary to headwaters.	3.9	Scenic	Scenery Geology	
East Fork Big Spring Creek	From south end of Section 33 to headwaters.	5.3	Wild	Fish	
<b>Upper Blackfoot GA</b>					
Alice Creek	From FS boundary to headwaters.	6.5	Recreational	Cultural	



River name	Segment description	Miles	Classification	Outstanding remarkable values	Past eligibility notes
Copper Creek	Segment 1: From FS boundary to private land boundary.	1.1	Recreational	Fish	Eligible in 1989 for Fish.
	Segment 2: From private land boundary to the headwaters.	12.0	Recreational		
Landers Fork	Segment 1: From FS boundary to private land boundary.	0.3	Scenic	Fish	
	Segment 2: From private land boundary to the headwaters.	18.5	Wild		
Snowbank Creek	From confluence with Copper Creek to headwaters.	4.4	Scenic	Fish	
<b>Total miles of eligible sections of wild and scenic rivers</b>					<b>360.8 miles</b>

Desired Conditions (FW-WSR-DC)

- 01 Eligible river segments retain their free-flowing characters and the outstandingly remarkable values for which they have been identified.
- 02 Eligible river segments retain their preliminary classifications of wild, scenic, or recreational unless they are changed through an act of Congress or determined not suitable through a suitability study.

Guidelines (FW-WSR-GDL)

- 01 To protect the eligibility of river segments, interim protection measures should be implemented within ¼ mile of either side of identified eligible river segment. These interim protective measures apply to the future use and management along the eligible river until they are changed through an act of Congress or unless a river is determined not suitable for designation through a suitability study.

Table 24 describes the interim protection measures applied to the management of eligible wild, scenic, or recreational river segments. For additional information on river segments please see Appendix F of the FEIS.

**Table 24. Interim protection measures for eligible river segments**

Project/activity	Interim protection measures		
	Wild	Scenic	Recreational
Water resource projects: Dams Diversions Flood control Activities that affect free-flow	Wild, Scenic, and Recreational: Water resource projects on eligible rivers should be analyzed as to their effects on a rivers free-flow, water quality, and identified outstanding remarkable values, with adverse effects to be prevented to the extent of the existing agency authority (such as special use authority).		

Project/activity	Interim protection measures		
	Wild	Scenic	Recreational
Hydroelectric power facilities	Wild, Scenic, and Recreational: FS-identified eligible rivers should be protected pending a suitability determination.		
Minerals: locatable	Wild, Scenic, and Recreational: Subject to valid existing rights, existing or new mining activity on an identified eligible river are subject to regulations in 36 Code of Federal Regulations Part 228, subpart A and should be conducted in a manner that minimizes surface disturbance, sedimentation, pollution, and visual impairment.		
Leasable	Leases, licenses, and permits under mineral leasing laws should include conditions necessary to protect the values of the river corridor that make it eligible for inclusion in the national system.		
Minerals Saleable	Disposal of saleable mineral material is prohibited.	Disposal of saleable mineral material is allowed if the values of the river corridor that make it eligible for inclusion in the national system are protected.	
Transportation system	<p>Roads and railroads are generally not compatible.</p> <p>Prevent actions related to the road system that would preclude protection of the river as wild. Do not plan roads outside of the corridor that would adversely affect the wild classification.</p> <p>New trail construction should generally be designed for nonmotorized users.</p> <p>New airfields may not be developed.</p>	<p>Roads and railroads may parallel the river for short segments or bridge the river if such construction protects the river values, including the free-flowing character.</p> <p>Bridge crossings and access points are allowed.</p> <p>New trail construction and airfield development should be compatible and fully protect river outstanding remarkable values.</p>	<p>Roads and railroads are permitted to parallel the river if such construction fully protects river outstanding remarkable values, including the free-flowing character.</p> <p>Bridge crossings and access points are allowed.</p> <p>New trail construction and airfield development should be compatible and fully protect river outstanding remarkable values.</p>
Utility proposals	Wild, Scenic, and Recreational: New transmission lines such as gas lines, water lines, and similar linear features are not compatible with eligible wild and scenic rivers and are discouraged. Any portion of a utility proposal that has the potential to affect the river's free-flowing character must be evaluated as a water resources project.		
Recreation developments	<p>Major public use areas such as large campgrounds, interpretive centers, or administrative headquarters must be located outside of the river corridor.</p> <p>Minimum facilities such as toilets and refuse containers may be provided to protect and enhance water quality and other river values.</p> <p>Facilities must be located and designed to</p>	<p>Public facilities, such as moderate sized campgrounds, simple sanitation and convenience facilities, public information centers, administration sites, and river access developments are allowed.</p> <p>Facilities must be located and designed to harmonize with the natural and cultural settings, must protect river values, including water quality, and must be screened from view to the extent possible.</p>	<p>Recreation, administration, and river access facilities may be in close proximity to the river. However, recreational classification does not require recreation development.</p> <p>Facilities must be located and designed to harmonize with the natural and cultural settings, must protect river values, including water quality, and must be screened from view to the extent possible.</p>

Project/activity	Interim protection measures		
	Wild	Scenic	Recreational
	harmonize with the primitive character, must protect river values, and must be screened from view to the extent possible.		
Motorized travel	Motorized travel on land or water may be permitted but is generally not compatible. Where motorized travel is deemed necessary, uses should be carefully defined and impacts mitigated.	Motorized travel on land or water may be permitted, prohibited, or restricted to protect river outstanding remarkable values.	
Wildlife and fish projects	<p>Construction of minor structures and vegetation management to protect and enhance wildlife and fish habitat should harmonize with the area's primitive character and protect river outstanding remarkable values.</p> <p>Proposed wildlife or fisheries restoration or enhancement projects that have potential to affect the rivers free-flowing character must be evaluated as a water resources project.</p>	<p>Construction of structures and vegetation management designed to protect and enhance wildlife and fish habitat should harmonize with the area's largely undeveloped character and protect river outstanding remarkable values.</p> <p>Any portion of a wildlife or fisheries restoration or enhancement projects that have potential to affect the rivers free-flowing character must be evaluated as a water resources project.</p>	<p>Construction of structures and vegetation management designed to protect and enhance wildlife and fish habitat should fully protect river outstanding remarkable values.</p> <p>Any portion of a wildlife or fisheries restoration or enhancement projects that have potential to affect the rivers free-flowing character must be evaluated as a water resources project.</p>
Vegetation management	Cutting of trees and other vegetation is not permitted except when needed in association with a primitive recreation experience, to protect users, or to protect identified outstanding remarkable values.	A range of vegetation management and timber harvest practices are allowed, if these practices are designed to protect users, or protect, restore, or enhance the river environment, including the long-term scenic character.	
Domestic livestock grazing	<p>Domestic livestock grazing should be managed to protect outstanding remarkable values.</p> <p>Existing structures may be maintained.</p> <p>New facilities may be developed so long as they maintain the outstanding remarkable</p>	<p>Domestic livestock grazing should be managed to protect outstanding remarkable values.</p> <p>Existing structures may be maintained.</p> <p>New facilities may be developed so long as they maintain the outstanding remarkable values and the</p>	<p>Domestic livestock grazing should be managed to protect outstanding remarkable values.</p> <p>Existing structures may be maintained.</p> <p>New facilities may be developed so long as they maintain the outstanding remarkable values for which the river was found eligible.</p>

Project/activity	Interim protection measures		
	Wild	Scenic	Recreational
	values and the area's primitive character.	area's largely undeveloped character.	

## National Recreation Trails (NRT)

### Introduction

National recreation trails are a network of scenic, historic, and recreational trails created by the National Trails System Act (Public Law 90-543) which was signed into law by President Lyndon B. Johnson on October 2, 1968. The purpose of the act was "to promote the preservation of, public access to, travel within, and enjoyment and appreciation of the open-air, outdoor areas and historic resources of the Nation." This act authorized three types of trails: 1) national scenic trails, 2) national recreation trails, and 3) connecting-and-side trails. In 1978 National Historic Trails were also added to the national trail system.

While national scenic trails and national historic trails may only be designated by Congress, national recreation trails may be designated by the Secretary of Interior or the Secretary of Agriculture to recognize exemplary trails of local and regional significance in response to an application from the trails managing agency or organization. Through designation, these trails are recognized as part of America's National Trail System. These trails provide for outdoor recreation needs; promote enjoyment, appreciation, and preservation of open-air, outdoor areas and historic resources; and encourage public access and citizen involvement.

The national recreation trails on the HLC NF are generally single track, linear features that pass through a great variety of physical features ranging from natural-appearing settings to locations where developments are noticeable. Table 25 displays the national recreation trails on the HLC NF.

**Table 25. National recreation trails**

Geographic area	Trail name	Trail number	Miles <sup>1</sup>
Big Belts	Hanging Valley	247	6
Divide	Mt. Helena	373	6
Little Belts	North Fork Deep Creek	303	6
	Ming Coulee	307	3
	South Fork Deep Creek	316	5
	Blankenbaker	320	4
	Deep Creek Ridge	338	6
	Monument Ridge	339	2
Snowies	Crystal Lake	404	2

<sup>1</sup>Miles are approximate and rounded to the nearest mile

### Desired Conditions (FW-NRT-DC)

- 01** National recreation trails enhance and/or protect the nature and purposes for which the trails were established.
- 02** National recreation trails outside of wilderness are clearly marked and identified with the national recreation or scenic trail symbol, especially at trail termini and junctions with side trails.

- 03 Access to national recreation trails allows for public uses, such as interpretation and education, in a manner that does not impair the feature(s) or values for which the individual trail was established.

**Guidelines (FW-NRT-GDL)**

- 01 To protect the resource values along national recreation trails, management activities adjacent to the trails should maintain or enhance the valued attributes for which the trails were established.

**Continental Divide National Scenic Trail (CDNST)**

The Continental Divide National Scenic Trail was designated by Congress in 1978. This 3,100 mile long trail follows the Continental Divide and traverses nationally significant scenic terrain and areas rich in the heritage and life of the Rocky Mountain west. In entirety, the trail passes through portions of Montana, Idaho, Wyoming, Colorado, and New Mexico and is administered by the FS in cooperation with the National Park Service, Bureau of Land Management, and tribal, state and local governments, and numerous partner groups. Management for the Continental Divide National Scenic Trail is outlined in the latest Continental Divide National Scenic Trail Comprehensive Management Plan.

Approximately 273 miles of the Continental Divide National Scenic Trail are located in the HLC NF. Approximately 65 miles of the trail is in the Upper Blackfoot GA, approximately 68 miles is located within the Divide GA, and approximately 140 miles is located within the Rocky Mountain Range GA. See Table 26 for more information.

**Table 26. Continental Divide National Scenic Trail**

Geographic area	Trail name	Trail #	Miles <sup>1</sup>
Divide	Continental Divide	337	68
Rocky Mountain Range	Two-Med-Heart Butte	101	4
	North Fork Badger	103	1
	North Fork Sun	110	4
	Rock Creek	111	12
	Open Fork	116	6
	North Fork Red Shale	130	7
	Summit Campground Cutoff	133	2
	Elk Calf Mountain	137	10
	Lee Creek-Sidney Creek	141	5
	Kip Creek	142	3
	Elbow Creek	145	4
	Muskrat Creek	147	7
	North Wall	174	11
	Wall Trail	175	6
	My Lake	194	4
	South Fork Sun	202	13
	West Fork Sun	203	16
	Dearborn River	206	9
	Blacktail-Landers Fork	207	3
Straight Creek	212	10	
Elbow Pass	248	3	

Geographic area	Trail name	Trail #	Miles <sup>1</sup>
Upper Blackfoot	Continental Divide National Scenic Trail	440	65

<sup>1</sup>Miles are approximate and rounded to the nearest tenth

### Desired Conditions (FW-CDNST-DC)

- 01** The Continental Divide National Scenic Trail is a well-defined trail that provides for high-quality, primitive and/or semiprimitive hiking and horseback riding opportunities, and other compatible nonmotorized trail activities, in a highly scenic setting along the Continental Divide. The notable scenic, natural, historic, and cultural resources along the trail's corridor are conserved. Where possible, the trail provides visitors with expansive views of the natural landscapes along the Continental Divide.
- 02** View sheds from the Continental Divide National Scenic Trail have high scenic values. The foreground of the trail (up to 0.5 mile on either side) is naturally-appearing, and generally appears unaltered by human activities. The potential to view wildlife is high and evidence of ecological processes such as fire, insects, and diseases exist.
- 03** The Continental Divide National Scenic Trail corridor's setting is consistent with or complements a primitive or semiprimitive nonmotorized setting. The trail may intermittently pass through more developed settings in order to provide for a continuous route. Side trails to the Continental Divide National Scenic Trail enhance the experience along the main trail.
- 04** The Continental Divide National Scenic Trail is accessible from access points that provide various opportunities to select the type of terrain, scenery, and trail length (ranging from long-distance to day use) that best provide for the compatible outdoor recreation experiences being sought. Wild, remote, backcountry segments of the route provide opportunities for solitude, immersion in natural landscapes, and primitive outdoor recreation. Front-country and more easily accessible trail segments complement local community interests and needs and help contribute to their sense of place.
- 05** User conflicts among Continental Divide National Scenic Trail users are infrequent.
- 06** The Continental Divide National Scenic Trail is well maintained, signed, and passable. Alternate routes provide access to the trail in the case of temporary closures resulting from natural events, such as fire or flood, or land management activities.
- 07** Trailside interpretation at key locations and visitor information enhance visitor appreciation of the outdoors and increase awareness of the cultural and historical importance of the lands along the Continental Divide.

### Goals (FW-CDNST-GO)

- 01** Active partnerships and cooperative relationships are emphasized to engage a wide range of people, partner organizations, communities, volunteers, federal, tribal, and state land and wildlife managers in the conservation of valuable natural, wild land, scenic, historic, and cultural resources and programs along the Continental Divide.

### Objectives (FW-CDNST-OBJ)

- 01** Reroute at least one mile of the Continental Divide National Scenic Trail to: improve scenic viewing opportunities, reconstruct trail to standard, and/or provide for a nonmotorized experience.

## Standards (FW-CDNST-STD)

- 01** No surface occupancy for oil and gas or geothermal energy leasing activities shall be permitted within the Continental Divide National Scenic Trail corridor (0.5 miles either side of the trail tread).
- 02** No common variety mineral extraction shall occur within the Continental Divide National Scenic Trail corridor.

## Guidelines (FW-CDNST-GDL)

- 01** To retain or promote the character for which the trail was designated, new or relocated trail segments should be located primarily within settings consistent with or complementing primitive or semi-primitive nonmotorized recreation opportunity spectrum classes. Road and motorized trail crossings and other signs of modern development should be avoided to the extent practicable.
- 02** To protect or enhance the scenic qualities of the Continental Divide National Scenic Trail, management activities should be consistent with, or make progress toward achieving scenic integrity objectives of high or very high within the foreground of the trail (up to 0.5 mile either side). In planning activities outside the foreground, managers should consider the mid ground and background and the effects on scenic integrity and trail experience given the seen area from the trail segments.
- 03** If forest health projects result in impacts to the scenic integrity of the trail, mitigation measures should be included, such as screening, feathering, and other scenery management techniques to minimize visual impacts within and adjacent to the trail corridor (within visible foreground of the Continental Divide National Scenic Trail at a minimum).
- 04** To promote a nonmotorized setting, the Continental Divide National Scenic Trail should not be permanently relocated onto routes open to motor vehicle use.
- 05** The minimum trail facilities necessary to accommodate the amount and types of use anticipated on any given segment should be provided in order to protect resource values and for health and safety, not for the purpose of promoting user comfort. The purpose is to preserve or promote a naturally appearing setting.
- 06** To protect the Continental Divide National Scenic Trail's scenic values, special use authorizations for new communication sites, utility corridors, and renewable energy sites should not be allowed within the seen area of the visible foreground (up to 0.5 mile) and middle ground (up to 4 miles) view sheds. Exceptions may be allowed where needed for safety of the public or employees associated with maintenance, management, or use of those sites.
- 07** To preserve and/or promote a naturally appearing setting, new linear utilities and rights-of-way should be limited to a single crossing of the trail unless additional crossings are documented as the only prudent and feasible alternative.
- 08** To promote a naturally-appearing setting along the Continental Divide National Scenic Trail, the development of any new roads and trails administratively designated via travel management decision within or across the trail corridor should minimize impacts to the scenic, natural, and experiential values of the trail. Exceptions may be allowed if new routes are: (a) required by law to provide access to private lands, (b) necessary for emergency protections of life and property, or (c) determined to be the only prudent and feasible option.
- 09** Using the Continental Divide National Scenic Trail for landings or as a temporary road for any purpose should not be allowed unless no other safe route is available for the implementation of the

project. Hauling or skidding along the Continental Divide National Scenic Trail itself should be allowed only: 1) where the Continental Divide National Scenic Trail is currently located on an open road or to address hazard tree removal, and 2) no other haul route or skid trail options are available. Design criteria should be used to minimize impacts to the trail infrastructure, and any necessary post-activity trail restoration should be a priority for the project's rehabilitation plan. The purpose is to provide for a naturally appearing setting and to avoid visual, aural, and resource impacts.

- 10** To preserve and/or promote a naturally appearing setting, unplanned fires in the foreground (up to 0.5 mile) of the Continental Divide National Scenic Trail should be managed using minimum impact suppression tactics or other tactics appropriate for the protection of Continental Divide National Scenic Trail values, if they can safely be implemented at the discretion of the incident commander. Heavy equipment line construction within the Continental Divide National Scenic Trail corridor should not be allowed unless necessary for protection of life and property.

### Lewis and Clark National Historic Trail (LCNHT)

In 1968, the National Trails System Act (Public Law 90-543) directed that the Lewis and Clark Trail be "studied in accordance with the objectives outlined in that law". After 10 years of study, in 1978 National Historic Trails were added to the National Trails Act and it was at this time that the Lewis and Clark National Historic Trail was added to the system. The purpose of the Lewis and Clark National Historic Trail is to commemorate the 1804 to 1806 Lewis and Clark expedition through the identification; protection; interpretation; public use and enjoyment; and preservation of historic, cultural, and natural resources associated with the expedition and its place in United States and tribal history.

The entire route is 3,700 miles long and extends from Wood River, Illinois, to the mouth of the Columbia River in Oregon. The overall trail is administered by the National Park Service, but individual sites along the trail are managed by different federal, state, local, tribal, and private organizations and agencies. This historic trail is not a traditional hiking-only trail and can also be traveled by car, boat, and/or horseback.

Many interpretive centers, signs, and recreation facilities are located along the entire length of the trail. Within the planning area, the Lewis and Clark National Historic Trail Interpretive Center, located in Great Falls, Montana, and numerous interpretive signs and sites interpret the overall journey and site-specific events along the trail. Recreation sites on the HLC NF that specifically tie to the Lewis and Clark National Historic Trail include the interpretive center in Great Falls, Lewis and Clark Pass in the Alice Creek area in the Upper Blackfoot GA, and the Meriwether Day Use Site within the Big Belts GA. The Lewis and Clark National Historic Trail is located on the Designated Areas maps in appendix A.

### Desired Conditions (FW-LCNHT-DC)

- 01** The Lewis and Clark National Historic Trail provides visitors the opportunity to learn about the 1805-1806 Lewis and Clark Expedition and to experience and appreciate the natural environment that the Corps of Discovery experienced in their travels.
- 02** The Lewis and Clark National Historic Trail is clearly marked and identified, especially at trail termini and junctions with side trails.
- 03** Trailside interpretation and related visitor information services enhance visitor appreciation of the outdoors and the natural resources, history, and scenic values along the Lewis and Clark National Historic Trail. Interpretation provides multiple perspectives and accurate information.



## Goals (FW-LCNHT-GO)

- 01** The operation, maintenance, and delivery of interpretation along the Lewis and Clark National Historic Trail is supported by partnerships and volunteer programs. Partners and volunteers also assist the FS in providing accurate historic and natural resources education and interpretation about the Lewis and Clark National Historic Trail, as well as relationship with the Continental Divide National Scenic Trail.

## Guidelines (FW-LCNHT-GDL)

- 01** To protect the historically relevant natural and cultural resources along the trail, effects to the trail (including user capacity issues) should be identified and considered in project level planning.
- 02** Vegetation management activities should only occur when consistent with the enhancement, protection, and/or interpretation of the Lewis and Clark National Historic Trail (up to 0.25 mile either side of the trail), to protect the historically relevant natural and cultural resources along the trail.

## Lewis and Clark National Historic Trail Interpretive Center (LCIC)

### Introduction

On October 28, 1988 Congress passed Public Law 100-552, establishing the Lewis and Clark National Historic Trail Interpretive Center, which opened its doors to the public on May 5, 1998. The building is approximately 25,000 square feet and includes a 158 seat theater, a 6,000 square foot exhibit hall, and a 1,500 square foot resource center that are used for educational programs, trainings, and receptions. The facility is open year-round and serves about 45,000 visitors and 4,000 students annually. Approximately 20 percent of the visitors to the center come from foreign countries, primarily Canada.

### Desired Conditions (FW-LCIC-DC)

- 01** Interpretation and education programming at the Lewis and Clark National Historic Trail Interpretive Center enhance visitor understanding and appreciation for the history surrounding the journey of Lewis and Clark through central Montana landscapes during the years of 1805-1806.
- 02** Interpretive and education themes at the Lewis and Clark National Historic Trail Interpretive Center focus on early exploration (Lewis and Clark), Native American history, mining, trapping, agricultural settlement, and the natural resources found throughout the area. Interpretation and education themes include natural resources management and history within the surrounding national forest.

### Goals (FW-LCIC-GO)

- 01** The Lewis and Clark National Historic Trail Interpretive Center is located on the Lewis and Clark National Historic Trail and has active partnerships both nationally and within the local community. Volunteerism is a valued resource and provides strong connections to the local community while providing a service to the FS in the management of the interpretive center.
- 02** The Lewis and Clark National Historic Trail Interpretive Center contributes to the economic sustainability of the local community as well as to the state of Montana.

## Research Natural Areas (RNA)

### Introduction

The HLC NF has 12 existing and two proposed research natural areas, which total approximately 18,447 acres. See Table 27. These research natural areas are part of a national network of ecological areas designated in perpetuity for research, education, and/or to maintain biological diversity of NFS lands. They serve as baseline areas for nonmanipulative research, observation, and study. Research natural areas are cooperatively managed with the Rocky Mountain Research Station. Additional guidance for the protection and management of RNAs is provided in FSM 4063.

The proposed research natural areas are Granite Butte and Poe-Manley. If approved, these areas would be additions to the national network. Other additions to the network may be identified in the future.

**Table 27. Currently designated and proposed research natural areas**

Research natural area	GA	Purpose for establishment	Designated	Proposed	Acres <sup>1</sup>
Cabin Gulch	Big Belts	Douglas-fir with bunchgrass understory.	X		2,418
Poe Manley	Elkhorns	Montane grassland dominated by rough fescue		X	1,578
Bartleson Peak	Little Belts	Spruce/cleft leaf groundsel and cinquefoil/Idaho fescue habitat types	X		1,603
O'Brien Creek	Little Belts	A variety of riparian vegetation types, an un-trenched, moderate to gentle gradient stream.	X		697
Onion Park	Little Belts	Tufted hairgrass-sedge, subalpine fir/grouse whortleberry and subalpine fir/bluejoint reedgrass; mesic meadow	X		1,207
Paine Gulch	Little Belts	Long-lived seral Douglas-fir on subalpine fir series sites, seral ponderosa pine and limber pine communities on Douglas-fir series sites.	X		2,402
Wagner Basin	Rocky Mountain Range	Unique wetland complexes containing large populations of Giant helleborine and yellow lady's-slipper.	X		940
Walling Reef	Rocky Mountain Range	High-elevation forest, shrubland, grassland, wetland, and alpine ecosystems.	X		833
Big Snowy-Greathouse Peak	Snowies	Alpine tundra plant communities on an alpine plateau composed of calcareous (limestone) substrate.	X		1,280
Big Snowy – Old Baldy	Snowies	Alpine tundra plant communities on an alpine plateau composed of calcareous (limestone) substrate.	X		1,866
Minerva Creek	Snowies	Ponderosa pine/snowberry interspersed with meadows.	X		340
Granite Butte	Upper Blackfoot	Subalpine fir and white bark pine habitat types, high alpine nonforest habitat types and wet meadows.		X	394

Research natural area	GA	Purpose for establishment	Designated	Proposed	Acres <sup>1</sup>
Indian Meadows	Upper Blackfoot	Douglas fir/blue huckleberry, Douglas fir/pine grass, Douglas fir/elk sedge, Subalpine fir/beargrass, Subalpine fir/bluejoint, Subalpine fir/menziesia and wet meadows.	X		992
Red Mountain	Upper Blackfoot	Subalpine fir and whitebark pine habitat types, high alpine nonforest habitat types, scree and type I and II streams.	X		1,897
Total RNA acres					18,447

<sup>1</sup>All acreages are approximate.

### Desired Conditions (FW-RNA-DC)

- 01** Ecological processes such as plant succession, fire, and native insect and disease activity function in research natural areas with limited human influences.

### Guideline (FW-RNA-GDL)

- 01** To maintain the integrity of the research natural area, management activities should be consistent with establishment records.

### Suitability (FW-RNA-SUIT)

- 01** Research natural areas are unsuitable for timber production. Timber harvest to provide for other multiple use values and other vegetation management (such as prescribed fire) is suitable when in accordance with establishment records or management plans for individual research natural areas.
- 02** Winter motorized travel (over snow) is suitable within research natural areas so long as those uses do not threaten or interfere with the objectives or purposes for which the research natural area is established.
- 03** Summer motorized travel is not suitable within research natural areas except on routes that existed at the time the research natural area was established. New motorized routes are not suitable within research natural areas.
- 04** Livestock grazing is suitable where needed to establish or maintain desired conditions for vegetative communities and/or where it is within the level defined by establishment records or management plans for individual research natural areas.

## Cultural, Historic, and Tribal Resources

### Introduction

The term “cultural resource” refers to an object or definite location of human activity, occupation, or use identifiable through field survey, historical documentation, or oral evidence (FS Manual 2360). Cultural resources are prehistoric, historic, archaeological, or architectural sites, structures, places, or objects and traditional cultural properties (FS Manual 2360). Cultural resources include the entire spectrum of resources for which the Heritage Program is responsible for from artifacts to cultural landscapes without regard to eligibility for listing in the National Register of Historic Places (FS Manual 2360).

Cultural resources provide educational opportunities that connect people, past and present, to the land and its history. Interpretation of the human history of the plan area promotes greater public understanding of the communities that have depended on this landscape for their livelihood, recreation, and spiritual wellbeing. Through positive heritage experiences provided by interpretive sites, historic standing structures, and other materials the public has an appreciation for the region's history and develops an awareness of preservation efforts.

In the centuries preceding Lewis and Clark and the Corps of Discovery's journey, central Montana was home to several indigenous American Indian cultures. Most prominent among these groups found in the plan area were those historically known as the Blackfeet, Gros Ventre, Salish, Shoshone, Kootenai, and Metis. Today these groups retain an active culture with an unbroken tie to the greater plan area.

## Cultural and Historic Resources (CR)

### Introduction

Numerous laws, regulations, and policies govern the use and administration of cultural resources on NFS lands. Some are more commonly used regulations, such as the Archaeological Resource Protection Act and the National Historic Preservation Act. National laws and regulations are also interpreted in FS Manuals, FS Handbooks, and Regional Guides.

Approximately 2,803 cultural resource sites reflecting the broad spectrum of prehistory and history are currently identified in the plan area. According to criteria outlined in 36 Code of Federal Regulations 60.4, some sites (344) have been determined to be historically insignificant. A total of 1,507 sites are not yet evaluated and therefore are considered to be significant and eligible to be listed on the National Register and require management consideration by the Forest.

Eight historic properties are listed on the National Register of Historic Places, including one historic district with eight contributing properties and features, one historic landscape, and one historic landmark with two contributing properties. In addition to the National Register of Historic Places sites, the plan area has one traditional cultural property. An additional 944 historic properties have been determined eligible for listing in the National Register of Historic Places but have not been fully researched and submitted for listing.

### Desired Conditions (FW-CR-DC)

- 01** Cultural resource-based recreation opportunities (visits to cultural sites, historic tourism) are connected, where practical, with other recreation opportunities.
- 02** Historic administrative buildings and historic buildings associated with special use permits reflect local and FS history and identity and provide for functional use. See also FW-RSUP-DC-04.
- 03** Cultural resource programs, interpretive presentations, and publications provide the public with opportunities to learn about, understand, and experience the Forest's past.
- 04** Opportunities exist for volunteers to participate in cultural resource conservation activities such as research, site stabilization, conservation, and interpretation.

### Goals (FW-CR-GO)

- 01** Cooperative agreements with other agencies and partners support the development of cultural resource inventories, the exchange of information on local and regional interests and knowledge.

- 02** Consultation with Native American tribes, traditional cultural practitioners, consulting parties, adjacent land owners, and project designers aid the FS in protecting and enhancing traditional cultural properties, cultural landscapes, sacred sites, and other culturally significant areas that provide tangible links to historically rooted beliefs, customs, and practices.

### Guidelines (FW-CR-GDL)

- 01** To conserve and preserve cultural resources, efforts should be made during management activities to maintain significant sites for future generations.

## Areas of Tribal Importance (TRIBAL)

### Introduction

The HLC NF recognizes that Native Americans are indigenous to this landscape and have accumulated spiritual and ecological knowledge over thousands of years. Sacred sites and traditional cultural properties have religious and/or traditional importance to individuals or cultural groups. Both may be difficult to identify using standard field survey methods and both require consultation with cultural groups. The difference is not in their importance, but rather under which authority they are managed and how they are identified. Traditional cultural properties are managed under the authority of the National Historic Preservation Act. They are, by definition, eligible for listing on the National Register and must be a tangible property, that is, a district site, building, structure, or object as defined in 36 Code of Federal Regulations 64.4.

Sacred sites important to Native Americans are managed under the authority of Executive Order 13007-Indian Sacred Sites. It is the responsibility of a Native American tribe or Native American individual to identify sacred sites. Executive Order 13007 defines a Native American/Indian sacred site as “any specific, discrete, narrowly delineated location on federal land that is...determined by an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the Indian tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.”

### Desired Conditions (FW-TRIBAL-DC)

- 01** Healthy, sustainable, and harvestable populations of culturally significant flora and fauna are available to ensure the rights reserved by Native Americans. See FW-OFP-DC-01 and 02.
- 02** Tribal members’ access to the Forest for the exercise of treaty rights is recognized and accommodated. Opportunities exist to practice traditional, cultural, and religious activities, such as plant gathering and ceremonial activities, which are essential to sustaining their way of life, cultural integrity, social cohesion, and economic well-being.

### Goals (FW-TRIBAL-GO)

- 01** Opportunities exist to help develop community capacity for participation in various management activities through projects that enhance landscape scale conservation efforts, increase environmental literacy, and strengthen collaborative relationships among Native American populations.
- 02** Acquire knowledge about native and ecological resources through consultation with tribal members.

## Land Status and Ownership, and Land Uses

### Introduction

Management of NFS lands on the HLC NF is important to protect the public's estate interest in its national forest. Land status is the zoning for private lands and formal management status of public lands. Land ownership is the basic pattern of public and private ownership. Land ownership is defined as the condition of title of land or interest in land under the jurisdiction of the Forest Service. The following conditions are also included under this definition: the manner in which these lands came into federal ownership; encumbrances and restrictions that affect the administration of the land; interest owned by the government in private lands; and the interest in government lands held by others.

Surveying and posting the national forest boundary, maintaining posted property lines, and defending public lands from trespass or encroachment are activities that maintain the integrity of the NFS.

The HLC NF has many instances of inholdings or near inholdings found within the confines of the forest boundaries. These private properties, vestiges of the gold rush era in the form of patented mining claims, railroad reservations, and the Homestead Act provide management challenges unique to the area.

Public lands are generally retained in federal ownership in order to provide long-term values. The vision for the planning area is to retain in public ownership all lands currently under its administration that meet the long-term needs of maintaining the integrity of contiguous natural ecosystems, river frontage, riparian areas and wetland ecosystems, recreation and open space, scenery, clean air and water, and habitat for plant and animal populations. Through the methods available to the agency, the FS would acquire lands and/or mineral estates that enhance this vision. Lands and/or mineral estates that do not meet these needs would be disposed of. In all such cases, the primary guiding principle would be the greater public benefit.

Some uses of NFS lands are covered by special use authorizations, including permits, leases, and easements that allow occupancy, use, rights, or privileges within the plan area. Special use authorizations are legal instruments whose terms and conditions are fully enforceable when reasonable and consistent with law, regulations, and policy. The mission of the Forest Service special use program is to manage the use and occupancy of NFS lands in a manner that protects natural resources, promotes public health and safety, and is consistent with forest land and resource management plans. Special use permits authorize the occupancy and use of NFS lands by private individuals, companies or other agencies for a wide variety of uses such as roads, utility corridors, communications sites, and other private or commercial uses that cannot be accommodated on private lands.

All authorized uses on public lands are required, by law, to meet all applicable environmental protection measures. For all proposed activities that have the potential for disturbance to lands and resources, a project design is required and is subject to environmental analysis, review, and monitoring.

### Land Status and Ownership (LAND)

#### Desired Conditions (FW-LAND-DC)

- 01** Surface and mineral ownership land patterns facilitate land management. Surface and mineral estates are consolidated.
- 02** Road and trail easements provide adequate, reasonable access to NFS lands now and in the future.
- 03** Land adjustments and acquisitions enhance or protect recreation, open space, scenery, clean air and water, riparian habitat, wetland ecosystems, and habitat for wildlife species.

- 04** Conservation easements protect and enhance the resource values for which they were acquired.
- 05** National Forest System property lines adjacent to private land and boundaries of special areas such as designated wilderness lands are clearly marked where inadvertent trespass and encroachment is most likely.

### Goals (FW-LAND-GO)

- 01** To reduce the number of inholdings and move toward consolidation, acquisition of private lands within the planning area occurs when the opportunities arise. The Forest works with adjacent landowners to acquire private lands within/adjacent to forest boundary.

### Objectives (FW-LAND-OBJ)

- 01** Every decade acquire at least five new road or trail right-of-ways that are needed as high-priority access or would fill a gap in existing access to public lands. Also see FW-ACCESS-GO-01.
- 02** Survey and clearly mark at least 150 miles of previously unmarked FS land ownership boundaries.

### Guidelines (FW-LAND-GDL)

- 01** To provide access to NFS lands, land adjustment proposals should consider reciprocal right-of-way acquisitions.
- 02** When new lands are acquired, the ROS, SIO, timber suitability, and other administrative designations within the scope of the forest plan should be consistent with adjacent land parcels.

### Land Uses (LAND USE)

#### Desired Conditions (FW-LAND USE-DC)

- 01** Energy corridors throughout the planning area improve the delivery of electricity, oil, and gas and enhance the western electric transmission grid by improving reliability, reducing congestion, and contributing to the national electrical grid.
- 02** Opportunities are available for a variety of lands special uses that include energy transmission rights of way, communication uses, roads, research activities, and other public services, on lands that are suitable for these activities.
- 03** Utility corridors and communication sites provide for their intended uses. Obsolete or unused facilities are not present on the landscape.

#### Goals (FW-LAND USE-GO)

- 01** Encourage road user associations in areas where multiple land owners' access is prevalent.
- 02** The Forest Service works with local county road authorities to grant public road easements (under the Forest Road and Trails Act) to provide access on routes that serve predominantly non-NFS purposes.
- 03** The Forest Service coordinates with proponents to co-locate emerging technology, communication sites, energy corridors, and other permitted infrastructure to minimize environmental and visual impacts.

## Guidelines (FW-LAND USE-GDL)

- 01** To provide access to NFS lands, the Forest Service should grant qualified applicants reasonable access across NFS lands, contingent upon receiving reciprocal access across private land when feasible and the Forest Service determines access is needed.
- 02** Vegetation treatment within corridors and along linear transmission facilities should meet facility safety requirements, provide for control of invasive species, and provide for revegetation in accordance with vegetation management standards identified operating plans, in order to reduce visual impacts. Also see FW-VEGT-DC-05.
- 03** When authorizing new lands special uses or reauthorizing existing uses, pre-approved clauses that contain terms and conditions to avoid or minimize adverse effects to resources should be included.
- 04** If adverse effects to inland native fish, species of conservation concern, impaired water bodies, or stream habitat conditions are unavoidable, land use authorizations should require actions that result in re-establishment, restoration, mitigation, or improvement of conditions and processes to ensure that projects that degrade conditions also include measures to incrementally improve conditions. At the time of reauthorization, existing authorizations should be adjusted to mitigate adverse effects to fish, water, and riparian resources as practicable.
- 05** New hydropower support facilities should be located outside of riparian management zones (RMZs) to reduce effects to fish, water, and riparian resources. Support facilities include any facilities or improvements (e.g., workshops, housing, switchyards, staging areas, transmission lines) not directly integral to its operation or necessary for the implementation of prescribed protection, mitigation, or enhancement measures.
- 06** If existing support facilities are located within the RMZs, at time of permit reissuance, pre-approved clauses that contain terms and conditions to reduce impacts on aquatic and riparian resources should be included. Also consider moving support facilities outside of RMZs or further from water bodies where feasible.
- 07** During project activities, energy distribution lines, communication lines and pipelines should be located within existing road systems or other previously disturbed areas, where feasible, in order to minimize the impacts to forest lands. They should be located underground when feasible.

## Infrastructure – Roads and Trails, Bridges, and Facilities

### Roads and Trails (RT)

#### Introduction

There are approximately 3,600 miles of NFS roads under FS jurisdiction within the plan area. See the associated FEIS and Assessment for more information about the roads. Some roads are kept in the system for the purpose of future resource management but remain closed until they are needed. Other roads are open seasonally or year-round. Approximately 1,100 miles of the 3,600 miles are closed to motorized use. Some of these roads were identified in the 2015 Travel Analysis Plan as opportunities for change that included decommissioning, placing into intermittent stored service, or converting to other uses.

There are approximately 2,600 miles of existing NFS motorized and nonmotorized trails within the ten GAs in the plan area. There are approximately 2,000 miles of trails located outside of wilderness areas and approximately 600 miles within designated wilderness.



There are three air strips within the plan area: 1) one in the Little Belts GA, 2) one in the Rocky Mountain Range GA, and 3) one air strip under special use permit (Lincoln Air Strip) located within the Upper Blackfoot GA.

### Desired Conditions (FW-RT-DC)

- 01** A safe and cost-effective transportation system provides public and administrative access to FS lands while protecting natural and cultural resources.
- 02** Roads that are not needed to serve administrative and public needs are not present.
- 03** Forest system trails provide a variety of low maintenance and sustainable motorized and nonmotorized summer and winter public access opportunities that connect people to NFS lands.
- 04** The transportation system has minimal impacts on resources including all wildlife, heritage and cultural sites, water quality, and aquatic species.

### Goals (FW-RT-GO)

- 01** Partnerships are developed with various interest and user groups for the evaluation, planning, and maintenance programs for roads, trails, and airstrips.
- 02** Pursue grants, cost-sharing, and partnerships to contribute to maintenance and improvement work.
- 03** The HLC NF cooperates with highway managers and other landowners to implement wildlife crossings that contribute to wildlife and public safety where needed.
- 04** Continue to partner with the Department of Natural Resources and Conservation to acquire permanent access under the Master Cost-Share Agreement or the Easement Exchange process.

### Objectives (FW-RT-OBJ)

- 01** Decommission or place into storage (maintenance level 1) at least 50 miles of roads. Priorities shall include roads causing resource damage in priority watersheds and/or where roads chronically fail.
- 02** Complete at least 100 miles of reconstruction or road improvement projects. Priorities shall include reducing effects on: desired aquatic and riparian conditions from chronic sediment delivery or potential future road prism failures, and conservation watershed networks that have westslope cutthroat or bull trout habitats.
- 03** Maintain at least 100 miles of NFS roads annually.
- 04** Maintain at least 100 miles of NFS trails annually.
- 05** Reconstruct or improve at least 10 miles of trail every five years.
- 06** Reduce deferred trail maintenance backlog by at least 15 percent.

### Standards (FW-RT-STD)

- 01** During dust abatement applications on roads, chemicals shall not be applied directly to watercourses, water bodies (for example, ponds and lakes), nor wetlands.

- 02** To maintain free-flowing streams, new, replacement, and reconstructed stream crossing sites (culverts, bridges and other stream crossings) shall accommodate at least the 100-year flow, including associated bedload and debris.
- 03** For new road construction and reconstruction of existing road segments within or adjacent to RMZs, fill material shall not be side-cast.
- 04** When installing new crossing structures on streams that have no fish, the structures shall accommodate a 1 percent probability (100-year) or higher flow, including associated bedload and debris. If site-specific conditions preclude that design, size the structure to the largest size the location will accommodate and provides for bankfull width.

### Guidelines (FW-RT-GDL)

- 01** Newly constructed or reconstructed roads, temporary roads, skid trails, and trails should be hydrologically disconnected from delivering water, sediment, and pollutants to water bodies (except at designated stream crossings) to maintain the hydrologic integrity of watersheds.
- 02** When placing physical barriers such as berms on travel routes such as roads, skid trails, temporary roads, and trails, drainage features should be sufficient to avoid future risks to aquatic resources (for example, remove culverts from stream crossings).
- 03** To maintain channel stability and reduce sediment delivery to watercourses, trails, fords, and other stream crossings should be hardened to protect stream beds, banks, and approaches during construction or reconstruction.
- 04** To reduce the risk to aquatic resources when decommissioning roads, making roads impassable, or putting roads into intermittent stored service (i.e. storing roads for longer than 1 year), roads should be left in a hydrologically stable condition (for example, drainage off roads should route away from water resources and landslide prone areas and towards stable areas of the forest floor to provide filtering and infiltration).
- 05** To maintain and/or improve watershed ecosystem integrity and reduce road-related mass wasting and sediment delivery to watercourses, new and relocated roads, trails (including skid trails and temporary roads), and other linear features should not be constructed on lands with high mass wasting potential.
- 06** For maintenance activities such as road blading and snow plowing on existing roads, sidecasting should be minimized, particularly into or adjacent to water bodies. Care should be taken when plowing snow so as not to include road soil. Breaks should be designed in the snow berms to direct water off the road.
- 07** Wetlands and unstable areas should be avoided when reconstructing existing roads or constructing new roads and landings. Impacts should be minimized where avoidance is not practical.
- 08** When constructing, reconstructing, or maintaining roads, sediment delivery to streams should be minimized. Road drainage should be routed away from potentially unstable channels, fills, and hillslopes.
- 09** Transportation infrastructure should be designed to maintain natural hydrologic flow paths to the extent practical (for example, streams should have crossing structures and not be routed down ditches).

- 10** In fish bearing streams, construction, reconstruction, or replacement of stream crossings should provide and maintain passage for all life stages of native aquatic organisms unless barriers should be created or maintained to prevent spread or invasion of nonnative species in alignment with fish management agencies. These crossings should also allow for passage for other riparian dependent species through the establishment of banks inside/beneath the crossing structure.
- 11** To maintain free-flowing streams, new, replacement, and reconstructed stream crossing sites (culverts, bridges and other stream crossings) should be constructed to prevent diversion of stream flow out of the channels in the event the crossing is plugged or has a flow greater than the crossing was designed.
- 12** Roads not needed in the long term should be decommissioned to benefit fish and wildlife habitat (prioritizing native fish habitat), enhance the desired recreation opportunity spectrum settings and opportunities, and/or create a more cost-efficient transportation system.
- 13** To avoid impacts to wildlife, newly constructed or reconstructed roads, temporary roads, skid trails, and trails should avoid key seasonal habitats.

## Bridges (BRDG)

### Introduction

There are approximately 140 road bridges under the jurisdiction of the FS within the HLC NF plan area. Most of these structures meet or exceed the minimum criteria for bridge condition. At the time of this plan, a few of these bridges (approximately 11) are at an intolerable or minimum tolerable limit for condition. Road bridges must be repaired and replaced with road maintenance funding, with a small number of structures being replaced through the capital investment program.

A trail bridge is a trail structure, including supports, erected over a depression or obstruction such as water, roadway, trail or railway that provides a continuous pathway and has a deck for carrying traffic or other loads. Trail bridges are divided into three classifications for inspection purposes:

- Complex trail bridges: all trusses, suspension, multiple-span, and non-timber/log trail bridges with a span greater than 20 feet and a vertical distance greater than 5 feet.
- Major trail bridges: all single-span timber/log trail bridges with a span greater than 20 feet and a vertical distance greater than 5 feet.
- Minor trail bridges: all trail bridges that do not meet the definition of a complex or major trail bridge and have a span less than 20 feet or a vertical distance less than 5 feet.

### Desired Conditions (FW-BRDG-DC)

- 01** Bridges and culverts provide safe public and administrative access to NFS lands while protecting natural and cultural resources.

### Guidelines (FW-BRDG-GDL)

- 01** Bridge removal or reconstruction should be timed to minimize impact to native wildlife nesting or roosting on structures, or aquatic connectivity.

## Facilities (FAC)

### Introduction

Administrative facilities are typically buildings and their appurtenances necessary to support the employees, equipment, and activities needed for the management of national forests. Administrative facilities are separate from recreation facilities. Administrative facilities include fire stations, offices, warehouses, and shops as well as living quarters such as barracks and individual residences.

There are approximately 245 administrative facilities. Under facilities, the focus is the rehabilitation or replacement of existing facilities that do not meet current operational standards, and the disposal of those facilities that are considered surplus to the forest's operational needs.

Recreation facilities are buildings, cabins, airstrips, water systems, and wastewater systems that are operated and maintained specifically to support public recreational use. These recreation facilities are often located at developed recreation sites, such as campgrounds, day use areas, and interpretive sites where recreation use requires a management investment in order to operate and/or maintain the site to health and safety standards.

### Desired Conditions (FW-FAC-DC)

- 01 Facilities provide for safe public and administrative use.
- 02 NFS facilities provide for the necessary support to employees, equipment, and activities.

### Goals (FW-FAC-GO)

- 01 Pursue partnerships to assist in completing necessary work on structures.

## Benefits to People: Multiple Uses and Ecosystem Services

### Introduction

Social, cultural, and economic resources in the plan area contribute to the social and economic sustainability of local communities and the public. The 2012 Planning Rule calls those resources “ecosystem services” or, put more simply, the benefits people obtain from the forest. Healthy forest ecosystems are life-supporting systems that provide a full suite of goods and services that are vital to human health, financial sustainability, and wellbeing. These “ecosystem services” or benefits include all the multiple uses that people traditionally have relied on, such as recreation, timber harvest, and mineral extraction, as well as less obvious or apparent benefits, such as clean air and carbon sequestration. Multiple use is defined by the Multiple-Use Sustained-Yield Act of 1960 (16 U.S.C. 528–531). Economic sustainability refers to the capability of society to produce and consume or otherwise benefit from goods and services including contributions to jobs and markets and nonmarket benefits.

The 2012 Planning Rule also requires that forests take an all-lands approach to ensure that ecological sustainability and contributions to social and economic sustainability are considered in the context of the larger landscape. This involves managing the plan area in partnership with both public and private land owners and stakeholders to ensure management efforts are coordinated whenever possible. Included in this section are desired conditions related to partnership and coordination.

In addition to the plan components in the following sections, many of the plan components within the previous sections above contribute to social and economic sustainability.

## Public Information, Interpretation, and Education (CONNECT)

### Introduction

Connecting people to their environment and to the natural and cultural history of the area is one of the primary goals of the HLC NF. Relevant and timely public information, creative interpretation, and stimulating education help the FS communicate with the public and enable visitors to be involved in the activities, actions, and expectations for activities on NFS lands. These connections provide opportunities for the development of strong stewardship ethics and appreciation for the natural and cultural history across these landscapes. Also see Lewis and Clark National Historic Trail and Interpretive Center section.

### Desired Conditions (FW-CONNECT-DC)

- 01** Interpretation and education programming enhance visitor understanding and appreciation for the rich natural, cultural, and historic resources of the Forest.
- 02** Education programming promotes conservation, stewardship, and understanding of natural resources and ecological processes (such as watershed, fisheries, native plants, fire ecology, and wildlife) as well as cultural resources on public lands. Conservation education efforts are experiential, contemporary, and culturally and generationally-relevant.
- 03** Opportunities to connect people to nature and open space, including underserved populations, promote the use of the Forest for the improvement of physical and mental well-being of the public.

### Goals (FW-CONNECT-GO)

- 01** The presentation and delivery of public information, natural and historic interpretation, and conservation education is supported by strong partnerships and volunteer programs.
- 02** The operation, maintenance, and delivery of conservation education programs, historic and natural interpretation, and stewardship services are supported by strong partnerships and volunteer programs.
- 03** Partnerships with federal and nonfederal entities help achieve desired conditions and improve overall resources management. Partnerships and/or collaborative processes within the local communities foster relationships that help accomplish projects in the communities' and Forest's shared interest.
- 04** Federal, state, county, and tribal agencies, universities, nongovernmental organizations, and private landowners have the opportunity to participate in development, implementation, maintenance, and/or monitoring efforts.
- 05** New, nontraditional partners help the HLC NF employ new technologies and contemporary approaches to reach youth where they are and in ways that are relevant to their lives.
- 06** The Forest's employees and partners have the skills and resources needed to build and manage effective, sustainable partnerships to engage youth.
- 07** Formal and nonformal educators in local communities understand natural resource issues and partner with the forest to deliver place-based outdoor learning opportunities.
- 08** Outfitter and guides, recreation events, and other special uses permit holders assist the Forest in delivering interpretation and education messages that instill an appreciation for the natural and cultural resources of the Forest and promote conservation and stewardship.

- 09** Youth have lifelong opportunities to learn, and a continuum of experiences that span from discovery, to awareness and connection, to knowledge, to action are provided. The youth of local communities have a personal connection with the natural and cultural resources of the forest and a personal conservation ethic through their recreation experiences.

### Objectives (FW-CONNECT-OBJ)

- 01** Within five years, expand communications about recreation and educational opportunities through social media, websites, print and web-based materials, webinars, and video technology to promote and increase tourism on the HLC NF and to provide support for state, private, and community-based partners.
- 02** Provide at least one hands-on outdoor learning opportunity per year for local communities and schools to: engage underserved populations, support local educators, connect youth with their natural and cultural heritage, promote the health benefits of outdoor recreation, and encourage the responsible use of natural resources.
- 03** Work with local partners to host at least one recreation event per year to engage community youth and their families with the rich natural and cultural resources of the forest.

### Guidelines (FW-CONNECT-GDL)

- 01** When providing education opportunities, the HLC NF should emphasize minimum impact principles (for example, Leave No Trace, Tread Lightly, Pack it in/Take it Home) to educate communities and visitors, while instilling a sense of pride and stewardship for the rich cultural and natural resources of their forest.

## Livestock Grazing (GRAZ)

### Introduction

Livestock grazing on FS lands is an important contribution to the social and economic sustainability of some rural communities. Forest grazing allotments are managed to be responsive to current federal and state environmental laws and regulations. Allotment management plans describe the kind and amount of livestock, season of use, structural improvement maintenance, resource management objectives, and standards and guidelines to move towards desired conditions for the appropriate resources.

Livestock grazing is an important source of income along with other diverse agricultural enterprises in the plan area. During the past several decades, livestock numbers have been declining across the western United States. There are over 6,000 farms and ranches in the area with over 2,000 classified as beef cattle ranches and farms. Forest grazing allotments occupy over 1.3 million acres with 240 active allotments and 234 permittees.

Adaptive management practices used in allotment management plans include deferment and rest from grazing, cultural and mechanical vegetation treatments, infrastructure to control livestock, and conservation measures to protect federally listed plants and animal species and species of conservation concern.

Other agencies, local conservation districts, conservation and civic organizations, livestock industry, and rural communities participate in rangeland management planning. Forest Service policy direction for permitted livestock use are found in agency manuals and handbooks.

### Desired Conditions (FW-GRAZ-DC)

- 01** Sustainable grazing opportunities are available for domestic livestock from lands suitable for forage production.
- 02** Within grazing allotments, rangelands are comprised of stable soils supporting a diverse species composition of grasses, forbs, and shrubs that create a healthy and resilient native plant community. Native plant communities provide forage for domestic livestock in addition to providing wildlife habitat and forage needs.
- 03** Within grazing allotments, soil stability, and hydrologic and biotic integrity function in a manner that provides for resilience relative to site potential as described in ecological classifications.
- 04** Within grazing allotments, plant communities in wetlands, spring/seep ecosystems, and groundwater dependent ecosystems retain desired species composition and structure.

### Goals (FW-GRAZ-GO)

- 01** Coordination with Montana Fish, Wildlife, and Parks biologists occurs during the allotment planning/permit process to ensure that wildlife habitat/forage needs are being addressed in conjunction with domestic livestock grazing.

### Standards (FW-GRAZ-STD)

- 01** New or revised allotment management plans shall provide site-specific management prescriptions to meet or move toward applicable desired conditions.
- 02** Annual livestock use indicators within inner RMZs shall be set during the allotment management planning process at levels that move towards or maintain desired rangeland vegetation, riparian function, and wildlife habitat specific to the ecological site (or equivalent classification). Indicator values shall be adapted over time based on long-term monitoring and evaluation of conditions and trends.
- 03** Stocking of vacant grazing allotments with domestic sheep or goats for livestock production shall only be permitted if a risk assessment using the best available science and agency or interagency recommendations indicates that effective separation can be achieved between livestock and bighorn sheep. (Refer to Appendix C for information on recommendations and strategies.)
- 04** Analysis for allotment management plan revisions or NEPA sufficiency reviews of active sheep allotments shall use the best available science and agency or interagency recommendations to identify and apply management tools by which effective separation can be achieved between domestic sheep and bighorn sheep (refer to Appendix C for information on recommendations and strategies)

### Guidelines (FW-GRAZ-GDL)

- 01** To maintain or improve riparian and aquatic conditions and achieve riparian desired conditions over time through adaptive management, new grazing authorizations and reauthorizations that contain low gradient, alluvial channels should require that end-of-season stubble height be 10 to 15 cm (4 to 6 inches) along the greenline. However, application of the stubble height numeric value range should only be applied where it is appropriate to reflect existing and natural conditions for the specific geoclimatic, hydrologic, and vegetative conditions where it is being applied. Alternative use and disturbance indicators and values, including those in current ESA consultation documents, may be

used if they are based on current science and monitoring data and meet the purpose of this guideline. Long-term monitoring and evaluation should be used to adapt this numeric range and/or the use of other indicators.

- 02 To ensure grazing is sustainable and contributes to other resource desired conditions, forage use by livestock should maintain or enhance the desired structure and composition of plant communities on grasslands, shrub lands, and forests and should maintain or restore healthy riparian conditions as defined in the allotment management plan.
- 03 New or revised allotment management plans should design grazing practices (such as stocking rate, duration, timing), and/or physical structures to reduce negative effects to riparian areas or riparian dependent at risk species.
- 04 Allotment management plans should incorporate adaptive management to move towards desired conditions for vegetation and riparian resources, considering both the needs and impacts of domestic livestock and wildlife.
- 05 When updating or managing existing facilities that are located within RMZs, facilities should be minimized or relocated to other areas. Livestock management activities (trailing, bedding, watering, salting, loading, and other handling or management efforts) should be avoided in RMZs to reduce effects to riparian resources and aquatic biota. Also see FW-RMZ section for additional information.
- 06 Livestock watering facilities should be constructed or maintained to provide for forage use that will maintain or enhance the desired structure and composition of plant communities on suitable rangelands, but avoid impacts to soil and water resources.
- 07 To attract livestock out of riparian areas, salt and/or supplements should be placed at least one-quarter (1/4) mile away.

## Timber (TIM)

### Introduction

The removal of timber is a multiple use provided by HLC NF and it is an important contributor to the economy of Montana. *Timber production* is the purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use. *Timber harvest* is the removal of trees for wood fiber use and other multiple-use purposes. This section of the plan provides plan components related to timber harvest and timber production.

Harvest of timber on national forest lands occurs for many different reasons, including ecological restoration, community protection in wildland-urban interfaces, public safety, habitat restoration, protection of municipal water supplies; and to contribute to economic sustainability through the production of timber, pulp for paper, specialty woods for furniture, or fuel as a renewable energy source. Timber harvest, whether for regularly scheduled wood production or for restoration and other reasons, supports local businesses and employment.

### Suitability for Timber Production

The planning rule requires identification of lands that are suited and not suited for timber production, based on factors that include legal withdrawal (for example, timber production prohibited due to statute and executive order), technical factors (nonforested lands, geology or soil conditions), and compatibility with desired conditions and objectives stated in the plan (plan components).



In lands suitable for timber production, regularly scheduled timber harvest is expected to occur. Unless prohibited by other plan components, timber harvest may also occur on lands unsuitable for timber production to meet resource objectives other than timber production.

Table 28 displays the timber production suitability classification for the forest plan. See chapter 3 for descriptions and appendix A for maps of timber suitability for each GA.

**Table 28. Timber production suitability classification**

Land classification category	Acres
A. Total NFS lands in the plan area	2,883,227
B. Lands not suited for timber production due to legal or technical reasons	2,216,098
C. Lands that may be suited for timber production (A–B)	667,129
D. Total lands suited for timber production because timber production is compatible with the desired conditions and objectives established by the plan	368,814
E. Lands not suited for timber production because timber production is not compatible with the desired conditions and objectives established by the plan (C – D)	298,315
F. Total lands not suited for timber production (B+E)	2,514,413

<sup>1</sup>All acreages are approximate. The total acres (A) is based on NFS acres as of June 2018.

### Timber Volume Metrics

As required by planning rule regulations, several timber volume metrics are specified in this plan, including the sustained yield limit, projected wood sale quantity, and projected timber sale quantity. The following table and sections describe the characteristics of these metrics.

**Table 29. Characteristics of timber volume metrics**

Characteristics	Sustained yield limit	Projected wood sale quantity	Projected timber sale quantity
Based on quantity sold from lands that may be suitable for timber production (line C Table 28).	Yes	No	No
Based on quantity sold from lands suited for timber production because timber production is compatible with the desired conditions and objectives established by the plan (line D Table 28).	No	No	No
Based on quantity sold from all lands in plan area (line A Table 28).	No	Yes	Yes
Based on the assumption that all lands that may be suitable for timber production are managed for timber production.	Yes	No	No
Limited by plan components, fiscal capability, and organizational capacity.	No	Yes	Yes
All volume meets utilization standards.	Yes	No	Yes
Includes sanitation or salvage harvest volume.	No	No	No

#### *Sustained Yield Limit*

Per the National Forest Management Act and planning rule regulations, the quantity of timber that may be sold must be less than or equal to the potential sustained yield limit. The sustained yield limit is the amount of timber meeting applicable utilization standards, “which can be removed from [a] forest annually in perpetuity on a sustained-yield basis” (National Forest Management Act at section 11, 16 United States Code 1611; 36 Code of Federal Regulations 219.11(d)(6)). The sustained yield limit is not a target but is a limitation on harvest. Calculation of the sustained yield limit is based on lands that may

be suitable for timber production (line C from Table 28) and is not limited by plan components or considerations of the anticipated fiscal capability or organizational capacity. The sustained yield limit is 4.95 MMCF (26.36 MMBF) for the proclaimed Lewis and Clark National Forest, and 5.75 MMCF (31.21 MMBF) for the proclaimed Helena National Forest, for a total 10.7 MMCF (57.57 MMBF).

### *Projected Wood and Timber Sale Quantities*

To clearly display the intended timber program associated with achieving ecological, social, and economic desired conditions, the plan identifies the projected wood sale quantity and projected timber sale quantity. The projected wood sale quantity is the estimated output of timber and all other wood products (such as fuelwood, firewood, or biomass) expected to be sold during the planning period for any purpose (except salvage harvest or sanitation harvest) on all lands in the Forest. The projected timber sale quantity is the portion of the projected wood sale quantity that meets applicable utilization standards (the sawlog portion of offered timber sales). Both the projected wood sale quantity and the projected timber sale quantity are limited by the projected fiscal capability and organizational capacity of the forest, and are disclosed in appendix C. These values provide the basis for the objectives stated in the section below.

Neither the projected wood sale quantity nor the projected timber sale quantity serves as management targets or as limitations on harvest. Rather, both are based on reasonable expectations about the fiscal capability and organizational capacity to achieve the desired conditions and objectives in the 2020 Forest Plan for the planning period. As such, calculations of these volume estimates are sensitive to several assumptions including future budget trends, future markets for timber products, efficiency in planning and implementation, and the timing and locations of large disturbance events. If additional support to achieve desired conditions was provided through opportunities such as increased congressional allocations, stewardship contracting, or work with partners through other authorities, the potential wood and timber sale quantity could be exceeded as long as the volume levels remain below the sustained yield limit. Conversely, if available resources, markets, or other factors are less favorable than anticipated, the potential wood and timber sale quantities identified may not be met.

### Desired Conditions (FW-TIM-DC)

- 01** Lands identified as suitable for timber production support a regularly scheduled timber harvest program that provides sustainable levels of wood fiber products.
- 02** Although natural disturbances occur on lands suitable for timber production, actively managed lands are resilient and/or resistant to disturbance and economic loss of the timber resource is minimized.
- 03** Production of timber and timber harvest contribute to economic sustainability, providing jobs and income to local economies.
- 04** A variety of harvest and contract methods are offered in response to market demand and local needs.

### Goals (FW-TIM-GO)

- 01** Timber harvest from the HLC NF, along with timber harvested from other lands, contributes to maintaining regional timber harvesting and milling infrastructure, including support to small businesses. When possible, efficiencies are gained across boundaries by utilizing available authorities for partnerships and agreements with entities, such as the state of Montana.

## Objectives (FW-TIM-OBJ)

- 01** Offer timber meeting product utilization standards for sale at an annual projected timber sale quantity of 4-7 MMCF (20-35 MMBF)<sup>1</sup>, averaged on a 10-year basis. See appendix C for definition of timber utilization standards.

<sup>1</sup> A projected timber sale quantity level of approximately 7.9 MMCF (approximately 38 MMBF) would be possible within the constraints of the desired conditions and other plan components if budget was not considered as a limiting factor.

- 02** Offer an annual projected wood sale quantity consisting of both timber that meets utilization standards (FW-TIM-OBJ-01) plus other wood products (fuelwood, biomass, and other volumes that do not meet timber product utilization standards) for sale of 6-9 MMCF<sup>1</sup>, averaged on a 10 year basis.

<sup>1</sup>A projected wood sale quantity level of approximately 10.5 MMCF would be possible within the constraints of the desired conditions and other plan components if budget was not considered as a limiting factor.

## Standards (FW-TIM-STD)

- 01** On lands both suitable and unsuitable for timber production, timber harvest will not occur where soil, slope, or other watershed conditions may be irreversibly damaged, as identified in project specific findings. Also see Aquatic Ecosystems and Soil sections.
- 02** On forested lands (both suitable and unsuitable for timber production), timber harvest shall only be used when there is reasonable assurance of restocking within 5 years after final regeneration harvest per legal mandate. Restocking levels are prescribed in a site-specific silvicultural prescription for a treatment unit and are determined to be adequate depending on the objectives and desired conditions for the plan area. In some instances, such as when stands are treated to reduce fuel loadings, to create openings for scenic vistas, or to prevent encroaching trees to meet desired vegetation or wildlife habitat conditions, it is acceptable not to restock or restock at low tree densities. Restocking considerations do not apply in nonforested plant communities.
- 03** On lands both suitable and unsuitable for timber production, silvicultural treatments shall not be selected based solely on their ability to provide the greatest dollar return or output of timber; other considerations such as the purpose and need shall inform the selection of silvicultural treatments.
- 04** On lands both suitable and unsuitable for timber production, clearcutting shall be used as a harvest method only where it has been determined to be the method most appropriate to meet the purpose and need of the project. Other types of even-aged harvest shall be used only where determined to be appropriate. Determinations shall be based on an interdisciplinary review of site conditions and the desired conditions for vegetation, wildlife habitat, scenery, and other resources.
- 05** On lands both suitable and unsuitable for timber production, harvest units shall be shaped and blended to the extent practicable with the natural terrain. Also see the guidelines for Scenery.
- 06** Even-aged stands shall reach a minimum of 95 percent of culmination of mean annual increment, as measured by cubic volume, prior to regeneration harvest, unless at least one of the following conditions have been identified during project development:
- When such harvesting would modify fire behavior to protect identified resource, social or economic values;
  - When harvesting of stands will trend landscapes toward vegetation desired conditions;
  - When harvest uses uneven-aged silvicultural systems, thinning, or other intermediate stand treatments that do not regenerate even-aged or two-aged stands;

- d. When harvest is for sanitation or salvage of timber stands that have been substantially damaged by fire, windthrow, or other catastrophe or which are in imminent danger from insect or disease attack;
  - e. When harvest is on lands not suited for timber production and the type and frequency of harvest is due to the need to protect or restore multiple use values other than timber production.
- 07** The quantity of timber that may be sold per decade from lands both suitable and not suitable for timber production shall not exceed the sustained yield limit of 5.75 mmcf (31.21 mmbf) per year on the proclaimed Helena National Forest; and 4.95 mmcf (26.36 mmbf) per year on the proclaimed Lewis and Clark National Forest. The sustained yield limits for both proclaimed forests total 10.7 mmcf (57.57 mmbf) across the administratively combined HLC NF, except for salvage or sanitation cutting of trees damaged by fire, windthrow, or other disturbance or to manage insect infestation or disease spread. Such trees may be harvested above the sustained yield limit, where it is not feasible to substitute such timber for timber that would otherwise be sold under the plan and where such harvest is consistent with desired conditions for terrestrial and aquatic ecosystems.
- 08** The maximum opening size created by clearcutting, seedtree cutting, shelterwood seed cutting, or other cuts designed to regenerate an even-aged stand of timber in a single harvest operation shall normally be 40 acres. This standard applies to new harvest proposals on NFS lands only and need not consider existing openings on NFS lands, adjacent private or other agency lands. An exception applies to achieve desired ecological conditions for the plan area, including those associated with forest patterns, patch sizes and resilience in the short and long term (FW-VEGT-DC-01, 04 and FW-VEGF-DC-08, 09). The maximum opening size exception for the HLC NF is 75 acres. This is consistent with the estimated natural range of variation for average patch size of early successional forest openings.
- 09** Harvest openings, created as a result of a single harvest operation, that exceed the maximum opening sizes established in FW-TIM-STD-08 shall require 60-day public review and Regional Forester approval.
- 10** FW-TIM-STD-08 and FW-TIM-STD-09 shall not apply to the size of harvest openings created as a result of catastrophic (stand replacing) disturbances, such as fire or insect and disease infestations.

### Guidelines (FW-TIM-GDL)

- 01** To contribute to ecological sustainability and ecosystem health, when timber harvest and maintenance activities (such as precommercial thinning) are conducted, they should be designed to move the Forest toward achievement of vegetation desired conditions (such as species composition, size class, forest density, and landscape pattern) as well as other resource desired conditions.
- 02** To help achieve desired conditions on lands unsuitable for timber production, but where timber harvest could occur, the use of timber harvest should be limited to the following purposes:
- Salvage dead or dying trees.
  - Improve production of forage for livestock and wildlife.
  - Reduce hazardous fuels and/or fire risk.
  - Manage powerline right-of-ways.
  - Mitigate forest insect or diseases.
  - Move conditions toward desired stand or landscape vegetation composition, structure, and patterns, including restoration of ecosystem functions and improving resiliency.

- Maintain or enhance wildlife habitat.
- Perform research or administrative studies.
- Address issues of public safety and health.
- Improve recreation, infrastructure and/or scenic resource conditions, including creation of scenic vistas.

**03** To provide habitat for wildlife species associated with burned habitats, clusters of burned trees of a variety of sizes should be retained where it is safe to do so when salvaging timber in areas burned by high-severity wildfire.

### Suitability (FW-TIM-SUIT)

- 01** Timber harvest for the purpose of timber production is only allowed on lands classified as suitable for timber production. See the map of these lands in each GA (appendix A).
- 02** Timber harvest is suitable to protect multiple use values on all lands where it is not prohibited by other plan components. See FW-TIM-GDL-02.

### Other Forest Products and Wood for Fuel (OFP)

#### Desired Conditions (FW-OFP-DC)

- 01** Vegetation conditions support sustainable use of forest products other than timber, including but not limited to mushrooms, firewood, biofuels, posts and poles, Christmas trees, medicinal plants, tepee poles, and berries.
- 02** A variety of special forest products are available for commercial, tribal, personal, educational, and scientific uses to meet local demand.

#### Guidelines (FW-OFP-GDL)

- 01** To provide products for current and future generations, when permits are issued special forest and botanical products should be collected in a sustainable manner.
- 02** When offering sales of forest products, targeted sales of small products should be available to small businesses in order to contribute to local economic growth.
- 03** When providing temporary opportunities for the public to collect fuelwood or other forest products in timber sale areas, the Forest should ensure that potential negative impacts to other resources including wildlife are avoided.

### Fish and Wildlife (FWL)

#### Introduction

The 2012 Planning Rule requires that forest plans provide for ecological sustainability and diversity of plant and animal communities. This plan meets that requirement through plan components in the wildlife, terrestrial vegetation, and aquatic ecosystems sections. By maintaining fish and wildlife populations that persist over the long-term and are resilient to stressors, the opportunity for humans to enjoy those populations in a variety of way is also maintained. This section therefore includes only those plan components that are directly related to specific human uses, such as fishing, hunting, and viewing.

## Desired Conditions (FW-FWL-DC)

- 01** Big game species remain on NFS lands throughout the archery and rifle hunting seasons at levels that support Montana Fish, Wildlife, and Parks recommendations regarding big game distribution, population size, and harvest.
- 02** Furbearers are present and potentially available to trappers on NFS lands, and habitat on NFS lands provides trapping opportunities that support Montana Fish, Wildlife and Parks population and harvest objectives.
- 03** Native and desired nonnative wildlife species are available on NFS lands for a variety of nonhunting recreational opportunities, such as viewing and photography.
- 04** Levels and types of public motorized access during the archery and rifle hunting seasons are balanced with desired conditions for wildlife populations and habitat security, as well as with other resource desired conditions.
- 05** The opportunity exists on some forest lands to fish native westslope cutthroat trout.
- 06** In some areas unsuitable for native fish restoration, sport fisheries habitats provide for recreational fishing opportunities.

## Goal (FW-FWL-GO)

- 01** Forest Service and Montana Fish, Wildlife, and Parks biologists cooperate to identify potential needs for and means to achieve desired distribution and hunting opportunity of elk and other big game species.

## Guidelines (FW-FWL-GDL)

- 01** Prior to management actions that would increase or change the location, timing, mileage, or density of wheeled motorized routes open during the archery and rifle hunting seasons, FS biologists should coordinate with Montana Fish, Wildlife, and Parks biologists to identify possible management actions that may reduce the potential for displacement of big game species from NFS lands during the archery and rifle hunting seasons. Possible management actions may vary on a project-specific or local basis, and should be based on the best available scientific information (such as that described in the U.S. Forest Service and Montana Department of Fish, Wildlife and Parks Collaborative Overview and Recommendations for Elk Habitat Management on the Custer, Gallatin, Helena, and Lewis and Clark National Forests, 2013, or subsequent versions). Also see appendix C section titled “Elk and Other Big Game Species.”

## Special Uses (SU)

### Introduction

All uses of NFS lands, improvements, and resources, except those authorized by the regulations governing sharing use of roads (212.9); grazing and livestock use (part 222); the sale and disposal of timber and special forest products, such as greens, mushrooms, and medicinal plants (part 223); and minerals (part 228) are designated “special uses”. These uses benefit tens of millions of people every day. The most notable of these uses revolve around energy transmission/distribution and communications. However, many of the other use types contribute substantially to the socio-economic health of smaller rural communities as well as larger metropolitan areas.

Of all uses on NFS lands, the transmission and distribution of electricity, oil, and gas (collectively called “energy uses”) has the most profound impact to our daily lives. Energy uses on NFS lands, as opposed to other alternatives, help address the Nation’s growing energy needs. Solar and wind energy generation, although not prevalent at this time, may be future energy uses in the planning area.

Communication facilities link us together through technology over vast distances. Many of these sites are located on NFS lands and provide critical emergency services in areas where no other alternative exists. Our communities are kept safer by these vital communication links. Communication sites connect us on a global scale by providing wireless communications, internet services, television, and public radio. Mobile radio systems existing on NFS lands allow highway workers and railroads to operate more efficiently, improving interstate commerce. In some cases, communication systems connect the electric grid which allows the early detection of system malfunctions, preventing large-scale power outages. Occupancy at communication facilities allows citizen-based organizations such as the Civil Air Patrol, Search and Rescue, and Coast Guard Auxiliary to maximize their communications, which enhances public safety and saves lives.

Special use authorizations on NFS lands allow municipalities to provide clean drinking water and enable farmers and ranchers the ability to convey water to crops and livestock. The support of military training operations on NFS lands via special use authorization contributes to the effectiveness and safety of our troops which strengthens our national security.

Recreation special uses such as ski areas, outfitter guide services, and organizational camps connect people to the forest. Annually, tens of thousands of people ski down winter slopes, get packed into remote camps to hunt big game, and/or attend summer camps on NFS lands - all of which is made possible through the issuance of special uses permits.

### Desired Conditions (FW-SU-DC)

- 01 Authorized uses connect people to the Forest and provide for maximum public benefit.
- 02 Special use authorizations support the public’s energy, communication, and infrastructure needs.

## Geology, Energy and Minerals (EMIN)

### Introduction

The geology of the HLC NF is extremely varied and unique. Tectonic forces, volcanism, alpine and continental glaciation, and alluvial process have shaped and reshaped all the GAs within the planning area. A large thrust fault system shaped the Rocky Mountain GA by displacing Mississippian-aged limestone over the top of Cretaceous-aged shale and sandstones. Granitic intrusions dominate the Elkhorn and Divide GAs as well as intrusions in the Blackfoot, Little Belts, and Crazy Mountain GAs where processes have resulted in mineralized deposits containing gold, silver, lead, copper, and other precious metals. Pleistocene glaciers left behind jagged peaks, with high mountain cirque lakes and wide glacial outwash filled valleys. Geologic processes continue today with active geomorphologic changes including stream channel migration, flooding, earthquakes, mass wasting, and anthropogenic disturbances.

The HLC NF has a long history of mineral extraction starting in the 1860s when gold and silver was discovered in the Helena area. Silver lead deposits were discovered in the 1880s and mined until the silver panic in the 1890s. Sapphires were discovered in an intrusive dike located on the east end of the Little Belt Mountains in 1879 and have been mined off and on to this day. Other geologic resources found on the HLC NF include gravel and decorative rock.

The HLC NF recognizes that historic mining has left a legacy of environmental degradation throughout the Forest. Unstable mine waste and acid mine drainage from open adits continue to degrade soil and water quality. Placer mining has impacted riparian and stream habitats and water quality. Many streams in the forest do not currently meet state water quality standards due to the impacts of mineral mining and exploration.

The FS has a minerals management mission to encourage, facilitate, and administer the orderly exploration, development, and production of mineral and energy resources on NFS lands to help meet the present and future needs of the Nation. Existing Federal laws, regulations, and legal decisions guide much of how or if particular minerals and energy management actions should take place. The right of access for purposes of prospecting, locating, and mining is provided by statute. Such access must be in accordance with the rules and regulations of the FS. Plan components do not reiterate overarching Federal law, regulation, and policy that must be implemented. The energy and minerals plan components provide further clarity and specificity as to how or if particular minerals and energy management actions should take place. All mineral and energy management activities on NFS lands are required to meet applicable environmental protection measures as required by law, regulation, and policy.

There are three types of mineral and energy resources:

- **Locatable minerals:** includes commodities such as gold, silver, copper, zinc, nickel, lead, platinum, etc. and some nonmetallic minerals such as asbestos, gypsum, and gemstones. US citizens are guaranteed the right to prospect and explore lands reserved from the public domain and open to mineral entry. The disposal of locatable minerals is nondiscretionary.
- **Salable minerals:** includes common varieties of sand, stone, gravel, cinders, clay, pumice, and pumicite. The FS has the authority to dispose of these materials on public lands through a variety of methods. The disposal of these materials is discretionary.
- **Leasable minerals:** includes commodities such as oil, gas, coal, geothermal, potassium, sodium phosphates, oil shale, sulfur, and solid leasable minerals on acquired lands. Areas of the Forest are open to leasable minerals exploration, development, and production. A leasing decision will not be a part of this draft plan. The disposal of these mineral resources is discretionary.

Mineral encumbrances for subsurface mineral estates include both reserved and outstanding private mineral rights on acquired lands on the HLC NF, and oil and gas leases and mining claims under the 1872 Mining Law.

The reserved and outstanding mineral rights occur on acquired lands that are split estate, federal surface, and private subsurface. Reserved mineral rights are those that a private landowner kept when the property was sold to the United States. Reserved minerals are managed based on the Secretary of Agriculture's rules and regulations. Outstanding minerals are those minerals that were separated from the surface estate sometime in the past. Outstanding minerals are subject to state laws and conditions stated in the original deed conveying the minerals. In both of these cases, the Forest Service has little control over the access and mineral activities for these private mineral rights. There are approximately 56,700 acres of lands with privately owned mineral estates within the HLC NF.

### Desired Conditions (FW-EMIN-DC)

- 01** Caves and karst topography retain their unique geological features. Also see FW-WL-GDL-10 and 11.
- 02** Geologic hazards (landslides, floods, sinkholes, etc.) and associated risks to public health and safety and facilities and infrastructure are minimized or mitigated.



- 03** The intrinsic values and characteristics of unique geologic features and scenery are conserved.
- 04** Geologic resources provide ecological, scientific, educational, interpretative, scenic, recreational, and paleontological benefits for the public and academia.
- 05** The Forest continues to contribute to the economic strength and demands of the nation by supplying mineral and energy resources while assuring that the sustainability and resiliency of other resources are not compromised or degraded.
- 06** Mineral materials are available based upon public interest, material availability, in-service needs, and protection of other resource values, including consistency with desired conditions for other resources.
- 07** Abandoned mine sites do not pose a risk to human health and/or the environment.

### Objectives (FW-EMIN-OBJ)

- 01** Complete reclamation on at least five abandoned mines.

### Standards (FW-EMIN-STD)

- 01** Superfund sites shall be managed within the context of the superfund designation in coordination with the Environmental Protection Agency and the Montana Department of Environmental Quality.
- 02** If previously undiscovered caves are encountered during drilling operations, reasonable precautions shall be taken to protect the cave. This includes but is not limited to sealing the casing above and below the cave to prevent air flow and water leakage.
- 03** Activities that could compromise the infrastructure and remedy at mine waste repositories and mine reclamation sites shall be excluded.

### Guidelines (FW-EMIN-GDL)

- 01** To minimize adverse effects to aquatic and riparian resources, new authorizations and reauthorizations for mineral development and operations should avoid RMZs to the extent practicable. If the RMZ cannot be avoided, then ensure operators take all practicable measures to maintain, protect, and rehabilitate fish and wildlife habitat that may be affected by the operations. Required bonding should consider (in the estimation of bond amount) the cost of stabilizing, rehabilitating, and reclaiming the area of operations.
- 02** To minimize adverse effects to aquatic and riparian resources, new authorizations and reauthorizations for mineral development and operations should avoid adverse effects to aquatic and riparian resources. This should include requirements that operators take all practicable measures to maintain, protect, and rehabilitate water quality, and habitat for fish and wildlife and other riparian associated resources which may be affected by the operations.
- 03** Controlled seismic surveys requiring explosives or other similar techniques should not be conducted, to the extent practicable, over or close enough to known caves to create disturbances to roosting or hibernating bats or bat maternity colonies.
- 04** The mining heritage of the HLC NF should be preserved to the extent practicable during mineral development.
- 05** During management activities, the FS should notify mining claimants and leaseholders of impending actions that may affect their claims or leased lands to minimize disruption of mining operations.

## Carbon Storage and Sequestration (CARB)

### Introduction

Carbon sequestration is the process by which atmospheric carbon dioxide is taken up by trees, grasses, and other plants through photosynthesis and stored as carbon in biomass (trunks, branches, foliage, and roots) and soils. The sink of carbon sequestration in forests and wood products helps to offset sources of carbon dioxide to the atmosphere, such as deforestation, forest fires, and fossil fuel emissions. Sustainable forestry practices can increase the ability of forests to sequester atmospheric carbon while enhancing other ecosystem services, such as improved soil and water quality. Planting new trees and improving forest health through thinning and prescribed burning are some of the ways to increase forest carbon in the long run. Harvesting and regenerating forests can also result in net carbon sequestration in wood products and new forest growth.

### Desired Conditions (FW-CARB-DC)

- 01** Forests are resilient to natural disturbance processes and changing climates and maintain ecosystem biodiversity and function, which sustains carbon sequestration storage and potential. Also see Forested Vegetation and Soils.

## Chapter 3. Geographic Area Direction

### Introduction

While the forestwide desired conditions indicate broad trends which we would expect to see over the next 10 to 15 years, we recognize that individual places across the HLC NF have their own unique characteristics and conditions. These places, referred to as “geographic areas” (GAs), define a landscape that people associate with on the Forest. Identifying these areas gives us the opportunity to fine-tune our forestwide management to better respond to more local conditions and situations. The HLC NF has been divided into the following ten GAs (see figure 2):

- Big Belts (BB)
- Castles (CA)
- Crazies (CR)
- Divide (DI)
- Elkhorns (EH)
- Highwoods (HW)
- Little Belts (LB)
- Rocky Mountain Range (RM)
- Snowies (SN)
- Upper Blackfoot (UB)

GAs provide a means for describing conditions and trends at a more local scale if appropriate. GAs are ecological areas that are synonymous with basin and watershed. Table 30 displays total acres and the acres of the HLC NF by GA.

**Table 30. Acres within the ten GAs on the HLC NF**

Geographic area	Total acres (all ownerships)	NFS acres within GA	Percent of GA in NFS lands
Big Belts	452,292	312,983	69
Castles	79,862	69,610	87
Crazies	70,036	57,618	82
Divide	232,890	202,577	87
Elkhorns	175,259	160,599	92
Highwoods	44,495	42,315	95
Little Belts	900,961	802,711	89
Rocky Mountain Range	782,986	777,963	99
Snowies	121,897	117,989	98
Upper Blackfoot	348,185	333,215	96

Each GA section on the following pages provides an overview of the area, including existing distinctive roles and contributions. GA specific desired conditions not covered by forestwide direction are also included. GA objectives, and in some cases standards and guidelines, are also specified. In all cases, please refer to the forestwide direction first, followed by any specific GA direction that may apply. Each GA has a set of associated maps (appendix A).

A number of small parcels that fall within FS jurisdiction are located outside of the HLC NF boundary and are not associated with any GA. These small parcels are primarily used administratively, except for the Lewis and Clark National Historic Trail Interpretive Center in Great Falls, MT, which is a large

interpretive and educational facility. These small parcels often fall within or very close to the communities surrounding the HLC NF.

Table 31 describes the locations and sizes of these smaller parcels.

**Table 31. Parcels that are within FS jurisdiction, but outside of HLC NF boundary**

Parcel general location and town/range/section	Description	Acres
Augusta, Montana T20N R06E S17	Augusta Information Station, several administrative buildings in the city limits.	1.5
Harlowton, Montana T08N R15E S21 and S22	Administrative buildings in the city limits.	1.4
White Sulphur Springs, Montana T09N R07E S18	Belt Creek-White Sulphur Springs Ranger District office, several administrative buildings located on several city lots within the city limits.	0.4
White Sulphur Springs, Montana T09N R07E S18		0.4
White Sulphur Springs, Montana T09N R07E S18		0.4
White Sulphur Springs, Montana T09N R07E S18		0.4
White Sulphur Springs, Montana T09N R07E S18 and T09N R07E S13		0.4
White Sulphur Springs, Montana T09N R07E S18 and T09N R07E S13		0.4
Townsend, Montana T07N R02E S32		Administrative buildings and corrals outside of the city limits.
Townsend, Montana T07N R02E S31	Administrative buildings in the city limits.	0.2
Helena, Montana T10N R03W S20	Old Helena Ranger District office, administrative buildings in the city limits, near the airport.	18.0
Helena, Montana T10N R03W S22	Tanker Base, administrative buildings near the airport.	8.3
Great Falls, Montana T21N R04E S32 and S33	Lewis and Clark National Historic Trail Interpretive Center within city limits.	29.3
Stanford, Montana T16N R12E S16 and S17	Administrative buildings in city limits.	6.7
Choteau, Montana T24N R05W S24	Administrative buildings and corrals north of the city limits	5.0
Total		112.6

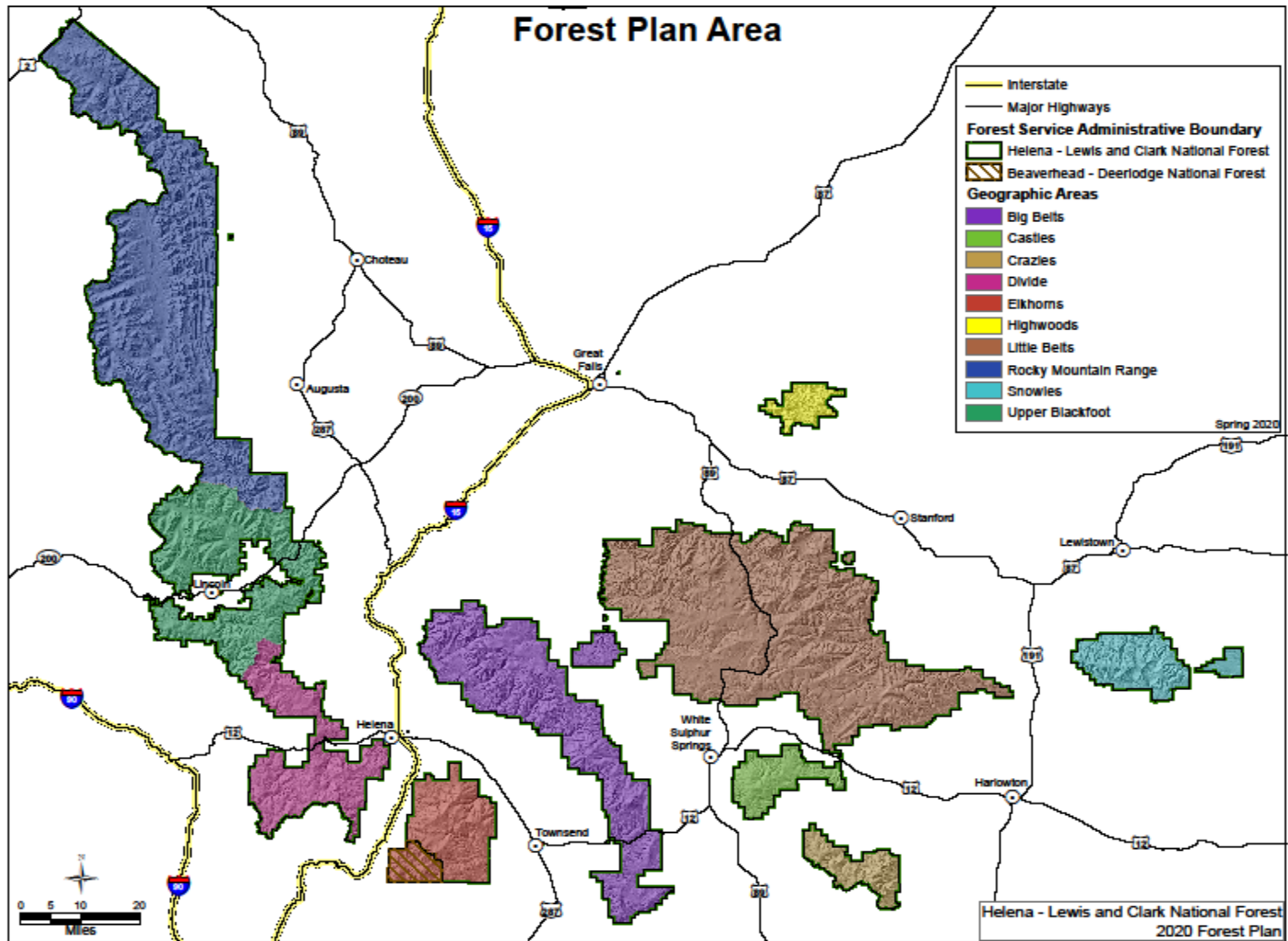


Figure 2. Geographic areas on the HLC NF

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## Big Belts Geographic Area

### General Overview

The Big Belt Mountains are an island range primarily in Broadwater, Lewis and Clark, and Meagher counties with small portions in Gallatin and Cascade counties. The GA includes the Gates of the Mountains Wilderness, the outlying Dry Range, and the small communities of York and Nelson. The nearest population centers include Helena, Townsend, and White Sulphur Springs. This GA is adjacent to the Missouri River and several large reservoirs.

Please see maps (appendix A) for detailed information.

### Distinctive Roles and Contributions

#### Ecological Characteristics

The Missouri River flows northwest along the west side of this GA and then flows north through the Big Belt Mountains. The area was named the Gates of the Mountains by the Lewis and Clark expedition because the river is constricted through tall, picturesque limestone cliffs that open like a gate when you pass through them on the water. An area of canyons adjacent to this stretch of river shares similar geology and has been designated as the Gates of the Mountains Wilderness. The Smith River flows through the valley to the east of the Big Belt Mountains and the Dry Range. The tallest mountains, Mount Baldy and Mount Edith, are found in the south-central part of the range. Some of the highest elevations have evidence of localized glaciation, such as the cirque on Mount Edith. Another prominent local landform feature are bars, which are depositions of material within a stream body over time. Many, such as Montana Bar, have been productive sources for valuable minerals, such as gold and sapphires from placer mining.

The geology of this GA is complex. The southern parts of the GA are predominantly granitic, uplifted, sedimentary, Precambrian limestone, sandstones, and shale. The northwest end of the Big Belts has an excellent exposure of the Precambrian-aged Helena (Empire shale) Formation. This area features dramatically deformed Mississippian-aged massive limestones that are exposed along the Missouri River corridor and in primary drainages. There are some pockets of rock from metamorphic and volcanic activity that are rich in minerals. Both the Big Belts and the Dry Range lack abundant surface water. High elevation lakes such as Camas, Edith, and Boulder are in basins surrounding Mount Baldy and Boulder Baldy peaks. Gypsy Lake, a manmade reservoir, is also on the east side.

The GA supports a mosaic of productive grasslands and conifer forests. Most of the Dry Range and a portion of the Big Belts along the Missouri River can be characterized as partially forested foothills with large grassland openings. This GA hosts a unique bitterbrush/sagebrush/skunkbush complex in the Sweats Gulch area, as well as a heavy sagebrush zone in the southern portion. Mountain mahogany occurs along the Missouri river, providing deer winter range. Other unique nonforested vegetation communities include rough fescue-dominated grasslands, horizontal juniper, and high elevation wetlands in the Boulder-Baldy and Mount Edith areas. The interior slopes support extensive conifer forests interspersed with higher elevation grass and shrublands, as well as several rocky peaks above treeline. The Big Belts is notable for its preponderance of warm, dry potential vegetation types and potential to promote ponderosa pine, aspen, limber pine, and open savannas, as well as whitebark pine on cold potential vegetation types at the highest elevations. Cool moist potential vegetation types and associated species (including lodgepole pine, subalpine fir, and Engelmann spruce) are present but less common in this GA than elsewhere on the Forest. Extensive sagebrush and aspen communities are present. The Long Gulch lodgepole pine test plantation is located here. The limestone cliffs near the Missouri support unique plant communities. In

addition, the Needles rock formation area supports a unique bog feature where livid sedge (*Carex livida*) can be found.

The Big Belts GA provides a variety of habitats for a diversity of wildlife species including mountain goats, bighorn sheep, bald eagles, and cliff-nesting raptors such as peregrine falcons and golden eagles. Lewis's woodpeckers and flammulated owls, species of conservation concern, are also found here. This GA is not within the Northern Continental Divide Ecosystem Recovery Zone for grizzly bears, but is within management Zone 2, identified in the Northern Continental Divide Ecosystem Grizzly Bear Conservation Strategy, and grizzly bears have been documented in this GA. The Big Belts GA is not occupied by Canada lynx, and is not within designated critical habitat for lynx. Very little of the Big Belts GA contains mapped potential Canada lynx habitat. The Big Belts GA provides viewing and hunting opportunities for a variety of big game species including elk, mule deer, and white-tailed deer, and has a population of wild turkeys that provides a hunting opportunity. The 36,000-acre Beartooth Wildlife Management Area borders the Big Belts GA and is managed by FWP to provide wildlife habitat and big game winter range. There are several streams containing conservation populations of westslope cutthroat trout that play a role in maintaining the viability of this trout in the Upper Missouri and Smith River 4th digit watersheds. Examples include Ray Creek, Avalanche, and Greyson Creek as well as Whites Gulch. In addition, Beaver Creek is a blue-ribbon trout stream.

### Social and Economic Characteristics

The Big Belts GA provides a variety of recreation opportunities. The GA has an established system of motorized trails offering access and loop opportunities for users. Snowmobiling is also very popular in the Big Belts GA. Additionally, many nonmotorized trails offer recreation opportunities into quiet areas, such as the Gates of the Mountains Wilderness and the Camas Inventoried Roadless Area. These motorized and nonmotorized trail opportunities are supported by numerous trailheads and developed recreation sites strategically located throughout the Big Belts GA. The Big Belts also hosts multiple popular historic and/or recreational rental cabins, such as Bar Gulch, Rillway, Miller, and Thompson Guard Station. These cabins are a highlight of the Big Belts GA and draw many visitors who appreciate the history of the cabins and enjoy their unique recreation settings. Additionally, the Missouri River along the northern border of the Big Belts GA draws both local and regional recreation users who enjoy fishing, boating, and camping. Visitors may take an interpretive boat ride on the Missouri River or may boat on their own through the Gates of the Mountains to access unique recreation and camping opportunities that are inaccessible by vehicle.

Roads have been constructed for resource extraction and now fragment some areas of the GA. The road network serves as the primary platform from which visitors experience the area. Timber management is evident in the roaded areas. Communication towers have been constructed on high points. Utilities and transmission corridors transect the GA, including a portion of the Gates of the Mountain Wilderness. In contrast to the roaded landscapes in the GA, inventoried roadless areas are in the GA, including the Mount Baldy Inventoried Roadless Area which provides a particularly remote expanse of land. A large livestock grazing program is active in the GA. Mineral production is primarily occurring via small mining operations, and there are several abandoned mines in the GA that need reclamation.

### Cultural and Historical Characteristics

The Big Belts GA has a rich history of occupation beginning with prehistoric peoples. Many cliff faces and rock shelters bear their signature in the form of pictographs and petroglyphs. Tool stone quarries and artifacts such as projectile points and associated flakes are commonly encountered. The Flathead Trail, a historic travel corridor, traverses the southern Big Belt Mountains.



Early European settlement began with the Lewis and Clark expedition of 1804-1806. Shortly thereafter, settlers and miners began to settle within the area. The presence of valuable minerals has endowed the Big Belts with a robust mining history. Relics of historic mining infrastructure and tools are frequent. Many small communities have come and gone such as Whites City, Diamond City, Watson, Vista, Manger, Duck Creek, Blackwell, Cement Gulch City, and Trout Creek. Thompson Civilian Conservation Corps Camp, Meriwether Guard Station, and Hogback Lookout stand as reminders of the Civilian Conservation Corps and FS history.

The Mann Gulch Wildfire Historic District in the northern Big Belts was listed in the National Register of Historic Places in 1999. Mann Gulch is significant in firefighting history because 13 fire personnel lost their lives in this drainage in 1949 while working to suppress a wildfire. Many make pilgrimages here to pay their respects, strengthen internal relationships, and revisit lessons learned.

## Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain their unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 32 and associated map(s) (appendix A) display the designated areas in this GA. Note that there can be overlap between the different areas and that there can also be portions of the GA outside of a designated area, so the sum of these acreages may differ from the total GA acreage.

**Table 32. Designated areas in the Big Belts GA**

Designated area	Acres/miles	Percent of GA <sup>1</sup>	Percent forestwide total <sup>2</sup>
Gates of the Mountains Wilderness	28,441	9	5
Inventoried roadless areas	148,939	47	10
Research natural areas	2,409	1	13
Eligible wild and scenic rivers	23	N/A	N/A
Lewis and Clark National Historic Trail	.5	N/A	N/A
Hanging Valley National Recreation Trail	6	N/A	N/A

<sup>1</sup> Percentage of total NFS lands in the GA, rounded to the nearest whole number. Not applicable to linear features.

<sup>2</sup> Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number. Not applicable to linear features.

## GA Emphasis Areas

GA emphasis areas are not congressionally designated but do have specific plan components. See Table 33.

**Table 33. Emphasis areas in the Big Belts GA**

Area	Acres	Percent of GA
Missouri River Corridor	3,633	1
Smith River Corridor	See Little Belts GA	See Little Belts GA

<sup>1</sup> Percentage of total NFS lands in the GA, rounded to the nearest whole number.

## Recreation Opportunity Spectrum

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components as well as the definitions of the recreation opportunity spectrum classes in the glossary. Table 34 displays the percentage breakout of each recreation

opportunity spectrum class for both summer and winter in this GA. In addition, the associated map(s) (appendix A) display the recreation opportunity spectrum categories in this GA.

**Table 34. Recreation opportunity spectrum classes for the Big Belts GA**

ROS class	Summer		Winter	
	Acres	Percent of GA <sup>1</sup>	Acres	Percent of GA <sup>1</sup>
Primitive	46,031	15	46,031	15
Semi-primitive nonmotorized	107,915	34	127,286	40
Semi-primitive motorized	39,021	12	84,657	27
Roaded natural	112,531	36	48,502	15
Rural	9,700	3	8,722	3
Urban	0	0	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

**Scenic Integrity Objectives**

The scenic character for the Big Belts GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social, economic, historic, and cultural characteristics commonly found throughout this GA. Scenic integrity objectives (Table 35) tied to the scenic character for the Big Belts GA are displayed in the scenic integrity objectives maps (appendix A). Please refer to FW-SCENERY for plan components that apply to scenery and aesthetics. Also, please see appendix G and the glossary for more information.

**Table 35. Scenic integrity objectives for the Big Belts GA**

Scenic integrity objective	Acres	Percent of GA <sup>1</sup>
Very high	46,032	15
High	177,770	56
Moderate	50,537	16
Low	40,860	13
Very low	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

**Lands Suitable for Timber Production**

Lands suitable for timber production are areas where timber production is an appropriate management objective. Please see chapter 2 for information on timber suitability and plan components for harvest on lands identified as suitable and unsuitable for timber production. The Big Belts GA contributes a substantial proportion of the forestwide total area of lands suitable for timber production. Table 36 and associated map(s) in appendix A display the lands suitable for timber production in this GA.

**Table 36. Lands suitable for timber production in the Big Belts GA**

Acres	Percent of the GA <sup>1</sup>	Percent of forestwide total <sup>2</sup>
54,701	17	15

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

<sup>2</sup> Percentage of the total NFS lands suitable for timber production forestwide, rounded to the nearest whole number

**Recommended Wilderness**

Table 37 and associated map(s) in appendix A display the recommended wilderness areas in this GA.

**Table 37. Recommended wilderness in the Big Belts GA**

Areas	Acres	Percent of the GA <sup>1</sup>
Big Log	7,035	2
Mount Baldy	8,141	3
Total	15,176	5

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

## Plan Components – Terrestrial Vegetation (VEGT)

### Desired Conditions (BB-VEGT-DC)

**01** Table 38 shows the desired condition for cover types in the Big Belts GA.

**Table 38. Big Belts GA existing and desired conditions for cover type (percent of area)**

Cover type <sup>1</sup>	Existing (percent) <sup>3</sup>	Desired range (percent)
Nonforested <sup>2</sup>	21 (18-28)	15-25
Aspen/hardwood	0	2-5
Ponderosa pine	9 (5-12)	25-40
Douglas-fir	41 (31-50)	15-30
Lodgepole pine	8 (5-12)	5-10
Spruce/fir	5 (2-7)	5-10
Whitebark pine	3 (1-6)	2-5

<sup>1</sup> Cover types reflect the most common species in a stand (see appendix D).

<sup>2</sup> Nonforested areas include grass and shrub cover types, which may support widely scattered trees in some cases.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data. Existing condition represents 2018 conditions and will change through time. Estimates are rounded to the nearest whole number unless the value is less than 1%, in which case it is rounded to the nearest 10th. The totals do not necessarily equal 100% due to non-vegetated areas (water or rock)

## Plan Components - Forested Vegetation (VEGF)

### Desired Conditions (BB-VEGF-DC)

**01** Table 39 shows the existing and desired conditions for tree species presence in the Big Belts GA.

**Table 39. Big Belts GA existing and desired conditions for tree species presence (percent of area)<sup>1, 2, 3</sup>**

Tree species	Existing (percent)	Desired range (percent)
Limber pine	3 (1-6)	5-15
Rocky Mountain juniper	17 (12-21)	5-15
Ponderosa pine	10 (6-13)	40-50
Douglas-fir	49 (42-54)	50-60
Aspen	1 (0.3-3)	2-10
Engelmann spruce	4 (1-6)	5-15
Lodgepole pine	16 (12-2)	10-20
Subalpine fir	15 (10-19)	5-15
Whitebark pine	6 (3-9)	5-15

<sup>1</sup> Percent of area where at least one tree of the species is present.

<sup>2</sup> Totals may be greater 100% because more than 1 species can be present on a site. Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

<sup>3</sup> Distributions include trees that occur on nonforested potential vegetation type.

**02** Table 40 shows the existing and desired conditions for forest size class in the Big Belts GA.

**Table 40. Big Belts GA existing and desired conditions for forest size class (percent of area)<sup>3</sup>**

Size class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Seedling/sapling (0-4.9")	7 (4-11)	1-15
Small (5-9.9")	31 (24-36)	2-15
Medium (10-14.9")	18 (14-23)	5-20
Large (15.0-19.9")	8 (5-11)	20-30
Very large (20"+)	2 (1-5)	10-30

<sup>1</sup> Size class = the average diameter class of live trees based on basal area weighted diameter, shown as ranges of diameter at breast height, or 4.5' above ground level. A stand within a size class may contain trees smaller and/or larger than the class range.

<sup>2</sup> Total may less than 100% because nonforested areas (grass, shrub, savanna) are excluded.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

**03** Table 41 shows the existing and desired conditions for forest density class in the Big Belts GA.

**Table 41. Big Belts GA existing and desired conditions for forest density class (percent of area)**

Density class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Low/med (<39.9%)	33	25-55
Med/high (40-59.9%)	29	30-50
High (60+%)	39	10-40

<sup>1</sup> Density class = the average canopy cover of live trees, shown as ranges of canopy cover percent.

<sup>2</sup> Existing condition is from the SIMPPLLE input landbase, based on VMap imagery.

## Plan Components – Nonforested Vegetation (VEGNF)

### Desired Conditions (BB-VEGNF-DC)

**01** Unique plant communities persist and are in a condition consistent with natural processes. This includes but is not limited to the bitterbrush/sagebrush/skunkbush complex in Sweats Gulch, mountain mahogany communities along the Missouri river, the heavy sagebrush zone of the southern

Belts, high elevation rough fescue-dominated grasslands, horizontal juniper components, and high elevation wetlands and bogs in the Boulder-Baldy and Mount Edith areas.

## Plan Components - Wildlife (WL)

### Desired Conditions (BB-WL-DC)

- 01** The risk of disease transmission from domestic livestock to bighorn sheep is minimal.
- 02** Ponderosa pine-dominated forests contain large-tree structure (see glossary) comprised of ponderosa pine and/or Douglas-fir trees and snags with relatively open canopy available for nesting by flammulated owls. These areas occur within a larger mosaic of closed-canopy forest and shrub-dominated openings that serve as flammulated owl roosting and foraging areas.
- 03** The Big Belts GA provides habitat connectivity for wide ranging species (e.g., grizzly bear and others) between public lands in northern Montana and those in south and southwestern Montana, including lands in the Greater Yellowstone Ecosystem.

### Standards (BB-WL-STD)

- 01** The best available scientific information, and the most current recommendations made through agency or interagency efforts, shall be used to determine and establish the means with which to achieve effective separation between bighorn sheep and domestic sheep and goats on NFS lands (refer to appendix C for information on recommendations and strategies).

## Plan Components – Missouri River Corridor (MISCOR)

The Missouri River is a nationally recognized river famous for its fishing, outstanding scenery, and the history present along it. The Missouri River Corridor has much historic and cultural significance. Captains Meriwether Lewis and William Clark passed through this corridor on route to the Pacific Ocean and back in 1805-06. Captain Lewis used the term “Gates of the Mountains” to describe these scenic and unique cliffs in the area. The Lewis and Clark National Historic Trail, a nationally designated trail, is in the bottom of the corridor. Additionally, the historic Mann Gulch Fire Historic Landscape is located within the Missouri River Corridor area. This historic landscape is recognized on the National Register of Historic Places and memorializes the loss of smokejumper fire fighters during the 1949 Mann Gulch fire.

Recreation use of the Missouri River Corridor is year-round but particularly high during the summer months when water recreation is the most active throughout the corridor. A commercial tour boat operation offers boat trips up the river and there are many developed and dispersed recreation sites along the banks of the river. This area also provides access to the western portions of the Gates of the Mountain Wilderness. In addition, there are concentrations of cliff nesting raptors in this corridor (also see FW-WLO-DC-03).

### Desired Conditions (BB-MISCOR-DC)

- 01** The developed recreation settings and opportunities along the Missouri River Corridor are ecologically sustainable and recreational user conflicts are minimal.
- 02** The Missouri River Corridor canyon appears largely natural.
- 03** The Missouri River Corridor maintains its historic and cultural features. Interpretation is available and enhances visitor experiences of the area.

- 04** Travelers within the Missouri River Corridor have opportunities to learn about the 1806 Lewis and Clark Expedition and the Mann Gulch Fire, and to experience and appreciate the unique natural environment of the area. Trailside interpretation and related visitor information services enhance visitor appreciation of the outdoors, the natural resources, scenery, and cultural and historic values within the corridor.
- 05** Developed recreation sites accommodate increased recreational use in the corridor while protecting the unique and important natural resources and historic and cultural features within the area.
- 06** Dispersed recreation opportunities along the river corridor allow for exploration and discovery with minimal environmental impacts and user conflicts.

### Goals (BB-MISCOR-GO)

- 01** The operation, maintenance, and delivery of recreation along the Missouri River corridor is supported by strong partnerships and volunteer programs.

### Guidelines (BB-MISCOR-GDL)

- 01** To protect and enhance the scenic quality of the area, management activities in the Missouri River Corridor should be consistent with the scenic integrity objective of high to very high.

### Suitability (BB-MISCOR-SUIT)

- 01** The Missouri River Corridor is unsuitable for timber production. However, harvest may be used for other multiple use values such as providing for public safety and enhancing the recreational or aesthetic values of the corridor.

## Plan Components – Smith River Corridor (SMITH)

The Smith River Corridor is located within two GAs - Big Belts and the Little Belts. Only a small portion of the corridor crosses the Big Belts on the far western portion of the GA, called the Dry Range. The majority of the corridor is located within the Little Belts GA. Therefore, the plan components for the Smith River corridor are in the Little Belts GA section.

## Plan Components – Benefits to People (SU)

### Goal (BB-SU-GO)

- 01** Work with permit holder to relocate the utility corridor outside of the Gates of the Mountains Wilderness.

### Standards (BB-SU-STD)

- 01** Maintenance of the utility corridor in the Gates of the Mountains Wilderness shall be managed to have minimal effects on wilderness character.

## Castles Geographic Area

### General Overview

The Castles GA is an island mountain range east of White Sulphur Springs in Meagher County. The Castle's forested higher elevations are surrounded by lower elevations that are predominantly treeless, instilling an island appearance.

Please see maps (appendix A) for detailed information.

### Distinctive Roles and Contributions

#### Ecological Characteristics

The Castle Mountains have their own geologic story unique from the other island ranges. The range is a combination of landforms that appear as one. Western slopes culminate in a gently rising, flat-topped dome of volcanic origin that is comprised of a group of castle-like outcrops of granite. The eastern section is characterized by plateaus of sedimentary origin. Vantages throughout the GA provide impressive views of the Little Belts to the north, the Crazyes to the south, the Big Belts to the west, the Bridger Mountains to the southwest, and a vast expanse of prairie to the east.

North and northwestern aspects are cloaked with a dense canopy of conifers. At higher elevations and on sun exposed aspects, forest intergrades with grassland meadows, or parks. These expansive grasslands consist of robust native plant communities that provide forage for both wildlife and livestock. This GA is dominated by nonforested and warm dry potential vegetation types, with more aspen, lodgepole pine, and limber pine than across the Forest as a whole, along with less Douglas-fir, ponderosa pine, and subalpine fir. Aspen stands grow in moist areas, and the western portion of the mountain range supports a large expanse of whitebark pine forest at the highest elevations. On the drier, eastern sections, plant communities are dominated by grassy parks interspersed with patches of conifers. Historically, fire was the primary shaper of plant communities.

The Castles GA provides habitat for a variety of wildlife species, including elk, mule deer, white-tailed deer, and black bear. This GA includes extensive sagebrush grasslands, likely supporting several species that use that habitat type, such as Vesper sparrow and possibly Brewer's sparrow and loggerhead shrike. The northeastern portion of the GA has important elk winter range. This GA is within management Zone 3, identified in the Northern Continental Divide Ecosystem Grizzly Bear Conservation Strategy, although grizzly bears have not been documented in the Castles as of early 2020.

The Castles GA drains to the North and South Forks of the Smith River on the west side and to the North and South Forks of the Musselshell River on the east side. Many spring fed streams drain from the mountains into these forks, some cutting deep gorges and some sinking underground. Willow Creek is the municipal water source for White Sulphur Springs. The western slopes are wetter than the porous eastern limestone slopes. There is also a small lake known as Castle Lake located within this GA. Several streams on the west slope of the Castles support westslope cutthroat trout.

Water quality in the upper areas of the Willow Creek drainage is good. The watershed is the primary source water for the municipal water for the city of White Sulphur Springs. The reservoir and infrastructure include a small dam and stream diversion just off FS lands on city property. A small conservation population of westslope cutthroat trout are present in the drainage.

## Social and Economic Characteristics

The recreation opportunities in the Castles primarily consist of trails that allow for year-round motorized access; two small campgrounds, one developed and one primitive, that provide overnight camping opportunities; and unique geologic formations that provide for interesting hiking and exploring. Nonmotorized access to the Castles is limited. Livestock grazing is a primary multiple use on this GA. Mineral production is primarily occurring via small mining operations, and there are several abandoned mines in the GA that need reclamation.

Private land inholdings and checkerboard ownership patterns in this GA make access to other NFS lands within the area challenging.

## Cultural and Historical Characteristics

This GA has a long history of occupation. Native Americans left evidence of their presence via rock art, stone tool quarries, and workshop sites. Euro-American settlement began with the discovery of metal deposits. This was followed by homesteading as a result of railroad development. The small railroad town of Lennep is a remnant of this era, as are the mining ghost towns of Castletown and Blackhawk. The short-lived city of Castletown (1887 to 1893), located on the south side of the Castle Mountains, had a population of over 2,000 individuals during the silver heydays of the late 1880s. Cities of White Sulphur Springs, Lennup, and Martinsdale were also established when silver was discovered in the Castle Mountains. Locals report the active use of Prohibition stills in the surrounding foothills, with one known recorded location.

## Designated Areas

Designated areas are specific areas or features within the plan area that have been given permanent designation to maintain their unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 42 and associated map(s) in appendix A display the designated areas in this GA.

**Table 42. Designated areas in the Castles GA**

Designated area	Acres/miles	Percent of GA <sup>1</sup>	Percent forestwide total <sup>2</sup>
Inventoried roadless areas (1)	29,386	42	2

<sup>1</sup> Percentage of total NFS lands in the GA, rounded to the nearest whole number.

<sup>2</sup> Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number.

## GA Emphasis Areas

GA emphasis areas are not congressionally designated but do have specific plan components. See Table 43.

**Table 43. Emphasis areas in the Castles GA**

Area	Acres	Percent of GA
Willow Creek Municipal Watershed	6,856	9

<sup>1</sup> Percentage of total NFS lands in the GA, rounded to the nearest whole number.

## Recreation Opportunity Spectrum

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components as well as the definitions of the recreation opportunity spectrum classes in the glossary. Table 44 displays the percentage breakout of each recreation



opportunity spectrum class for both summer and winter. In addition, the associated map(s) in appendix A display the recreation opportunity spectrum categories in this GA.

**Table 44. Recreation opportunity spectrum classes for the Castles GA**

ROS Class	Summer		Winter	
	Acres	Percent of GA <sup>1</sup>	Acres	Percent of GA <sup>1</sup>
Primitive	0	0	0	0
Semi-primitive nonmotorized	16,876	24	13,195	19
Semi-primitive motorized	16,343	24	56,514	81
Roaded natural	36,490	52	0	0
Rural	0	0	0	0
Urban	0	0	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

**Scenic Integrity Objectives**

The scenic character for the Castles GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural characteristics commonly found throughout this GA. Scenic integrity objectives (Table 45) tied to the scenic character for the Castles GA are displayed in the scenic integrity objective maps (appendix A). Please refer to FW-SCENERY for plan components that apply to scenery and aesthetics. Also, please see appendix G and the glossary for more information.

**Table 45. Scenic integrity objectives for the Castles GA**

Scenic integrity objective	Acres	Percent of GA <sup>1</sup>
Very high	0	0
High	39,690	57
Moderate	18,584	27
Low	11,434	16
Very low	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

**Lands Suitable for Timber Production**

Lands suitable for timber production are areas where timber production is an appropriate management objective. Please see chapter 2 for information on timber suitability and plan components for harvest on lands identified as suitable and unsuitable for timber production. This GA contributes a relatively small proportion of the forestwide total area of lands suitable for timber production. Table 46 and associated map(s) (see appendix A) display the lands suitable for timber production in this GA.

**Table 46. Lands suitable for timber production in the Castles GA**

Acres	Percent of the GA <sup>1</sup>	Percent of forestwide total <sup>2</sup>
15,084	22	4

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

<sup>2</sup> Percentage of the total NFS lands suitable for timber production forestwide, rounded to the nearest whole number

**Recommended Wilderness**

There are no recommended wilderness areas in the Castles GA.

## Plan Components – Watershed (WTR)

### Desired Conditions (CA-WTR-DC)

- 01 Willow Creek municipal watershed provides a clean water supply for the city of White Sulphur Springs. See FW-WTR-STD-01.

### Goals (CA-WTR-GO)

- 01 Coordinate management of the municipal watershed with the state of Montana and municipality.

### Guidelines (CA-WTR-GDL)

- 01 Management activities within the Willow Creek municipal watershed should emphasize restoration and resiliency.
- 02 Livestock grazing should only be permitted in the Willow Creek watershed when moving animals between pastures which are adjacent to the watershed.

## Plan Components – Terrestrial Vegetation (VEGT)

### Desired Conditions (CA-VEGT-DC)

- 01 Table 47 shows the existing and desired condition for cover types in the Castles GA.

**Table 47. Castles GA existing and desired conditions for cover type (percent of area)**

Cover type <sup>1</sup>	Existing (percent) <sup>3</sup>	Desired range (percent)
Nonforested <sup>2</sup>	15 (6-23)	10-20
Aspen/hardwood	2 (2-6)	2-5
Ponderosa pine	0	15-30
Douglas-fir	35 (23-46)	10-20
Lodgepole pine	35 (23-46)	30-40
Spruce/fir	6 (1-12)	5-10
Whitebark pine	4 (3-8)	2-5

<sup>1</sup> Cover types reflect the most common species in a stand (see appendix D).

<sup>2</sup> Nonforested areas include grass and shrub cover types, which may support widely scattered trees in some cases.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis.

Source is R1 Summary Database, FIA data. Existing condition represents 2018 conditions and will change through time.

Estimates are rounded to the nearest whole number unless the value is less than 1%, in which case it is rounded to the nearest 10th. The totals do not necessarily equal 100% due to non-vegetated areas (water or rock)

## Plan Components - Forested Vegetation (VEGF)

### Desired Conditions (CA-VEGF-DC)

- 01 Table 48 shows the existing and desired conditions for tree species presence in the Castles GA.

**Table 48. Castles GA existing and desired conditions for tree species presence (percent of area)<sup>1, 2, 3</sup>**

Tree species	Existing (percent)	Desired range (percent)
Limber pine	15 (6-23)	35-45
Rocky Mountain juniper	2 (1-6)	1-5
Ponderosa pine	6 (5-12)	20-30

Tree species	Existing (percent)	Desired range (percent)
Douglas-fir	48 (38-62)	20-30
Aspen	2 (1-6)	2-10
Engelmann spruce	2 (1-6)	2-10
Lodgepole pine	44 (32-56)	35-45
Subalpine fir	15 (7-24)	5-15
Whitebark pine	19 (10-28)	10-20

<sup>1</sup> Percent of area where at least one tree of the species is present.

<sup>2</sup> Totals may be greater 100% because more than 1 species can be present on a site. Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

<sup>3</sup> Distributions include trees that occur on nonforested potential vegetation type.

**02** Table 49 shows the existing and desired conditions for forest size class in the Castles GA.

**Table 49. Castles GA existing and desired conditions for forest size class (percent of area)<sup>3</sup>**

Size class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Seedling/sapling (0-4.9")	7 (2-13)	1-20
Small (5-9.9")	50 (39-62)	2-25
Medium (10-14.9")	7 (2-14)	2-25
Large (15.0-19.9")	13 (6-23)	25-35
Very large (20"+)	4 (4-9)	5-15

<sup>1</sup> Size class = the average diameter class of live trees based on basal area weighted diameter, shown as ranges of diameter at breast height, or 4.5' above ground level. A stand within a size class may contain trees smaller and/or larger than the class range.

<sup>2</sup> Total may less than 100% because nonforested areas (grass, shrub, savanna) are excluded.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

**03** Table 50 shows the existing and desired condition for forest density class in the Castles GA.

**Table 50. Castles GA existing and desired conditions for forest density class (percent of area)**

Density class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Low/med (< 39.9%)	28	20-40
Med/high (40-59.9%)	46	30-50
High (60+%)	26	15-45

<sup>1</sup> Density class = the average canopy cover of live trees, shown as ranges of canopy cover percent.

<sup>2</sup> Existing condition is from the SIMPLLE input landbase, based on VMap imagery.

## Plan Components – Nonforested Vegetation (VEGNF)

### Desired Conditions (CA-VEGNF-DC)

- 01** The extent and health of native grass and shrublands support habitat for potential use by native wildlife species associated with these habitats.
- 02** Unique plant communities persist and are in a condition consistent with natural processes. This includes but is not limited to sagebrush communities.

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## Crazies Geographic Area

### General Overview

The Crazies GA encompasses the northern portion of the Crazy Mountains. The southern portion of the GA is administered by the Gallatin National Forest. The GA is at the junction of Meagher, Wheatland, Sweet Grass, and Park counties. White Sulphur Springs is the nearest population center.

Please see maps (appendix A) for detailed information.

### Distinctive Roles and Contributions

#### Ecological Characteristics

The Crazy Mountains make up an island range that abruptly rises from the surrounding Shield, Musselshell, and Yellowstone River valleys. This island range is a discrete geologic unit, unique from the adjacent ranges. The form of the Crazies is bold and craggy. They are of volcanic origin and enriched with granitic geology. Talus, scree, and boulder areas dot steep and moderate slopes. Broad valleys and long finger ridges radiate outward from its center. Many ridge tops and summits lack vegetation residing in the alpine. Glaciation has imparted many of these landforms with sharp, scoured edges.

The Crazy Mountains support a mix of nonforested, warm dry, cool moist, and cold potential vegetation types. Riparian forests of aspen, willow, dogwood, and cottonwood grow along their courses. Grasslands occupy much of the lower elevations, more so than the forest as a whole, which intergrade with coniferous forest at higher elevations. Small patches of aspen punctuate the dense canopy of evergreen trees, although this species is relatively rare. Limber pine is present, but ponderosa pine and juniper are notably absent. Spruce/fir cover types are the most common, and although lodgepole pine and Douglas-fir are common, they are less prevalent here than on the forest as a whole. At the highest elevations whitebark pine communities are particularly prevalent, eventually giving way to nonforested alpine habitats. Historically, fire would have been a major influence on plant communities.

The Crazies GA is home to several wildlife species, including western toads, Clark's nutcrackers, black bears, moose, elk, mule deer, and others. The Crazies support a population of mountain goats introduced by Montana Fish, Wildlife, and Parks in 1941 and 1943 that currently provide an important hunting and viewing opportunity. This GA is within management Zone 3, identified in the Northern Continental Divide Ecosystem Grizzly Bear Conservation Strategy, although grizzly bears have not been documented in the Crazies as of early 2020. The Crazy Mountains may provide some connectivity for certain wildlife species between the Little Belt Mountains to the north, and the mountain ranges of the Greater Yellowstone Ecosystem to the south.

All the GA's streams drain into the Musselshell River on their way to the Gulf of Mexico via the Missouri River. There is no mapped population of westslope cutthroat trout in the Crazies.

#### Social and Economic Characteristics

Recreation use in the Crazies is dispersed in nature and is concentrated around FS Road 66, which is the primary access to the historic Forest Lake Guard Station and a primitive campground near Forest Lake. Private land inholdings and checkerboard ownership patterns in this GA make access to other NFS lands within the area challenging. Hunting is a very popular recreation activity in the GA. Outfitter and guides provide unique hunting opportunities and access that is difficult to achieve otherwise.

## Cultural and Historical Characteristics

The rugged and awe-inspiring range has captivated people over time. The Mountain Crow people visited its tall peaks and special areas for vision quests. Euro-American settlement has lightly affected the area with only a few signs of habitation. Forest Lake Guard Station still stands as a sentry for FS administration. Today people still seek spiritual experiences through various recreational and other means.

## Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 51 and associated map(s) (appendix A) display the designated areas in this GA.

**Table 51. Designated areas in the Crazies GA**

Designated area	Acres/miles	Percent of GA <sup>1</sup>	Percent forestwide total <sup>2</sup>
Inventoried roadless areas (2)	37,498	65	3

<sup>1</sup> Percentage of total NFS lands in the GA, rounded to the nearest whole number.

<sup>2</sup> Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number.

## GA Emphasis Areas

GA emphasis areas are not congressionally designated but do have specific plan components.

### *Recreation Opportunity Spectrum*

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components as well as the definitions of the ROS classes in the glossary. Table 52 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter. In addition, the associated map(s) (appendix A) display the recreation opportunity spectrum categories in this GA.

**Table 52. Recreation opportunity spectrum classes for the Crazies GA**

ROS class	Summer		Winter	
	Acres	Percent of GA <sup>1</sup>	Acres	Percent of GA <sup>1</sup>
Primitive	0	0	0	0
Semi-primitive nonmotorized	33,899	59	35,830	62
Semi-primitive motorized	15,126	26	21,838	38
Roaded natural	8,642	15	0	0
Rural	0	0	0	0
Urban	0	0	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

### *Scenic Integrity Objectives*

The scenic character for the Crazies GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural characteristics commonly found throughout this GA. The locations of scenic integrity objectives (Table 53) for the Crazies GA are displayed in the scenic integrity objectives maps (appendix A). Please refer to FW-SCENERY for plan components that apply to scenery and aesthetics. Also, please see appendix G and the glossary for more information.

**Table 53. Scenic integrity objectives for the Crazies GA**

Scenic integrity objective	Acres	Percent of GA <sup>1</sup>
Very high	0	0
High	47,087	82
Moderate	6,584	11
Low	3,996	7
Very low	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

**Lands Suitable for Timber Production**

Lands suitable for timber production are areas where timber production is an appropriate management objective. Please see chapter 2 for information on timber suitability and plan components for harvest on lands identified as suitable and unsuitable for timber production. This GA contributes a small proportion of the forestwide total area of lands suitable for timber production. Table 54 and associated map(s) (appendix A) display the lands suitable for timber production in this GA.

**Table 54. Lands suitable for timber production in the Crazies GA**

Acres	Percent of the GA <sup>1</sup>	Percent of forestwide total <sup>2</sup>
5,353	9	1

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

<sup>2</sup> Percentage of the total NFS lands suitable for timber production forestwide, rounded to the nearest whole number

**Recommended Wilderness**

There are no recommended wilderness areas in the Crazies GA.

**Plan Components – Terrestrial Vegetation (VEGT)**

**Desired Conditions (CR-VEGT-DC)**

**01** Table 55 shows the desired condition for cover types in the Crazies GA.

**Table 55. Crazies GA existing and desired conditions for cover type (percent of area)**

Cover type <sup>1</sup>	Existing (percent) <sup>3</sup>	Desired range (percent)
Nonforested <sup>2</sup>	19 (9-32)	10-20
Aspen/hardwood	0	1-2
Ponderosa pine	0	5-15
Douglas-fir	34 (14-55)	5-15
Lodgepole pine	14 (5-24)	25-35
Spruce/fir	21 (10-34)	15-25
Whitebark pine	5 (4-12)	2-5

<sup>1</sup> Cover types reflect the most common species in a stand (see appendix D).

<sup>2</sup> Nonforested areas include grass and shrub cover types, which may support widely scattered trees in some cases.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data. Existing condition represents 2018 conditions and will change through time. Estimates are rounded to the nearest whole number unless the value is less than 1%, in which case it is rounded to the nearest 10th. The totals do not necessarily equal 100% due to non-vegetated areas (water or rock)

## Plan Components - Forested Vegetation (VEGF)

### Desired Conditions (CR-VEGF-DC)

01 Table 56 shows the desired condition for tree species presence in the Crazies GA.

**Table 56. Crazies GA existing and desired conditions for tree species presence (percent of area)<sup>1, 2, 3</sup>**

Tree species	Existing (percent)	Desired range (percent)
Llimber pine	12 (4-23)	20-30
Rocky Mountain juniper	0	1-5
Ponderosa pine	0	2-10
Douglas-fir	45 (30-58)	10-20
Aspen	0	1-10
Engelmann spruce	12 (2-21)	15-25
Lodgepole pine	33 (20-46)	25-40
Subalpine fir	45 (33-60)	15-30
Whitebark pine	21 (11-35)	15-25

<sup>1</sup> Percent of area where at least one tree of the species is present.

<sup>2</sup> Totals may be greater 100% because more than 1 species can be present on a site. Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

<sup>3</sup> Distributions include trees that occur on nonforested potential vegetation type.

02 Table 57 shows the desired condition for forest size class in the Crazies GA.

**Table 57. Crazies GA existing and desired conditions for forest size class (percent of area)<sup>3</sup>**

Size class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Seedling/sapling (0-4.9")	17 (11-25)	2-20
Small (5-9.9")	46 (39-52)	5-25
Medium (10-14.9")	17 (12-21)	5-25
Large (15.0-19.9")	6 (3-9)	15-25
Very large (20"+)	3 (1-6)	5-25

<sup>1</sup> Size class = the average diameter class of live trees based on basal area weighted diameter, shown as ranges of diameter at breast height, or 4.5' above ground level. A stand within a size class may contain trees smaller and/or larger than the class range.

<sup>2</sup> Total may less than 100% because nonforested areas (grass, shrub, savanna) are excluded.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

03 Table 58 shows the desired condition for forest density class in the Crazies GA.

**Table 58. Crazies GA existing and desired conditions for forest density class (percent of area)**

Density class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Low/med (< 39.9%)	25	30-55
Med/high (40-59.9%)	29	25-45
High (60+%)	46	15-45

<sup>1</sup> Density class = the average canopy cover of live trees, shown as ranges of canopy cover percent.

<sup>2</sup> Existing condition is from the SIMPPLLE input landbase, based on VMap imagery.



## Plan Components - Wildlife (WL)

### Desired Conditions (CR-WL-DC)

- 01** The Crazies GA provides habitat connectivity for wide-ranging species (e.g., grizzly bear and others) between public lands in northern Montana and those in south and southwestern Montana, including lands in the Greater Yellowstone Ecosystem.

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## Divide Geographic Area

### General Overview

This GA is the scenic backdrop and primary recreational resource for Montana's capital city of Helena. It also includes the smaller communities of Austin, Rimini, Elliston, and Unionville. Portions of the GA are within Lewis and Clark, Powell, and Jefferson counties. Unlike many of the other GAs in the HLC NF plan area, the Divide is not an island range, but rather a portion of the larger Continental Divide that extends north/south across Montana. One of its most unique characteristics is that a significant portion of the GA is located west of the Continental Divide.

Please see maps (appendix A) for detailed information.

### Distinctive Roles and Contributions

#### Ecological Characteristics

The Divide GA encompasses landscapes that span across the Continental Divide. It is located west of Helena and extends both north and south of Highway 12. East of the Continental Divide, it includes the Tenmile drainage as well as the headwaters of Prickly Pear and Little Prickly Pear Creeks. West of the Continental Divide, it includes the Little Blackfoot drainage. The range is predominantly sedimentary, with some volcanic intrusions. The area has been heavily mined since the late 1800s. Red Mountain is a notable peak visible from many locations, distinguished by its expanses of bare red rock. Greenhorn Mountain is also a key topographical feature.

The Divide GA supports a wide range of vegetation conditions. Historically, fire was the primary disturbance and would determine composition and patterns of vegetation, although the most recent large fire occurred in the 1860's. Much of the area west of the Continental Divide is covered with mature conifer forest, characterized by large expanses of even-aged lodgepole pine. It also includes other species such as whitebark pine, Engelmann spruce, and subalpine fir at the highest elevations and Douglas-fir with limited ponderosa pine at lower elevations. Many wetlands are present in the western portion of the GA. Large parks are distributed at both high and low elevations, including Irish Mine Hill, Baldy Mountain, Bullion Parks, and Blackhall Meadows, a unique aspen and grassland community. High quality native vegetation can be found in many rough fescue grasslands. East of the Continental Divide the landscape supports rolling foothills where conifer forest is interspersed with grass and shrubland communities. The Sweeney Creek area includes a unique vegetation complex of ponderosa pine and bitterbrush. Limber pine is present, although limited in this GA by the extent of its natural range. This area includes the dry ponderosa pine and Douglas-fir forests and meadows that abut the city of Helena. The pine forests on both sides of the divide in this GA were particularly affected by the mountain pine beetle outbreak that occurred from 2006 to 2010. This GA also has the Cellar-Ogilvie lodgepole pine test plantation.

The Divide GA provides opportunities for connections for wildlife populations between the expanse of public lands in northern Montana with public lands in the Yellowstone area and southwest Montana. It sits at the southern end of the Northern Continental Divide Ecosystem Recovery Zone for grizzly bears and is an important north/south connectivity corridor. This GA is within management Zone 2, identified in the Northern Continental Divide Ecosystem Grizzly Bear Conservation Strategy, and grizzly bears have been documented in the Divide GA. The northern portion of the Divide GA is within Unit 3 of designated Canada lynx Critical Habitat. Other wildlife species present in this GA include flammulated owl, western toad, Clarks' nutcracker, wolverine, wolves, and big game and other species that provide wildlife viewing, hunting, and trapping opportunities. The Upper Blackfoot GA provides important connectivity for a

variety of wildlife species between larger blocks of public land to the north and the south. Several streams within the Divide GA support westslope cutthroat trout and bull trout are known to occur at very low densities.

Tenmile drainage is a high priority watershed. Water quality in the upper Tenmile drainage is good and the watershed is the primary source of municipal water for the City of Helena. This landscape encompasses a network of associated infrastructure located in and near NFS lands including Chessman and Scott Reservoir, the 4.8 miles Chessman flume, and five separate headgate/intakes distributed along Tenmile Creek. Tributaries include Beaver, Moose, Banner and Minnehaha Creeks, and Water Gulch. Historic mining includes 150 mine features in the Divide GA which have impacted water quality in lower Tenmile Creek and the Little Blackfoot River.

## Social and Economic Characteristics

The Divide landscape hosts a wide variety of recreation opportunities such as, but not limited to, developed and dispersed site camping, hiking, mountain biking, fishing, snowmobiling, hunting, all-terrain vehicle riding, and driving for pleasure.

Especially unique to the Divide GA, is the South Hills Recreation Area which provides a large dispersed recreation area adjacent to the city limits of Helena. The well-used and popular trail system through this area crosses NFS, Bureau of Land Management, City of Helena, and private lands and is maintained through a memorandum of understanding between the managing entities. Extension of this area north and west to the Continental Divide provides for additional remote and more backcountry dispersed recreation and trail opportunities.

A variety of developed campgrounds are located within the Divide GA. A couple of the more unique ones are Park Lake Campground and Cromwell Dixon. Park Lake Campground provides access to a small mountain lake and is one of the most popular campgrounds due to its proximity to Helena. Cromwell Dixon campground is located along the Continental Divide National Scenic Trail at the top of MacDonald Pass.

The MacDonald Pass area is also home to the MacDonald Pass Cross Country Ski Trails which are groomed and operated under a special use permit. This area offers a network of cross-country skiing trails that are easily accessed by the community of Helena. As mentioned above, the Continental Divide National Scenic Trail follows the crest of the continental divide west of the city of Helena and is easily accessed from trailheads in the MacDonald Pass area. The Continental Divide National Scenic Trail crosses several GAs and focuses on remote and primitive dispersed recreation opportunities for hiking, horseback riding, and mountain biking.

The Divide GA also remains host to many active mining claims, primarily for gold, and there are several historic mining districts in the GA. Amidst the active mining claims, residential development on patented claims and extensive reclamation activities associated with historic mining are taking place throughout the GA. A large portion of this GA has been identified as a Comprehensive Environmental Response, Compensation, and Liability Act superfund site, which is referred to as Upper Tenmile Creek Mining Area.

Livestock grazing takes place across much of the GA and some riparian benches have been converted to pasture on private property, adding a rural setting in parts of the Divide GA.

## Cultural and Historical Characteristics

While the GA has a rich history of prehistoric occupation, its signature on the landscape is not obvious. A legacy of historic uses has left behind a suite of structures - cabins, kilns, flumes, railroad beds, logging evidence, and over 139 named mines including the historic Charter Oak Mine and Mill, Armstrong Mine, and Beatrice Mine. Many former mining communities were settled and have since vanished. Several historic administrative sites are also present on the landscape, for example the Moose Creek Ranger Station near Rimini and Kading Guard Station located near Elliston. The historic Mullan Road passed through this GA and sections are still visible on NFS land.

## Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. The following table and associated map(s) (appendix A) display the designated areas in this GA. Note that there can be overlap between the different areas and that there can also be portions of the GA outside of a designated area, so the sum of these acreages may differ from the total GA acreage.

**Table 59. Designated areas in the Divide GA**

Designated area	Acres/miles	Percent of GA <sup>1</sup>	Percent forestwide total <sup>2</sup>
Inventoried roadless areas	63,852	32	4
Eligible wild and scenic rivers (several)	21	N/A	N/A
Continental Divide National Scenic Trail	68	N/A	N/A
Mt. Helena National Recreation Trail	6	N/A	N/A

<sup>1</sup> Percentage of total NFS lands in the GA, rounded to the nearest whole number. Not applicable to linear features.

<sup>2</sup> Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number. Not applicable to linear features.

## GA Emphasis Areas

GA emphasis areas are not congressionally designated but do have specific plan components. See Table 60.

**Table 60. Emphasis areas in the Divide GA**

Area	Acres	Percent of GA
South Hills Recreation Area	50,181	25
Tenmile municipal watershed	25,911	11

<sup>1</sup> Percentage of total NFS lands in the GA, rounded to the nearest whole number.

## Recreation Opportunity Spectrum

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components as well as the definitions of the ROS classes in the glossary. Table 61 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter. In addition, the associated map(s) (appendix A) display the recreation opportunity spectrum categories in this GA.

**Table 61. Recreation opportunity spectrum classes for the Divide GA**

ROS class	Summer		Winter	
	Acres	Percent of GA <sup>1</sup>	Acres	Percent of GA <sup>1</sup>
Primitive	32,953	16	32,955	16
Semi-primitive nonmotorized	69,126	34	46,639	23
Semi-primitive motorized	22,457	11	64,551	32
Roaded natural	69,298	34	48,639	24
Rural	8,808	5	9,860	5
Urban	0	0	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

**Scenic Integrity Objectives**

The scenic character for the Divide GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural characteristics commonly found throughout this GA. The locations of scenic integrity objectives (Table 62) for the Divide GA are displayed in the scenic integrity objectives maps (appendix A). Please refer to FW-SCENERY for plan components that apply to scenery and aesthetics. Also, please see appendix G and the glossary for more information.

**Table 62. Scenic integrity objectives for the Divide GA**

Scenic integrity objective	Acres	Percent of GA <sup>1</sup>
Very high	32,953	16
High	103,177	51
Moderate	52,603	26
Low	13,909	7
Very low	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

**Lands Suitable for Timber Production**

Lands suitable for timber production are areas where timber production is an appropriate management objective. Please see chapter 2 for information on timber suitability and plan components for harvest on lands identified as suitable and unsuitable for timber production. This GA contributes a substantial proportion of the forestwide total area of lands suitable for timber production. Table 63 and associated map(s) in appendix A display the lands suitable for timber production in this GA.

**Table 63. Lands suitable for timber production in the Divide GA**

Acres	Percent of the GA <sup>1</sup>	Percent of forestwide total <sup>2</sup>
54,387	27	15

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

<sup>2</sup> Percentage of the total NFS lands suitable for timber production forestwide, rounded to the nearest whole number

**Recommended Wilderness**

The following table and associated map(s) in appendix A display the recommended wilderness areas in this GA.

**Table 64. Recommended wilderness in the Divide GA**

Area	Acres	Percent of the GA <sup>1</sup>
Electric Peak	18,239	9
Nevada Mountain	14,714	7
Total	32,953	16

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

## Plan Components – Watershed (WTR)

### Desired Conditions (DI-WTR-DC)

- 01** The Tenmile Creek watershed provides a clean water supply which will, with adequate treatment, result in a satisfactory and safe domestic water supply for the City of Helena. See FW-WTR-STD-01.

### Goals (DI-WTR-GO)

- 01** Coordinate management of the municipal watershed with the state of Montana and municipality.

### Guidelines (DI-WTR-GDL)

- 01** Management activities within the Tenmile Creek municipal watershed should emphasize restoration and resiliency.

## Plan Components – Fisheries and Aquatic Habitat (FAH)

### Desired Conditions (DI-FAH-DC)

- 01** Bull trout spawning, rearing, and migratory habitat is widely available and inhabited. Bull trout have access to historic habitat, and appropriate life history strategies (for example, resident, fluvial, and adfluvial) are supported.
- 02** The bull trout population trends towards recovery.

### Goals (DI-FAH-GO)

- 01** Bull trout population recovery is supported through the Bull Trout Conservation Strategy, the Bull Trout Recovery Plan, and the Columbia Headwaters Recovery Unit Implementation Plan or the latest guiding documents through cooperation and coordination with the USFWS, tribes, state agencies, other federal agencies, and interested groups.

## Plan Components – Terrestrial Vegetation (VEGT)

### Desired Conditions (DI-VEGT-DC)

- 01** Table 65 shows the desired condition for cover types in the Divide GA.

**Table 65. Divide GA existing and desired conditions for cover type (percent of area)**

Cover type <sup>1</sup>	Existing (percent) <sup>3</sup>	Desired range (percent)
Nonforested <sup>2</sup>	8 (5-12)	5-15
Aspen/hardwood	1 (1-3)	2-5
Ponderosa pine	0	10-20
Douglas-fir	40 (31-52)	20-30

Cover type <sup>1</sup>	Existing (percent) <sup>3</sup>	Desired range (percent)
Lodgepole pine	37 (29-42)	20-30
Spruce/fir	10 (7-14)	5-15
Whitebark pine	1 (1-3)	2-5

<sup>1</sup> Cover types reflect the most common species in a stand (see appendix D).

<sup>2</sup> Nonforested areas include grass and shrub cover types, which may support widely scattered trees in some cases.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data. Existing condition represents 2018 conditions and will change through time. Estimates are rounded to the nearest whole number unless the value is less than 1%, in which case it is rounded to the nearest 10th. The totals do not necessarily equal 100% due to non-vegetated areas (water or rock)

## Plan Components - Forested Vegetation (VEGF)

### Desired Conditions (DI-VEGF-DC)

**01** Table 66 shows the desired condition for tree species presence in the Divide GA.

**Table 66. Divide GA existing and desired conditions for tree species presence (percent of area)<sup>1, 2, 3</sup>**

Tree species	Existing (percent)	Desired range (percent)
Limber pine	2 (2-3)	5-15
Rocky Mountain juniper	3 (1-5)	1-5
Ponderosa pine	3 (1-5)	25-35
Douglas-fir	53 (46-59)	45-55
Aspen	6 (3-9)	2-10
Engelmann spruce	13 (10-19)	5-15
Lodgepole pine	59 (53-65)	25-35
Subalpine fir	23 (18-29)	10-20
Whitebark pine	8 (4-11)	5-15

<sup>1</sup> Percent of area where at least one tree of the species is present.

<sup>2</sup> Totals may be greater 100% because more than 1 species can be present on a site. Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

<sup>3</sup> Distributions include trees that occur on nonforested potential vegetation type.

**02** Table 67 shows the desired condition for forest size class in the Divide GA.

**Table 67. Divide GA existing and desired conditions for forest size class (percent of area)<sup>3</sup>**

Size class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Seedling/sapling (0-4.9")	17 (11-25)	2-20
Small (5-9.9")	46 (39-52)	5-25
Medium (10-14.9")	17 (12-21)	5-25
Large (15.0-19.9")	6 (3-9)	15-25
Very large (20"+)	3 (1-6)	5-25

<sup>1</sup> Size class = the average diameter class of live trees based on basal area weighted diameter, shown as ranges of diameter at breast height, or 4.5' above ground level. A stand within a size class may contain trees smaller and/or larger than the class range.

<sup>2</sup> Total may less than 100% because nonforested areas (grass, shrub, savanna) are excluded.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

**03** Table 68 shows the desired condition for forest density class in the Divide GA.



**Table 68. Divide GA existing and desired conditions for forest density class (percent of area)**

Density class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Low/med (< 39.9%)	18	25-55
Med/high (40-59.9%)	39	30-50
High (60+%)	43	10-35

<sup>1</sup> Density class = the average canopy cover of live trees, shown as ranges of canopy cover percent.

<sup>2</sup> Existing condition is from the SIMPLLE input landbase, based on VMap imagery.

- 04** Lynx habitat (see glossary) provides the amount, distribution, and structural conditions (based on the best available scientific information), at the scale of a reproductive female lynx home range, necessary to support the recovery and persistence of Canada lynx in the plan area.

## Plan Components – Nonforested Vegetation (VEGNF)

### Desired Conditions (DI-VEGNF-DC)

- 01** Unique plant communities persist and are in a condition consistent with natural processes. This includes but is not limited to the large fescue grasslands and the bitterbrush communities in the Sweeney Gulch area.

## Plan Components – Wildlife (WL)

### Desired Conditions (DI-WL-DC)

- 01** The Divide landscape provides habitat connectivity for wide-ranging species (grizzly bear, Canada lynx, wolverine, and others) between public lands in northern Montana and those in south and southwestern Montana, including lands in the Greater Yellowstone Ecosystem.
- 02** Ponderosa pine-dominated forests contain large-tree structure (see glossary) comprised of ponderosa pine and/or Douglas-fir trees and snags with relatively open canopy available for nesting by flammulated owls. These areas occur within a larger mosaic of closed-canopy forest and shrub-dominated openings that serve as flammulated owl roosting and foraging areas.

### Goals (DI-WL-GO)

- 01** Acquire ownership of or easements on non-NFS lands that are intermingled with or immediately adjacent to NFS lands, for the purpose of ensuring connectivity and security for wildlife species.

### Guidelines (DI-WL-GDL)

- 01** In order to maintain or improve wildlife security and connectivity, resource management activities in the central portion of the GA, adjacent to Highway 12, and where private ownerships are intermingled with NFS lands, should maintain or enhance high quality wildlife habitat, wildlife movement areas, and connectivity. In order to improve wildlife security and connectivity in these areas:
- Vegetation management activities should provide for wildlife hiding cover needs.
  - Motorized access should not be increased.
  - New trails should be constructed only where minimal impacts will occur to wildlife habitats and movement corridors.

## Plan Components – South Hills Recreation Area (SHRA)

The South Hills Recreation Area is located just to the south and west and adjacent to the city of Helena, Montana. The South Hills Recreation Area is approximately 50,180 acres in size and extends to MacDonald Pass and the Continental Divide. This large landscape includes lands in and around private land ownership, shares boundaries with the City of Helena, and has shared jurisdiction with the City of Helena on many of the trails nearest the community. Additionally, the area includes large portions of nonmotorized inventory roadless areas as well as portions of the Continental Divide National Scenic Trail.

### Desired Conditions (DI-SHRA-DC)

- 01** The area offers dispersed nonmotorized recreation opportunities with high scenic quality within proximity to the city of Helena, Montana. Also see Forestwide Recreation Opportunities, Dispersed Recreation.
- 02** The area provides dispersed, trail-related recreation opportunities ranging from those that are easy and readily accessible to those that are more difficult and require greater skills.

### Goals (DI-SHRA-GO)

- 01** Partners and volunteer groups work collaboratively with the FS for the planning, management, and offering of recreation experiences and settings within the South Hills Recreation Area.

### Guidelines (DI-SHRA-GDL)

- 01** When conducting vegetation management in the South Hills Recreation Area, projects should be designed to meet desired conditions for vegetation and other resources while emphasizing values such as visitor safety, desirable recreation experiences, improving forest resilience, reducing the risk of high severity wildfire, and reducing hazardous fuels.

### Suitability (DI-SHRA-SUIT)

- 01** The South Hills Recreation Area is unsuitable for timber production, although harvest may be conducted to provide for other multiple use values compatible with the recreation values of the area, such as those described in DI-SHRA-GDL-01.
- 02** Within the South Hill Recreation Area, mechanized means of transportation (such as mountain bikes) are suitable on FS established roads and trails only. Mechanized means of transportation are not suitable off of NFS roads and trails.

# Elkhorns Geographic Area and Wildlife Management Unit

## General Overview

The Elkhorns GA encompasses the Elkhorn Mountains, an island mountain range, in Broadwater, Jefferson, and Lewis and Clark counties and includes the small mining town of Elkhorn. The nearest large population center is Helena, Montana. Many smaller communities also have intimate relationships with the GA: Montana City, Clancy, Alhambra, Jefferson City, Boulder, Radersburg, Townsend, Winston, and East Helena. The Elkhorn Mountains were designated a Wildlife Management Unit in 1986 and that designation continues under this plan.

The Elkhorn Mountains provide rich wildlife habitat, and NFS management extends throughout the entire mountain range to the surrounding valley bottoms, including sizeable areas of ungulate winter range. The combination of NFS management of large blocks of year-round habitat, along with the presence of adjacent lands managed by both the Bureau of Land Management and the state of Montana, results in a unique opportunity for comprehensive and cooperative management of wildlife and their habitats.

The Elkhorns Wildlife Management Unit was designated as a wildlife management unit in the 1986 Helena Forest Plan, and is the only one of its kind in the nation. The designation continues under this plan. The Elkhorns Wildlife Management Unit encompasses the entire Elkhorns GA, which includes portions of both the HLC NF and the Beaverhead-Deerlodge National Forest. In this forest plan, the Elkhorns GA is synonymous with the Elkhorns Wildlife Management Unit, and the plan components specified for the GA are designed to meet the purposes for the designation of the wildlife management unit. Habitats are managed in this unit to maintain populations of species associated with the existing ecosystems, with emphasis on those for which seclusion is an important requirement. Unlike other mountain ranges where winter range is largely on private land, the Elkhorns includes winter range. Collaborative groups comprising federal, state, and local citizens work toward habitat maintenance and restoration and interpretation of the area's history. The Elkhorns Wildlife Management Unit is managed cooperatively as the Elkhorn Cooperative Management Area with the Bureau of Land Management, Montana Fish, Wildlife and Parks, and the Natural Resources Conservation Service.

Please see maps (appendix A) for detailed information.

## Distinctive Roles and Contributions

### Ecological Characteristics

The Elkhorns GA is surrounded by the Divide Mountains and Boulder Batholith on the west, and the Missouri and Boulder River valleys on the north, east, and south. This GA is an island mountain range, prominently visible from the northwest, west, and southwest. Drainages have carved steep gulches and canyons. The Elkhorns GA can be divided into west and east sections by the predominant underlying geology. The majority of the Elkhorns (north, west, southwest) is part of a batholith. This geologic history has left the area rich in minerals. Evidence of glaciation is localized as boulder strewn areas of granitic rocks. The remaining approximate quarter (southwest) of the GA is underlain by sedimentary rock that lacks the same mineralization as the batholith but is rich in calcareous rock. The landforms are rugged, low mountains with hogback ridges and dry valleys.

The sedimentary geologic area found extensively on the eastern side of the range is a gradient of foothill prairie and partially forested low mountains. Grasslands and shrub communities which contain bitterbrush and sagebrush are major components. Rocky mountain juniper and Douglas-fir in particular, with limited amounts of limber pine and ponderosa pine, are found in ecotone areas with nonforested plant

communities. Plant communities on the batholith portion are mostly forested with conifers, including ponderosa pine and Douglas-fir at low elevations and lodgepole pine, subalpine fir, and whitebark pine at high elevations. Parks, rich with grasses and forbs, are frequent at lower elevations and break up the forest in montane elevations. Aspen stands and water-loving plants take advantage of riparian areas and wet seeps across the GA. Fire has historically been a major influence on plant communities, and a large expanse of this GA burned in 1988 and is now dominated by young lodgepole pine forest.

Wildlife observed in this GA include elk, mule deer, Clark's nutcracker, river otter, wolverine, turkeys and others. The Elkhorns GA has supported bighorn sheep, although the potential for long-term persistence of a herd in the GA has been impacted by disease outbreaks. This GA is within management Zone 2, identified in the Northern Continental Divide Ecosystem Grizzly Bear Conservation Strategy, and grizzly bears may be present in the Elkhorns GA. The Elkhorns provide important connectivity for certain wildlife species.

The western side of the GA is generally wetter than the eastern side. The entire landmass is drained by many perennial and intermittent creeks including several tributaries to Prickly Pear Creek on the west, Crow Creek, Beaver Creek, and Staubach Creek on the east, and Elkhorn and Muskrat Creeks on the southwest. All creeks flow to the Missouri River, some via Prickly Pear Creek or the Boulder and Jefferson Rivers. The basins around Elkhorn and Crow Peaks harbor high elevation lakes such as Hidden Lake, Tizer Lakes, Leslie Lake, and Glenwood Lake. Crow Creek plummets over an impressive falls. Springs are important water features in the more arid eastern sections. Management of the WMU in the Elkhorn Mountains has led to the expanded distribution of westslope cutthroat trout by limiting and/or removing brook trout populations. A number of these efforts have been successful and have helped increase the potential for continued viability of westslope populations in the upper Missouri 4th digit watershed.

Water quality in the upper areas of McClellan Creek drainages are good, and the watershed is the primary source of municipal water for the city of East Helena. Infrastructure includes an infiltration gallery downstream of the forest boundary.

## Social and Economic Characteristics

There are numerous trailheads and dispersed recreation opportunities throughout the Elkhorns, including several dispersed nonmotorized trails and primitive camping areas. The area is used primarily by hunters, as the Elkhorns are known to produce trophy bull elk. The area is also used for many other purposes such as hiking, mountain biking, trail running, driving for pleasure, and wildlife viewing.

The interior of the GA provides an expanse of unroaded and remote country surrounding steep, rugged peaks. The lower elevations of the GA are roaded, and minimal amounts of vegetation management are visible in these areas, most commonly prescribed fire. There is an active livestock grazing program in portions of the Elkhorns; grazing allotments are present across most of the GA. Mineral production is primarily occurring via small mining operations, predominantly for gold. There are several abandoned mines in the GA that need reclamation. There is an ongoing mine reclamation project at the Warm Springs Tailings site. One designated electric energy corridor (approximately four miles long) is located in the southwest corner of the Elkhorn GA per the *Designation of Energy Corridors on Federal Lands in the 11 Western States* (U.S. Department of Energy [USDE] & USDI Bureau of Land Management [BLM], 2008).

## Cultural and Historical Characteristics

The Elkhorns GA has been occupied by human inhabitants for thousands of years. Two of the oldest known human occupations in Montana are found in this GA. However, prehistoric occupations and use

are less evident on the surface than the more recent Euro-American settlement. After the discovery of valuable mineral deposits, mines and associated settlements sprang up in portions of the GA. The ghost town of Elkhorn is a good example of this era. Other communities have all but disappeared, such as Queen, Eagle City, Gold Dust, Ruddville, and Sourdough. Remnant tools and infrastructure of the mining era are found throughout the GA. Eagle and Tizer Guard stations, as well as the Strawberry Lookout, are standing reminders of FS administration in the GA.

## Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 69 and associated map(s) in appendix A display the designated areas in this GA. Note that there can be overlap between the different areas and that there can also be portions of the GA outside of a designated area, so the sum of these acreages may differ from the total GA acreage.

**Table 69. Designated areas in the Elkhorns GA**

Designated area	Acres/miles	Percent of GA <sup>1</sup>	Percent forestwide total <sup>2</sup>
Inventoried roadless areas	75,415	47	5
Eligible wild and scenic rivers (1)	2	N/A	N/A

<sup>1</sup> Percentage of total NFS lands in the GA, rounded to the nearest whole number. Not applicable to linear features.

<sup>2</sup> Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number. Not applicable to linear features.

## GA Emphasis Areas

GA emphasis areas are not congressionally designated but do have specific plan components. See Table 70.

**Table 70. Emphasis areas in the Elkhorns GA**

Area	Acres	Percent of GA
McClellan Creek municipal watershed	16,697	10

## Recreation Opportunity Spectrum

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components as well as the definitions of the ROS classes in the glossary. Table 71 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter. In addition, the associated map(s) in appendix A display the recreation opportunity spectrum categories in this GA.

**Table 71. Recreation opportunity spectrum classes for the Elkhorns GA**

ROS class	Summer		Winter	
	Acres	Percent of GA <sup>1</sup>	Acres	Percent of GA <sup>1</sup>
Primitive	45,894	28	45,894	29
Semi-primitive nonmotorized	48,708	30	90,832	56
Semi-primitive motorized	6,450	4	14,682	9
Roaded natural	57,346	36	6,989	4
Rural	2,853	2	2,853	2
Urban	0	0	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

### Scenic Integrity Objectives

The scenic character for the Elkhorns GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural characteristics commonly found throughout this GA. The locations of scenic integrity objectives (Table 72) for the Elkhorns GA are displayed in the scenic integrity objectives maps (appendix A). Please refer to FW-SCENERY for plan components that apply to scenery and aesthetics. Also, please see appendix G and the glossary for more information.

**Table 72. Scenic integrity objectives for the Elkhorns GA**

Scenic integrity objective	Acres	Percent of GA <sup>1</sup>
Very high	45,894	28
High	64,510	40
Moderate	24,181	15
Low	26,653	17
Very low	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

### Lands Suitable for Timber Production

Lands suitable for timber production are areas where timber production is an appropriate management objective. No such lands are identified in this GA. Forestwide and GA-specific plan components for harvest in lands unsuitable for timber production apply.

### Recommended Wilderness

There are no recommended wilderness areas in the Elkhorns GA.

## Plan Components – Watershed (WTR)

### Desired Conditions (EH-WTR-DC)

**01** McClellan Creek provides a clean water supply for the City of East Helena. See FW-WTR-STD-01.

### Goals (EH-WTR-GO)

**01** Coordinate management of the municipal watershed with the state of Montana and municipality.

### Guidelines (EH-WTR-GDL)

**01** Management activities within the McClellan Creek municipal watershed should emphasize restoration and resiliency.

## Plan Components – Terrestrial Vegetation (VEGT)

### Desired Conditions (EH-VEGT-DC)

**01** Table 73 shows the desired condition for cover types in the Elkhorns GA.

**Table 73. Elkhorns GA existing and desired conditions for cover type (percent of area)**

Cover type <sup>1</sup>	Existing (percent) <sup>3</sup>	Desired range (percent)
Nonforested <sup>2</sup>	23 (15-31)	20-30
Aspen/hardwood	1 (1-3)	2-5

Cover type <sup>1</sup>	Existing (percent) <sup>3</sup>	Desired range (percent)
Ponderosa pine	1 (1-4)	10-20
Douglas-fir	19 (13-33)	10-20
Lodgepole pine	23 (14-30)	20-30
Spruce/fir	17 (10-26)	5-15
Whitebark pine	4 (3-7)	5-10

<sup>1</sup> Cover types reflect the most common species in a stand (see appendix D).

<sup>2</sup> Nonforested areas include grass and shrub cover types, which may support widely scattered trees in some cases.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data. Existing condition represents 2018 conditions and will change through time. Estimates are rounded to the nearest whole number unless the value is less than 1%, in which case it is rounded to the nearest 10th. The totals do not necessarily equal 100% due to non-vegetated areas (water or rock).

## Plan Components - Forested Vegetation (VEGF)

### Desired Conditions (EH-VEGF-DC)

**01** Table 74 shows the desired condition for tree species presence in the Elkhorns GA.

**Table 74. Elkhorns GA existing and desired conditions for tree species presence (percent of area)<sup>1, 2, 3</sup>**

Tree species	Existing (percent)	Desired range (percent)
Limber pine	1 (0-4)	2-10
Rocky Mountain juniper	5 (1-9)	1-5
Ponderosa pine	1 (1-4)	20-30
Douglas-fir	28 (20-38)	20-40
Aspen	2 (2-5)	2-10
Engelmann spruce	20 (11-27)	5-15
Lodgepole pine	32 (22-41)	25-35
Subalpine fir	29 (19-37)	5-15
Whitebark pine	14 (6-20)	10-20

<sup>1</sup> Percent of area where at least one tree of the species is present.

<sup>2</sup> Totals may be greater 100% because more than 1 species can be present on a site. Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

<sup>3</sup> Distributions include trees that occur on nonforested potential vegetation type.

**02** Table 75 shows the desired condition for forest size class in the Elkhorns GA.

**Table 75. Elkhorns GA existing and desired conditions for forest size class (percent of area)<sup>3</sup>**

Size class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Seedling/sapling (0-4.9")	21 (9-34)	1-20
Small (5-9.9")	29 (19-37)	5-25
Medium (10-14.9")	9 (4-16)	5-25
Large (15.0-19.9")	7 (2-13)	15-25
Very large (20"+)	0	5-20

<sup>1</sup> Size class = the average diameter class of live trees based on basal area weighted diameter, shown as ranges of diameter at breast height, or 4.5' above ground level. A stand within a size class may contain trees smaller and/or larger than the class range.

<sup>2</sup> Total may less than 100% because nonforested areas (grass, shrub, savanna) are excluded.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

**03** Table 76 shows the desired condition for forest density class in the Elkhorns GA.

**Table 76. Elkhorns GA desired conditions for forest density class (percent of area)**

Density class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Low/med (< 39.9%)	15	25-55
Med/high (40-59.9%)	34	25-45
High (60+%)	52	10-35

<sup>1</sup> Density class = the average canopy cover of live trees, shown as ranges of canopy cover percent.

<sup>2</sup> Existing condition is from the SIMPPLLE input landbase, based on VMap imagery.

## Plan Components – Nonforested Vegetation (VEGNF)

### Desired Conditions (EH-VEGNF-DC)

**01** Unique plant communities persist and are in a condition consistent with natural processes. This includes but is not limited to bitterbrush and sagebrush.

## Plan Components – Wildlife (WL)

### Desired Conditions (EH-WL-DC)

**01** NFS lands within the Elkhorn Mountains GA support native species associated with the existing ecosystems, with emphasis on those for which seclusion is an important requirement, consistent with the purpose of its designation as a wildlife management unit.

**02** The Elkhorns GA provides habitat connectivity for wide ranging species (e.g., grizzly bear and others) between public lands in northern Montana and those in south and southwestern Montana, including lands in the Greater Yellowstone Ecosystem.

**03** Ponderosa pine-dominated forests contain large-tree structure (see glossary) comprised of ponderosa pine and/or Douglas-fir trees and snags with relatively open canopy available for nesting by flammulated owls. These areas occur within a larger mosaic of closed-canopy forest and shrub-dominated openings that serve as flammulated owl roosting and foraging areas.

**04** The risk of disease transmission from domestic livestock to bighorn sheep is minimal.

### Goals (EH-WL-GO)

**01** The Elkhorn Mountains are managed cooperatively across political and administrative boundaries as the Elkhorns Cooperative Management Area, through a memorandum of understanding with other agencies.

**02** The Forest Service coordinates with the BLM, NRCS, and Montana Fish, Wildlife and Parks in the planning, analysis, and monitoring of management activities occurring in the wildlife management unit.

**03** A Cooperative Elkhorns Wildlife Monitoring Program involving Montana Fish, Wildlife, and Parks, BLM, NRCS and the FS 1) evaluates forest plan management direction for the wildlife management unit, 2) makes recommendations to maintain and improve wildlife habitats, 3) monitors habitat conditions and wildlife populations to determine the effectiveness of management, and 4) recommends adjustments to management based on monitoring and research.



### Standards (EH-WL-STD)

- 01 The best available scientific information, and the most current recommendations made through agency or interagency efforts, shall be used to determine and establish the means with which to achieve effective separation between bighorn sheep and domestic sheep and goats on NFS lands (refer to appendix C for information on recommendations and strategies).

### Guidelines (EH-WL-GDL)

- 01 Maintenance, enhancement, and restoration of wildlife habitats should be the priority for resource management in the Elkhorns Wildlife Management Unit. Management activities and permitted uses should be compatible with wildlife values and habitats, and/or should be designed to avoid negative impacts to wildlife and wildlife habitats.
- 02 When permitting or authorizing activities such as grazing, special uses, rights-of-way, seismic activities, and others, specific conditions should be incorporated into permits or authorizations to reduce potential impacts to wildlife. These conditions include but are not limited to conditions regarding timing of activities, location of activities or infrastructure, access, retention of forage or cover, and others.
- 03 Livestock head months should be maintained no higher than existing levels and should be reduced if needed to address impacts to wildlife forage or wildlife habitat.

### Plan Components – Recreation Access (ACCESS)

#### Desired Conditions (EH-ACCESS-DC)

- 01 The Elkhorns Wildlife Management Unit offers high quality dispersed nonmotorized recreation opportunities, consistent with its wildlife emphasis. Authorized motorized recreation opportunities occur in defined areas and during defined time periods.

#### Guidelines (EH-ACCESS-GDL)

- 01 Access to authorized routes to private inholdings or valid mining claims should protect wildlife habitat through restrictions on both locations and timing of use.

#### Suitability (EH-ACCESS-SUIT)

- 01 Motorized travel is not suitable in elk wintering areas from the end of hunting season through early spring, except as required for specific resource management activities.

### Plan Components – Roads and Trails (RT)

#### Standards (EH-RT-STD)

- 01 New permanent roads shall be constructed only for alleviating resource concerns (e.g., removing a road from a riparian area and replacing it with a road in another location) or to allow reasonable access to private lands that cannot be accessed except by crossing NFS lands. Permanent roads constructed for these purposes shall include conditions (for example, timing of use restrictions, location restrictions) in order to meet wildlife habitat objectives.
- 02 A trans-mountain road (bisecting the Elkhorns Mountain Range) shall not be constructed.

### Guidelines (EH-RT-GDL)

- 01 Roads constructed for exploration or development of leasable minerals, as required by law or regulation for access to those resources, should avoid identified elk wintering areas, big-game calving or lambing areas, or other identified wildlife habitats in which wildlife are known to be sensitive to disturbance or displacement. Timing restrictions should be placed on road-building activities and road use to avoid disturbance and displacement of wildlife.

### Plan Components – Benefits to People (TIM)

#### Guidelines (EH-TIM-GDL)

- 01 Harvest of timber or forest products such as Christmas trees and posts and poles in identified elk winter range should occur only during the non-winter season when elk use of the area is minimal. If these activities are allowed during the winter for specific resource management purposes, disturbance activities should be limited in time and space.

#### Suitability (EH-TIM-SUIT)

- 01 The Elkhorns Wildlife Management Unit is not suitable for timber production. However, timber harvest may occur to provide for other multiple use values.

### Plan Components – Benefits to People (EMIN)

#### Guidelines (EH-EMIN-GDL)

- 01 When practicable, no surface occupancy for activities associated with exploration of locatable minerals should be allowed during the season of use by elk in identified elk wintering areas, big-game calving or lambing areas, identified elk summer habitat, or other identified wildlife habitats in which wildlife are known to be sensitive to disturbance or displacement.

## Highwoods Geographic Area

### General Overview

The Highwoods GA is the smallest of the GAs within the plan area and encompasses the Highwood Mountains. This isolated island range is located within Cascade, Chouteau, and Judith Basin counties. This GA is the closest NFS land to Great Falls.

Please see maps (appendix A) for detailed information.

### Distinctive Roles and Contributions

#### Ecological Characteristics

The Highwood Mountains are a small island mountain range of volcanic origin. The highest point is Highwood Baldy at 7,670 feet. The mountains have been weathered over time by natural processes, leaving them rolling and furrowed in form. The mountains are bisected by Highwood Creek. Slopes are moderately steep. North facing aspects are considerably wetter than less vegetated, rocky, south facing slopes.

The Highwoods GA contains a high proportion of warm dry and nonforested potential vegetation types, and very little cool moist or cold types. The land cover of this GA is a mosaic of conifers, deciduous trees, grass, and rock; woodland, forest, and prairie ebb and flow into one another. Open savannas, grasslands, and shrublands are common even on the warm dry forested potential vegetation types. Aspen communities are present to a higher degree than most other places in the plan area. Conifer forests are relatively dense and single-aged composed of primarily Douglas-fir and lodgepole pine, with small amounts of subalpine fir at higher elevations. Unlike the Forest as a whole, there is little to no Engelmann spruce, ponderosa pine, Rocky Mountain juniper, or limber pine. Fire was historically the main determinant of vegetative cover. Riparian areas are composed of willow, dogwood, water birch, cottonwood, Hawthorne, and other water-loving plants.

The Highwoods provides habitat for a variety of wildlife species, including a population of mountain goats. They were introduced by Montana Fish, Wildlife, and Parks in 1943 in an area east of the GA, then augmented in 1971. By 1994 they had dispersed and were established in the Highwoods GA. The Highwood Mountains support many other wildlife species. The Highwoods GA is within management Zone 3, identified in the Northern Continental Divide Ecosystem Grizzly Bear Conservation Strategy. Grizzly bears have been observed on private lands south of the Highwood Mountains.

Most of the area drains north to the Missouri River; drainages include Thain and Highwood Creeks. Cottonwood Creek drains to Arrow Creek on the east side, and Little Belt Creek drains the southwest portion. The area is a westslope cutthroat trout emphasis area and has several relatively secure westslope cutthroat trout populations, including Big Coulee, Cottonwood, and North Fork and Middle Fork Little Belt Creeks. The North Fork Highwood Creek could also repopulate from a pure headwaters population of westslope cutthroat trout over approximately 5.3 stream miles of habitat above a barrier where non-native salmonids have been removed. All these streams are critical to maintaining westslope cutthroat trout viability in the Highwoods GA and the upper Missouri River drainage.

#### Social and Economic Characteristics

Within the GA, there is one small developed campground (Thain Creek Campground) and a developed trailhead in North Fork Highwood Creek. These developed sites provide access points for the many

single-track trails that traverse the Highwoods. These trails are used extensively by motorcycle users and bicyclists as well as by hikers and horseback riders.

The mountain goat population provides an important hunting and viewing opportunity. Other big game species are found in the Highwoods and provide important and highly sought-after hunting opportunities. In addition to hunting and trapping opportunities, wildlife viewing is an important activity in this GA. An active grazing program is one of the many multiple uses of this landscape and contributes substantially to the economy of Choteau County.

### Cultural and Historical Characteristics

Native Americans have a long history in this GA and the evidence can be seen in prehistoric occupations, rock cairns and travel routes. Euro-American use can be seen in homesteads, mines, cemeteries, trails, roads and recreational cabins. The Highwoods have a long history of grazing and their history is seen in historic corrals, fence post caches, cow camps, and grazing association cabins. The historically significant Shonkin Grazing Association cabin and the newer Highwood Creek Grazing Association cabin are reminders of this heritage. Forest Service history is represented by trails, roads, Thain Creek campground, several dismantled guard stations, and the one remaining guard station on North Fork Highwood Creek.

### Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 77 and associated map(s) in appendix A display the designated areas in this GA. Note that there can be overlap between the different areas and that there can also be portions of the GA outside of a designated area, so the sum of these acreages may differ from the total GA acreage.

**Table 77. Designated areas in the Highwoods GA**

Designated area	Acres/miles	Percent of GA <sup>1</sup>	Percent forestwide total <sup>2</sup>
Inventoried roadless areas (2)	39,653	94	3
Eligible wild and scenic rivers (several)	10	N/A	N/A

<sup>1</sup> Percentage of total NFS lands in the GA, rounded to the nearest whole number. Not applicable to linear features.

<sup>2</sup> Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number. Not applicable to linear features.

### GA Emphasis Areas

GA emphasis areas are not congressionally designated but do have specific plan components.

#### *Recreation Opportunity Spectrum*

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components as well as the definitions of the ROS classes in the glossary. Table 78 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter. In addition, the associated map(s) in appendix A display the recreation opportunity spectrum class categories in this GA.

**Table 78. Recreation opportunity spectrum classes for the Highwoods GA**

ROS class	Summer		Winter	
	Acres	Percent of GA <sup>1</sup>	Acres	Percent of GA <sup>1</sup>
Primitive	0	0	0	0

ROS class	Summer		Winter	
	Acres	Percent of GA <sup>1</sup>	Acres	Percent of GA <sup>1</sup>
Semi-primitive nonmotorized	29,906	71	30,834	73
Semi-primitive motorized	8,219	19	11,457	27
Roaded natural	4,165	10	0	0
Rural	0	0	0	0
Urban	0	0	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

**Scenic Integrity Objectives**

The scenic character for the Highwoods GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural characteristics commonly found throughout this GA. The locations of scenic integrity objectives (Table 79) for the Highwoods GA are displayed in the scenic integrity objectives maps (appendix A). Please refer to FW-SCENERY for plan components that apply to scenery and aesthetics. Also, please see appendix G and the glossary for more information.

**Table 79. Scenic integrity objectives for the Highwoods GA**

Scenic integrity objective	Acres	Percent of GA <sup>1</sup>
Very high	0	0
High	41,160	97
Moderate	1,009	3
Low	122	<1
Very low	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

**Lands Suitable for Timber Production**

Lands suitable for timber production are areas where timber production is an appropriate management objective. No such lands are identified in this GA. Forestwide and GA-specific plan components for harvest in lands unsuitable for timber production apply.

**Recommended Wilderness**

There are no recommended wilderness areas in the Highwoods GA.

**Plan Components – Terrestrial Vegetation (VEGT)**

**Desired Conditions (HI-VEGT-DC)**

**01** Table 80 shows the desired condition for cover types in the Highwoods GA.

**Table 80. Highwoods GA existing and desired conditions for cover type (percent of area)**

Cover type <sup>1</sup>	Existing (percent) <sup>3</sup>	Desired range (percent)
Nonforested <sup>2</sup>	37 (21-52)	20-40
Aspen/hardwood	3 (2-10)	4-10
Ponderosa pine	0	5-20
Douglas-fir	12 (11-30)	20-30
Lodgepole pine	31 (16-46)	5-15

Cover type <sup>1</sup>	Existing (percent) <sup>3</sup>	Desired range (percent)
Spruce/fir	3 (2-10)	2-10

<sup>1</sup> Cover types reflect the most common species in a stand (see appendix D).

<sup>2</sup> Nonforested areas include grass and shrub cover types, which may support widely scattered trees in some cases.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis.

Source is R1 Summary Database, FIA data. Existing condition represents 2018 conditions and will change through time.

Estimates are rounded to the nearest whole number unless the value is less than 1%, in which case it is rounded to the nearest 10th. The totals do not necessarily equal 100% due to non-vegetated areas (water or rock)

## Plan Components - Forested Vegetation (VEGF)

### Desired Conditions (HI-VEGF-DC)

**01** Table 81 shows the desired condition for tree species presence in the Highwoods GA.

**Table 81. Highwoods GA existing and desired conditions for tree species presence (percent of area)<sup>1, 2, 3</sup>**

Tree species	Existing (percent)	Desired range (percent)
Limber pine	3 (3-10)	5-20
Rocky Mountain juniper	0	1-5
Ponderosa pine	0	10-20
Douglas-fir	34 (19-50)	45-60
Aspen	3 (3-10)	5-15
Lodgepole pine	45 (30-62)	15-30
Subalpine fir	3 (3-10)	2-10

<sup>1</sup> Percent of area where at least one tree of the species is present.

<sup>2</sup> Totals may be greater 100% because more than 1 species can be present on a site. Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

<sup>3</sup> Distributions include trees that occur on nonforested potential vegetation type.

**02** Table 82 shows the desired condition for forest size class in the Highwoods GA.

**Table 82. Highwoods GA existing and desired conditions for forest size class (percent of area)<sup>3</sup>**

Size class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Seedling/sapling (0-4.9")	0	1-15
Small (5-9.9")	23 (9-37)	2-15
Medium (10-14.9")	23 (10-38)	1-10
Large (15.0-19.9")	3 (3-10)	20-35
Very Large (20"+)	0	10-30

<sup>1</sup> Size class = the average diameter class of live trees based on basal area weighted diameter, shown as ranges of diameter at breast height, or 4.5' above ground level. A stand within a size class may contain trees smaller and/or larger than the class range.

<sup>2</sup> Total may less than 100% because nonforested areas (grass, shrub, savanna) are excluded.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

**03** Table 83 shows the desired condition for forest density class in the Highwoods GA.

**Table 83. Highwoods GA existing and desired conditions for forest density class (percent of area)**

Density class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Low/med (< 39.9%)	10	25-55

Density class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Med/high (40-59.9%)	33	30-50
High (60+%)	57	25-45

<sup>1</sup> Density class = the average canopy cover of live trees, shown as ranges of canopy cover percent.

<sup>2</sup> Existing condition is from the SIMPPLLE input landbase, based on VMap imagery.

### Plan Components – Nonforested Vegetation (VEGNF)

- 01** Diverse plant communities persist and are in a condition consistent with natural processes. This includes but is not limited to sagebrush and riparian woody shrub communities.

### Plan Components – Wildlife (WL)

#### Desired Conditions (HI-WL-DC)

- 01** The system of ridges is generally dominated by nonforested habitats and connected by nonforested or open forest habitats and provides habitat connectivity within the mountain range for wildlife.

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## Little Belts Geographic Area

### General Overview

The Little Belts GA is a large isolated mountain range in central Montana. Portions of this GA are in Meagher, Judith Basin, Cascade, and Wheatland counties. It is surrounded by predominantly treeless foothills of prairie and sagebrush steppe. The city of Great Falls is 50 miles to its northwest, Stanford to the east, Harlowton to the southeast, and the town of White Sulphur Springs is on its southern edge. The Little Belts GA is bisected north-south by the Kings Hill scenic byway (Highway 89), along which the small historic mining communities of Niehart and Monarch reside. Most of the Little Belts can be described as remote but accessible by a well-distributed transportation network.

Please see maps (appendix A) for detailed information.

### Distinctive Roles and Contributions

#### Ecological Characteristics

The Little Belts is the largest of the isolated island ranges in central Montana, comprised primarily of rolling hills. The geology of the Little Belts is rich in limestone with pockets of metamorphic and igneous rock. Some of the oldest rocks in Montana are located within the Little Belts. Bands of limestone bluffs break up uniform expanses of evergreen forest. The limestone nature also leads to many caves throughout the GA, including Lick Creek Cave. The GA served as the landscape in much of the work of artist Charlie Russell, who resided in the area.

This large GA supports a wide diversity of vegetation communities, including expansive and productive grasslands that characterize low elevations and open flat-topped plateaus. Thick stands of conifers can be found in the interior, which at lower elevations includes limber pine and ponderosa pine (in a higher abundance than most other places on the Forest); transitioning to productive Douglas-fir and lodgepole pine forests; and Engelmann spruce, subalpine fir, and whitebark pine at the highest elevations. Some mountain summits lack vegetation, revealing gently sloping, broad ridges. Aspen is present but rare. This GA hosts several vegetation research and tree improvement areas, including the Tenderfoot Experimental Forest, the Adams Creek whitebark pine seed orchard, the future Spur Park whitebark pine test plantation, and the Wet Park lodgepole pine test plantation.

The Little Belts GA supports a wide variety of wildlife species, including carnivores such as black bear, mountain lion, bobcat, and wolverine, and big game such as moose, elk, mule deer, and white-tailed deer. NFS lands in the Little Belts GA include more big game winter range than is present in most GAs on the HLC NF. The Little Belt Mountains historically supported bighorn sheep but were extirpated by the early 1900s. Groups of bighorn sheep have been observed in the Little Belts in recent years. Mountain goats were introduced in the early to mid 1900s, where they did not historically occur. This population did not persist, although occasional individual mountain goats are found there. This GA is within management Zone 3, identified in the Northern Continental Divide Ecosystem Grizzly Bear Conservation Strategy, and grizzly bears may be present in the Little Belts.

The many streams of the Little Belts are picturesque and ecologically rich. Stream courses have carved exposed escarpments and palisades. Drainages typically flow outward, radially from the center of the range where upon reaching the foothills, streams lose as much as 70-80% of their flow to the Madison aquifer. The Belt Creek watershed drains to the north, the Judith River watershed drains to the east, and the Tenderfoot and Sheep Creek watersheds drain to the Smith River on the west. Multiple streams in the Belt Creek and Judith Creek watersheds support westslope cutthroat trout.

Water quality in the upper areas of the O'Brien and Shorty Creek drainages are good, and the watershed is the primary source of municipal water for the city of Neihart. Infrastructure includes a small low head dam, a diversion on Shorty Creek, and a water plant just east of forest lands. A small conservation population of westslope cutthroat trout is present in O'Brien Creek.

## Social and Economic Characteristics

The Little Belts GA offers diverse recreation opportunities. This includes developed campgrounds; developed trailheads; recreation residences; Camp Rotary; Showdown ski area; King's Hill winter recreation area which includes the Silvercrest groomed cross-country ski area, snowmobile, snowshoe, and dogsled opportunities; cabin rentals; and interpretive panels. The Middle Fork Judith Wilderness Study Act area is located within the center of the Little Belts Mountain range. This primitive area was identified in 1977 as important for its wilderness characteristics. Dispersed recreation activities include motorized and nonmotorized trails, snowmobile trails, caves, and dispersed camping. The Little Belts GA provides permitted access within the Smith River corridor. This GA offers significant hunting, trapping, and wildlife viewing opportunities.

This GA supports an active grazing program. Timber harvest has also been a primary multiple use in the roaded portions of the landscape, including historic logging associated with early mining and settlement of the area. While the GA includes a large roadless interior, the roaded portions of the landscape support a relatively high road density.

Mineral production primarily occurs via small mining operations, primarily for lead, zinc, silver, gold, and sapphires (Yogo). There are several inholdings as well as extensive reclamation activities associated with historic mining, including two Comprehensive Environmental Response, Compensation, and Liability Act superfund sites: Carpenter Snow Creek and Barker Hughesville.

## Cultural and Historical Characteristics

Native Americans have a long history in the area. They used local outcrops as quarries for tools and weapons. They created pictographs on rock shelters, cliff walls, and overhangs. Native Americans left many remnants of past occupations across the landscape.

The GA was quickly inhabited by Euro-Americans after Missouri river travel was established and rich deposits of minerals were discovered. Mining infrastructure and tools are frequently encountered throughout the area. Areas within the Little Belt Mountains were also developed mining areas. The towns of Monarch, Neihart, Barker, and Hughesville were population hubs for the extraction of lead and silver. Many communities sprang up quickly and then disappeared. A few former community names include Galena, Summit, Silver Dyke, Carbonate, and Hughesville. Homesteading also occurred. The history of timber cutting is evident and relics such as splash dams and log chutes exist. FS guard stations and fire lookouts, including Monument and Porphyry Lookouts, remain in various locations and conditions.

The Yogo mining district is in a relatively remote area east of Neihart and south of Stanford on the east slope of the Little Belt Mountains along Yogo Creek. Miners were initially attracted by placer gold. However, deposits of silver, lead, and iron ore supported small scale lode mining for several years. The eventual discovery of sapphires brought fame to the lower Yogo district.

## Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 84 and associated map(s) in appendix A display the designated areas

in this GA. Note that there can be overlap between the different areas and that there can also be portions of the GA outside of a designated area, so the sum of these acreages may differ from the total GA acreage.

**Table 84. Designated areas in the Little Belts GA**

Designated area	Acres/miles	Percent of GA <sup>1</sup>	Percent forestwide total <sup>2</sup>
Middle Fork Judith Wilderness Study Act Area	82,127	10	48
Inventoried roadless areas (16)	439,106	55	29
Research natural areas (4)	5,909	1	32
Eligible wild and scenic rivers (5)	63	N/A	N/A
National recreation trails (5)	26	N/A	N/A
Kings Hill Scenic Byway	40	N/A	N/A
Tenderfoot Creek Experimental Forest	8,870	1	100%

<sup>1</sup> Percentage of total NFS lands in the GA, rounded to the nearest whole number. Not applicable to linear features.

<sup>2</sup> Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number. Not applicable to linear features.

## GA Emphasis Areas

GA emphasis areas are not congressionally designated but do have specific plan components. See Table 85.

**Table 85. Emphasis areas in the Little Belts GA**

Area	Acres	Percent of GA
Showdown Ski Area	600	<1
Smith River Corridor	3,330	<1
Neihart Municipal Watershed	7,025	<1

<sup>1</sup> Percentage of total NFS lands in the GA, rounded to the nearest whole number.

## Recreation Opportunity Spectrum

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components as well as the definitions of the ROS classes in the glossary. Table 86 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter. In addition, the associated map(s) in appendix A display the recreation opportunity spectrum categories in this GA.

**Table 86. Recreation opportunity spectrum classes for the Little Belts GA**

ROS class	Summer		Winter	
	Acres	Percent of GA <sup>1</sup>	Acres	Percent of GA <sup>1</sup>
Primitive	101,382	13	98,208	12
Semi-primitive nonmotorized	189,391	23	301,585	37
Semi-primitive motorized	221,916	28	307,746	39
Roaded natural	288,729	36	93,828	12
Rural	3,239	<1	3,290	<1
Urban	0	0	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

### Scenic Integrity Objectives

The scenic character for the Little Belts GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural characteristics commonly found throughout this GA. The locations of scenic integrity objectives (Table 87) for the Little Belts GA are displayed in the scenic integrity objectives maps (appendix A). Please refer to FW-SCENERY for plan components that apply to scenery and aesthetics. Also, please see appendix G and the glossary for more information.

**Table 87. Scenic integrity objectives for the Little Belts GA**

Scenic integrity objective	Acres	Percent of GA <sup>1</sup>
Very high	101,382	13
High	461,283	57
Moderate	154,241	19
Low	87,751	11
Very low	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

### Lands Suitable for Timber Production

Lands suitable for timber production are areas where timber production is an appropriate management objective. Please see chapter 2 for information on timber suitability and plan components for harvest on lands identified as suitable and unsuitable for timber production. This large, productive GA contributes a substantial proportion of the forestwide total area of lands suitable for timber production, more than any other GA in the plan area. Table 88 and associated map(s) in appendix A display the lands suitable for timber production in this GA.

**Table 88. Lands suitable for timber production in the Little Belts GA**

Acres	Percent of the GA <sup>1</sup>	Percent of forestwide total <sup>2</sup>
187,412	23	51

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

<sup>2</sup> Percentage of the total NFS lands suitable for timber production forestwide, rounded to the nearest whole number

### Recommended Wilderness

There are no recommended wilderness areas in the Little Belts GA.

## Plan Components – Watershed (WTR)

### Desired Conditions (LB-WTR-DC)

- 01** Neihart municipal watershed provides a clean water supply for the city of Neihart. See FW-WTR-STD-01.

### Goals (LB-WTR-GO)

- 01** Coordinate management of the municipal watershed with the state of Montana and municipality.

### Guidelines (LB-WTR-GDL)

- 01** Management activities within the Neihart municipal watershed should emphasize restoration and resiliency.

**02** Livestock grazing should only be allowed within the municipal watershed when moving animals between pastures adjacent to the watershed.

## Plan Components – Terrestrial Vegetation (VEGT)

### Desired Conditions (LB-VEGT-DC)

**01** Table 89 shows the desired condition for cover types in the Little Belts GA.

**Table 89. Little Belts GA existing and desired conditions for cover type (percent of area)**

Cover type <sup>1</sup>	Existing (percent) <sup>3</sup>	Desired range (percent)
Nonforested <sup>2</sup>	8 (6-9)	5-10
Aspen/hardwood	<1 (0.4-1)	2-5
Ponderosa pine	9 (7-11)	20-35
Douglas-fir	39 (33-44)	15-25
Lodgepole pine	29 (26-32)	15-25
Spruce/fir	11 (9-13)	15-25
Whitebark pine	1 (0.6-2)	2-5

<sup>1</sup> Cover types reflect the most common species in a stand (see appendix D).

<sup>2</sup> Nonforested areas include grass and shrub cover types, which may support widely scattered trees in some cases.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data. Existing condition represents 2018 conditions and will change through time. Estimates are rounded to the nearest whole number unless the value is less than 1%, in which case it is rounded to the nearest 10th. The totals do not necessarily equal 100% due to non-vegetated areas (water or rock).

## Plan Components - Forested Vegetation (VEGF)

### Desired Conditions (LB-VEGF-DC)

**01** Table 90 shows the desired condition for tree species presence in the Little Belts GA.

**Table 90. Little Belts GA existing and desired conditions for tree species presence (percent of area)<sup>1, 2, 3</sup>**

Tree species	Existing (percent)	Desired range (percent)
Limber pine	24 (21-26)	15-25
Rocky Mountain juniper	4 (2-5)	1-10
Ponderosa pine	8 (6-10)	20-35
Douglas-fir	59 (56-62)	35-50
Aspen	1 (0.3-2)	2-10
Engelmann spruce	27 (24-30)	15-25
Lodgepole pine	43 (40-46)	20-30
Subalpine fir	23 (21-26)	15-25
Whitebark pine	10 (8-12)	5-15

<sup>1</sup> Percent of area where at least one tree of the species is present.

<sup>2</sup> Totals may be greater 100% because more than 1 species can be present on a site. Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

<sup>3</sup> Distributions include trees that occur on nonforested potential vegetation type.

**02** Table 91 shows the desired condition for forest size class in the Little Belts GA.

**Table 91. Little Belts GA existing and desired conditions for forest size class (percent of area)<sup>3</sup>**

Size class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Seedling/sapling (0-4.9")	10 (7-13)	1-15
Small (5-9.9")	46 (43-49)	2-20
Medium (10-14.9")	26 (24-29)	5-25
Large (15.0-19.9")	5 (4-7)	25-35
Very large (20"+)	2 (1-3)	10-25

<sup>1</sup> Size class = the average diameter class of live trees based on basal area weighted diameter, shown as ranges of diameter at breast height, or 4.5' above ground level. A stand within a size class may contain trees smaller and/or larger than the class range.

<sup>2</sup> Total may less than 100% because nonforested areas (grass, shrub, savanna) are excluded.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

**03** Table 92 shows the desired condition for forest density class in the Little Belts GA.

**Table 92. Little Belts GA existing and desired conditions for forest density class (percent of area)**

Density class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Low/med (< 39.9%)	15	25-50
Med/high (40-59.9%)	25	30-50
High (60+%)	61	15-45

<sup>1</sup> Density class = the average canopy cover of live trees, shown as ranges of canopy cover percent.

<sup>2</sup> Existing condition is from the SIMPPLLE input landbase, based on VMap imagery.

## Plan Components – Wildlife (WL)

### Desired Conditions (LB-WL-DC)

**01** The system of ridges in the southeastern Little Belts Mountains is generally dominated by nonforested habitats and connected by nonforested or open forest habitats and provides habitat connectivity between seasonal ranges for mule deer, blue grouse, and other species.

**02** The risk of disease transmission from domestic livestock to bighorn sheep is minimal.

### Standards (LB-WL-STD)

**01** The best available scientific information and the most current recommendations made through agency or interagency efforts shall be used to determine and establish the means with which to achieve effective separation between bighorn sheep and domestic sheep and goats on NFS lands (refer to appendix C for information on recommendations and strategies).

## Plan Components – Smith River Corridor (SMITH)

The Smith River is a nationally recognized river famous for its fishing, outstanding scenery, and the opportunity it provides for a 60-mile float through private, state, and NFS lands during the late spring and early summer months.

The majority of the Smith River Corridor is located within the Little Belts GA. However, the southern portion lies within the Dry Range which is located within the Big Belts GA.

### Desired Conditions (LB-SMITH-DC)

- 01** The developed recreation settings and opportunities along the Smith River corridor are compatible with other resources and allow for ecological sustainability.
- 02** Visitor experiences are focused on the natural, cultural, and historic resources along the Smith River corridor.
- 03** Dispersed recreation opportunities along the river corridor allow for exploration and discovery with minimal environmental impacts and user conflicts.

### Goals (LB-SMITH-GO)

- 01** The operation, maintenance, and delivery of recreation along the Smith River is supported by partnerships and volunteer programs.

### Guidelines (LB-SMITH-GDL)

- 01** To protect and enhance the scenic quality of the area, management activities in the Smith River Corridor should be consistent with the scenic integrity objective of high to very high.

### Suitability (LB-SMITH-SUIT)

- 01** Timber production is not suitable in the Smith River Corridor. However, timber harvest is suitable to provide for other multiple use values such as public safety and to enhance the recreational or aesthetic values.

### Plan Components – Showdown Ski Area (SHOWSKI)

The Showdown Ski Area is located on Kings Hill Pass, along Highway 89. This historic ski resort has been in operation since 1936 and is currently authorized by a long-term special use permit which permits winter ski resort development on approximately 600 acres. Currently, the Showdown Ski Area services approximately 45,000 visitors per year.

### Desired Conditions (LB-SHOWSKI-DC)

- 01** The Showdown Ski Area provides public access to developed recreation activities such as, but not limited to, downhill skiing, snowboarding, and snowshoeing.
- 02** The vegetation and forest conditions at Showdown Ski Area provide for public health and safety, recreational settings and user experiences, enhanced scenic values, and protection of facilities and infrastructure. Also see FW-VEGT-DC-05, FW-VEGF-GDL-01 and FW-VEGF-GDL-02.

### Suitability (LB-SHOWSKI-SUIT)

- 01** Timber production is not suitable in the Showdown Ski Area. However, timber harvest is suitable for other multiple use purposes.

### Plan Components – Tenderfoot Creek Experimental Forest (TCEF)

The Tenderfoot Creek Experimental Forest encompasses the headwaters of Tenderfoot Creek in the Little Belt Mountains. It was established in 1961 to investigate lodgepole pine harvesting techniques which maintained soil stability while increasing water yield. In the early 1900's a new objective was outlined to develop and evaluate methods for sustaining the productivity and biodiversity of east-side lodgepole pine communities. In addition, the vision of using the experimental forest as a demonstration area for forest

research and management options for ecosystem management activities was expressed. Recent work on the experimental forest includes forest monitoring and health; mountain pine beetle assessments; spatial fuel analysis; hydrologic processes including factors affecting hydrologic connectivity, water quality, sediment transport and discharge; climate studies involving net ecosystem exchange of carbon and water; and sustainable silvicultural methods.

Management and administrative responsibilities for the Tenderfoot Creek Experimental Forest are conducted cooperatively between the HLC NF and the Rocky Mountain Research Station, as guided by the letter of agreement.

### Desired Conditions (LB-TCEF-DC)

- 01** The Tenderfoot Creek Experimental Forest provides the necessary vegetation conditions and management opportunities to support research and demonstration activities conducted by the Rocky Mountain Research Station.
- 02** The Tenderfoot Creek Experimental forest provides opportunities to continue long-term studies as well as the collection of baseline hydrology, climate, and other resource information.
- 03** Research facilities and infrastructure (for example, buildings, roads, and signs) are sufficient to support the research and education programs of the Tenderfoot Creek Experimental Forest.
- 04** Dispersed recreation opportunities are present within the Tenderfoot Creek Experimental Forest and their use and management is compatible with research activities.

### Suitability (LB-TCEF-SUIT)

- 01** The Tenderfoot Creek Experimental Forest is unsuitable for timber production. However, this area is suitable for timber harvest and other vegetation management activities for the purposes of conducting and demonstrating research or for other reasons as mutually agreed upon between Rocky Mountain Research Station and the HLC NF.
- 02** The Tenderfoot Creek Experimental Forest is not suitable for the removal of nontimber forest products (for example, mushrooms, firewood, botanical products) for commercial use.
- 03** The Tenderfoot Creek Experimental Forest is not suitable for the removal of the following nonforest products for personal use: firewood, Christmas trees, boughs, and surface rock. Removal of other nonforest products for personal use (for example, mushrooms and botanical products) may occur.
- 04** The Tenderfoot Creek Experimental Forest is not suitable for livestock grazing.
- 05** The Tenderfoot Creek Experimental Forest is suitable for motorized travel on designated routes or trails.

### Plan Components – Kings Hill Scenic Byway (KHSB)

The Kings Hill Scenic Byway is a 71-mile long National Forest scenic byway that begins at Armington Junction (the junction of US Highways 89 and 12) near Belt, MT and ends where Highway 89 intersects Highway 12, near White Sulphur Springs, MT. Approximately 40 miles of the Kings Hill Scenic Byway passes through NFS lands located in the Little Belt Mountains GA.



### Desired Conditions (LB-KHSB-DC)

- 01** NFS lands visible from Kings Hill Scenic Byway are natural-appearing and promote high scenic qualities.
- 02** The interpretive and recreation infrastructure that service visitors along the scenic byway protect, complement, and promote the intrinsic scenic and historic values along the route.
- 03** The interpretation along the Kings Hill Scenic Byway is cohesive and enhances the appreciation of the natural, historic, and cultural landscape of the area.

### Goals (LB-KHSB-GO)

- 01** The interpretation along the Kings Hill Scenic Byway is supported by partnerships with state and local highway districts and volunteers. Together these groups update, promote, and maintain the signage along the Kings Hill Scenic Byway.

### Guideline (LB-KHSB-GDL)

- 01** To protect and enhance the scenic quality as well as the historically relevant natural and cultural resources of the area, management activities in and adjacent to the Kings Hill Scenic Byway should be consistent with the scenic integrity objective of high, and should maintain or enhance the valued attributes for which the byway was established.

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## Rocky Mountain Range Geographic Area

### General Overview

The Rocky Mountain Range GA is in portions of Teton, Pondera, Glacier, and Lewis and Clark counties. The closest communities are Augusta, Choteau, Bynum, Dupuyer, East Glacier, and Heart Butte. Great Falls is the nearest large population center, about an hour drive to the southeast. The GA is bordered by Highway 2 and Glacier National Park to the north. The Blackfoot Nation lands are to the northeast. The east and southeast are bordered by state, private, and Bureau of Land Management lands. The Upper Blackfoot GA is to the south. The Continental Divide and the Lolo and Flathead National Forests are to the west. Unlike many of the GAs in the HLC NF plan area, the Rocky Mountain Range is not an island mountain range, but rather a part of the expansive Continental Divide ecosystem that extends across Montana.

Please see maps (appendix A) for detailed information.

### Distinctive Roles and Contributions

#### Ecological Characteristics

This GA is a part of the larger Rocky Mountain Front, where large bands of exposed limestone along a roughly 90-mile-long Lewis Thrust fault are visible. Two highlights of this overthrust formation are Scapegoat Mountain, a large escarpment in the Scapegoat wilderness; and the Chinese Wall, a limestone escarpment that averages 1,000 feet high and extends for approximately 22 miles. The Continental Divide is located along the top of this long limestone escarpment. The distinct ridges are locally known as reefs.

During the Pleistocene age, the last ice age, the GA was heavily glaciated and sculpted by mountain glaciers moving through and east out of the mountains onto the foot hills and prairies. Many glacial derived sediment and ice chiseled features dominate the landscape. Moraines, ice block features, and u-shaped valleys all add to the scenic quality of the Rocky Mountain Front.

Many wildfires in this GA have been managed to achieve multiple resource objectives, allowing fire to operate as an important disturbance, and drive the mosaic and pattern of vegetation. There are many natural barriers that tend to slow or stop fire spread, including major river drainages and rocky ridges.

The Northwest Glaciated Plains are characterized by large open expanses of what was historically short grass prairie. It has been predominantly converted to agricultural purposes. Kettle ponds seasonally dot the rolling foothills. Vegetation within the forest boundary is largely influenced by natural processes. This GA is characterized by a dominance of cool moist and cold forest potential vegetation types, in contrast to most other areas on the Forest. Prairie, limber pine, and aspen cover lower foothills. Rare cottonwood can be found and are more abundant here than in other GAs. Prairie vegetation extends into the front ridges and gives way to conifer forests. Engelmann spruce and subalpine fir forests are particularly prevalent. Lodgepole pine and Douglas-fir forests are also common along with whitebark pine at the highest elevations; Rocky mountain juniper is also present. Ponderosa pine is present but rare. Exposed rock, aspen, and open grassland break up the forest. This GA hosts high plant diversity and is home to several endemic species.

The very diverse topography and vegetation of this GA supports a wide array of wildlife species. All the wildlife species present before Euro-American settlement of the continent, except for bison, are believed to be present in this GA. Two species (grizzly bear and Canada lynx) that are currently listed as threatened under the federal Endangered Species Act are present in this GA. The Rocky Mountain Range GA is part

of the Northern Continental Divide Ecosystem Recovery Zone for grizzly bears and is entirely within the Primary Conservation Area identified in the Northern Continental Divide Ecosystem Grizzly Bear Conservation Strategy. This GA is also within Unit 3 of federally designated Canada lynx Critical Habitat. Other uncommon species that are present include the white-tailed ptarmigan, harlequin duck, northern bog lemming, and wolverine.

The Sun River Game Preserve was established in 1913 by the Montana legislature to protect what was then a dwindling elk population. It is the largest state game preserve and one of only a few remaining in Montana. Despite the elk population having grown substantially since its establishment, the preserve continues to be championed by many members of the public. The bighorn sheep population in the Sun River area of the Rocky Mountain Range GA has been one of the most robust and resilient herds in Montana and has been the source for sheep transplanted to other states and areas within Montana to augment or re-establish declining or extirpated herds.

Most precipitation in this GA comes in the form of snow and early spring rains with watersheds draining eastward from the continental divide to the Missouri River. Major drainages include the Two Medicine, Teton, Dearborn, Birch Creek, and Sun River watersheds. There are several streams that support westslope cutthroat trout, including a meta-population in the Badger watershed. Upon exiting the forest boundary, the preponderance of water is quickly captured in reservoirs for irrigation and other agricultural use. Many of the streams and rivers within this GA are noted for their ecological and scenic value.

Strong, frequent Chinook winds in this GA provide open winter range habitat key to many wildlife species, including big game. The strong winds also affect plant communities, such as dry limber pine, krummholz, savannah, and snow that is pushed and drifted into coulees that melt and irrigate snow-bank riparian areas.

## Social and Economic Characteristics

A large portion of the Rocky Mountain Range GA is designated wilderness and includes portions of the Scapegoat and Bob Marshall Wilderness areas. These two wilderness areas are components of a greater wilderness complex that totals well over 1.5 million acres, the 5th largest wilderness area in the lower 48 states. With the passing of the National Defense Act of 2015 in December 2014, an additional 67,112 acres were added to these wilderness areas, and 197,568 acres of Conservation Management Area were also designated. The GA's proximity to this wilderness complex, Glacier National Park, and adjacent wild areas of Canada make it a critical component of the Northern Continental Divide Ecosystem.

The GA is a destination for Montanans as well as visitors from all over. People are drawn to the area because of its remoteness, stunning landscape, recreational opportunities, and because it is one of the significant remaining wild places in the lower 48 states. Many lodges, resorts, cabins, and ranches have intimate relationships with the area. Multiple guard stations, work centers, and lookouts help the FS steward the vast country.

Recreation use within the GA is diverse and ranges from primitive settings found within the wilderness areas to well-established developed sites in a roaded natural setting. Because of the large amount of designated wilderness there is substantial backcountry recreation. Backpacking, hiking, horseback riding, and commercial outfitting are the primary recreation opportunities present in these remote reaches. Conversely, in the front country, one can find developed campgrounds and trailheads, commercial resorts, cabin rentals, and an airstrip. There is a high proportion of recreation residences in comparison to other GAs on the HLC NF. The Continental Divide National Scenic Trail follows the continental divide through this GA. This area has a history of oil and gas production.

## Cultural and Historical Characteristics

Portions of the Old North Trail, an ice-free corridor used for southward travel through North America, run through this GA. More recent indigenous cultures revere the area as a sacred landscape with spiritual importance for ceremonial purposes. Its continued use for cultural and spiritual resources has led to the designation of the Badger-Two Medicine area as a Traditional Cultural District. A special emphasis area, Badger-Two Medicine, is proposed to address and support special management needs of this area. Archaeological and cultural sites dot the entire GA.

## Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 93 and associated map(s) in appendix A display the designated areas in this GA. Note that there can be overlap between the different areas and that there can also be portions of the GA outside of a designated area, so the sum of these acreages may differ from the total GA acreage.

**Table 93. Designated areas in the Rocky Mountain Range GA**

Designated area	Acres/miles	Percent of GA <sup>1</sup>	Percent forestwide total <sup>2</sup>
Bob Marshall Wilderness	351,651	45	62
Scapegoat Wilderness	100,535	13	18
Conservation management area	195,073	25	100
Inventoried roadless areas (2)	359,341	46	24
Research natural areas (2)	1,774	<1	1
Eligible wild and scenic rivers (many)	189	N/A	N/A
Continental Divide National Scenic Trail	140	N/A	N/A

<sup>1</sup> Percentage of total NFS lands in the GA, rounded to the nearest whole number. Not applicable to linear features.

<sup>2</sup> Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number. Not applicable to linear features.

## GA Emphasis Areas

GA emphasis areas are not congressionally designated but do have specific plan components. See Table 94.

**Table 94. Emphasis areas in the Rocky Mountain Range GA**

Area	Acres	Percent of GA
Badger Two Medicine	129,591	17
Teton Pass Ski Area	407	<1
Green Timber Basin – Beaver Creek	2942	<1
Rocky Mountain Front Conservation Management Area	195,073	25

<sup>1</sup> Percentage of total NFS lands in the GA, rounded to the nearest whole number.

## Recreation Opportunity Spectrum

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components as well as the definitions of the ROS classes in the glossary. Table 95 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter. In addition, the associated map(s) in appendix A display the recreation opportunity spectrum categories in this GA.

**Table 95. Recreation opportunity spectrum classes for the Rocky Mountain Range GA**

ROS class	Summer		Winter	
	Acres	Percent of GA <sup>1</sup>	Acres	Percent of GA <sup>1</sup>
Primitive	578,357	74	579,452	75
Semi-primitive nonmotorized	144,091	19	150,120	19
Semi-primitive motorized	24,553	3	35,288	5
Roaded natural	27,796	4	9,937	1
Rural	3,226	<1	3,226	<1
Urban	0	0	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

**Scenic Integrity Objectives**

The scenic character for the Rocky Mountain Range GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural characteristics commonly found throughout this GA. The locations of scenic integrity objectives (Table 96) for the Rocky Mountain Range GA are displayed in the scenic integrity objectives maps (appendix A). Please refer to FW-SCENERY for plan components that apply to scenery and aesthetics. Also, please see appendix G and the glossary for more information.

**Table 96. Scenic integrity objectives for the Rocky Mountain Range GA**

Scenic integrity objective	Acres	Percent of GA <sup>1</sup>
Very high	578,357	74
High	197,809	26
Moderate	1,710	<1
Low	146	<1
Very low	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

**Lands Suitable for Timber Production**

Lands suitable for timber production are areas where timber production is an appropriate management objective. No such lands are identified in this GA. Forestwide and GA-specific plan components for harvest in lands unsuitable for timber production apply.

**Recommended Wilderness**

There are no recommended wilderness areas in the Rocky Mountain Range GA.

**Plan Components – Terrestrial Vegetation (VEGT)**

**Desired Conditions (RM-VEGT-DC)**

**01** Table 97 shows the desired condition for cover types in the Rocky Mountain Range GA.

**Table 97. Rocky Mountain Range GA existing and desired conditions for cover type (percent of area)**

Cover type <sup>1</sup>	Existing (percent) <sup>3</sup>	Desired range (percent)
Nonforested <sup>2</sup>	21 (15-27)	5-15
Aspen/hardwood	3 (1-5)	2-10
Ponderosa pine	2 (0.2-4)	2-5

Cover type <sup>1</sup>	Existing (percent) <sup>3</sup>	Desired range (percent)
Douglas-fir	15 (7-22)	10-20
Lodgepole pine	20 (15-27)	10-20
Spruce/fir	22 (16-28)	35-45
Whitebark pine	5 (2-8)	5-10

<sup>1</sup> Cover types reflect the most common species in a stand (see appendix D).

<sup>2</sup> Nonforested areas include grass and shrub cover types, which may support widely scattered trees in some cases.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data. Existing condition represents 2018 conditions and will change through time. Estimates are rounded to the nearest whole number unless the value is less than 1%, in which case it is rounded to the nearest 10th. The totals do not necessarily equal 100% due to non-vegetated areas (water or rock).

## Plan Components - Forested Vegetation (VEGF)

### Desired Conditions (RM-VEGF-DC)

01 Table 98 shows the desired condition for tree species presence in the Rocky Mountain Range GA.

**Table 98. Rocky Mountain Range GA existing and desired conditions for tree species presence (percent of area)<sup>1, 2, 3</sup>**

Tree species	Existing (percent)	Desired range (percent)
Limber pine	5 (2-8)	5-15
Rocky Mountain juniper	3 (0.4-5)	1-5
Ponderosa pine	0	2-10
Douglas-fir	27 (20-33)	20-40
Aspen	5 (2-8)	2-15
Engelmann spruce	33 (27-40)	25-40
Lodgepole pine	32 (26-40)	10-25
Subalpine fir	36 (29-43)	30-50
Whitebark pine	14 (9-20)	10-20

<sup>1</sup> Percent of area where at least one tree of the species is present.

<sup>2</sup> Totals may be greater 100% because more than 1 species can be present on a site. Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

<sup>3</sup> Distributions include trees that occur on nonforested potential vegetation type.

02 Table 99 shows the desired condition for forest size class in the Rocky Mountain Range GA.

**Table 99. Rocky Mountain Range GA existing and desired conditions for forest size class (percent of area)<sup>3</sup>**

Size class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Seedling/sapling (0-4.9")	21 (16-27)	1-15
Small (5-9.9")	29 (24-33)	2-15
Medium (10-14.9")	16 (13-20)	5-20
Large (15.0-19.9")	1 (0.3-3)	20-30
Very large (20"+)	0	10-20

<sup>1</sup> Size class = the average diameter class of live trees based on basal area weighted diameter, shown as ranges of diameter at breast height, or 4.5' above ground level. A stand within a size class may contain trees smaller and/or larger than the class range.

<sup>2</sup> Total may less than 100% because nonforested areas (grass, shrub, savanna) are excluded.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

- 03** Table 100 shows the desired condition for forest density class in the Rocky Mountain Range GA.

**Table 100. Rocky Mountain Range GA existing and desired conditions for forest density class (percent of area)**

Density class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Low/med (< 39.9%)	38	30-50
Med/high (40-59.9%)	17	30-50
High (60+%)	45	10-35

<sup>1</sup> Density class = the average canopy cover of live trees, shown as ranges of canopy cover percent.

<sup>2</sup> Existing condition is from the SIMPPLLE input landbase, based on VMap imagery.

- 04** Lynx habitat (see glossary) provides the amount, distribution, and structural conditions (based on the best available scientific information), at the scale of a reproductive female lynx home range, necessary to support the recovery and persistence of Canada lynx in the plan area.

## Plan Components – Wildlife (WL)

### Desired Conditions (RM-WL-DC)

- 01** The Rocky Mountain Range GA provides habitat connectivity for wide-ranging species (grizzly bear, Canada lynx, wolverine, and others) between public lands in northern Montana and those in central and southern Montana, including lands in the Greater Yellowstone Ecosystem.
- 02** The risk of disease transmission from domestic livestock to bighorn sheep is minimal.
- 03** Known harlequin duck breeding streams are relatively undisturbed by human activities during the brood-rearing time period.

### Standards (RM-WL-STD)

- 01** To avoid potential conflicts with grizzly bears and to avoid risk of disease transmission to wild bighorn sheep, domestic sheep or goat grazing on NFS lands within the Rocky Mountain Range GA will not be permitted. See also PCAZ1-NCDE-STD-03, PCAZ1-NCDE-STD-04, PCA-NCDE-STD-10, and PCA-NCDE-GDL-09.
- 02** The best available scientific information, and the most current recommendations made through agency or interagency efforts, shall be used to determine and establish the means with which to achieve effective separation between bighorn sheep and domestic sheep and goats on NFS lands (refer to appendix C for information on recommendations and strategies).

### Guidelines (RM-WL-GDL)

- 01** Livestock grazing in identified bighorn sheep winter range should be managed to prioritize maintenance of overwinter forage for bighorn sheep.
- 02** In order to minimize potential disturbance to harlequin duck broods, management and recreation activities that have the potential to separate or displace harlequin pairs or broods (for example, timber harvest, road construction and heavy maintenance, boating, rafting) should be avoided on or immediately adjacent to known harlequin duck breeding streams during the brood-rearing period.



## Plan Components – Teton Pass Ski Area (TETONSKI)

The Teton Pass Ski Area is along the Teton Canyon Road. This ski area is approximately 30 miles west of Choteau, MT. Teton Pass Ski Resort has been in operation since 1966 and is currently authorized by a long-term special use permit which permits winter ski resort development and some summer activities on approximately 407 acres. Currently, the Teton Pass Ski Area services approximately 6,000 - 8,000 visitors per year.

### Desired Conditions (RM-TETONSKI-DC)

- 01** The Teton Pass Ski Area provides public access to developed recreation activities such as, but not limited to, downhill skiing, snowboarding, snowshoeing, and backcountry skiing.
- 02** The vegetation and forest conditions at Teton Pass Ski Area provide for public health and safety, recreational settings and user experiences, enhancing scenic values, protection of facilities and infrastructure. Also see FW-VEGT-DC-05, FW-VEGF-GDL-01 and FW-VEGF-GDL-02.

### Suitability (RM-TETONSKI-SUIT)

- 01** The Teton Pass Ski Area is not suitable for timber production. However, timber harvest may occur to provide for other multiple use values.

## Plan Components – Badger Two Medicine (BTM)

The area commonly known as the Badger Two Medicine encompasses approximately 129,591 acres at the northern end of the Rocky Mountain Range GA. The majority of this area is located within the Badger Two Medicine Traditional Cultural District, an area acknowledged for its significance to the oral traditions and culture practices of the Blackfeet people, who have used the lands for traditional purposes for generations and continue to value the area as important to maintaining their community's continuing cultural identity. This area also falls within the 1895 Agreement with the Indians of the Blackfeet Indian Reservation in Montana, which states that the Blackfeet Nation will retain rights to extract timber, fish, animals, and other resources in the Badger Two Medicine area.

### Desired Conditions (RM-BTM-DC)

- 01** Badger Two Medicine is a sacred land, a cultural touchstone, a repository of heritage, a living cultural landscape, a refuge, a hunting ground, a critical ecosystem, a habitat linkage between protected lands, a wildlife sanctuary, a place of solitude, a refuge for wild nature, and an important part of both tribal and non-tribal community values. It is important to the people who rely upon it, critical to the wild nature that depends upon it, and has an inherent value and power of its own.
- 02** The Badger Two Medicine is a large, undeveloped landscape that is characterized by a natural environment where ecological processes such as natural succession, fire, insects, and disease function and exist. Impacts from visitor uses do not detract from the natural setting.
- 03** Education and research opportunities are available within the Badger Two Medicine.

### Standards (RM-BTM-STD)

- 01** Management activities in the Badger Two Medicine shall be conducted in close consultation with the Blackfeet Nation to fulfill treaty obligations, and the federal Indian trust responsibility. Project and activity authorizations shall be protected and honor Blackfeet reserved rights and sacred land. The uses of this area must be compatible with desired conditions and compatibility shall be determined through government to government consultation.

- 02** Management activities shall accommodate Blackfeet tribal member access to the Badger Two Medicine for the exercise of reserved treaty rights, and enhance opportunities for tribal members to practice spiritual, ceremonial, and cultural activities.

### Suitability (RM-BTM-SUIT)

- 01** The Badger Two Medicine is unsuitable for timber production. However, timber harvest may occur to provide for other multiple use values, such as habitat restoration, hazardous fuel reduction, and to support tribal treaty rights.
- 02** The Badger Two Medicine is suitable for restoration activities (such as but not limited to management ignited fires, tree planting, and active weed management) to protect and/or enhance the natural ecology and habitat conditions of this area.

### Plan Components – Rocky Mountain Front Conservation Management Area (CMA)

On December 19, 2014, President Obama signed into effect Public Law 113-291: National Defense Authorization Act for Fiscal Year 2015. Included within this law was language that established the Rocky Mountain Front Conservation Management Area. The law includes approximately 195,073 acres of federal land managed by the FS and approximately 13,087 acres of federal land managed by the Bureau of Land Management.

### Desired Conditions (RM-CMA-DC)

- 01** The conservation management area on the Rocky Mountain Front conserves, protects, and enhances the recreational, scenic, historic, cultural, fish, wildlife, roadless, and ecological values of the area for the benefit and enjoyment of present and future generations.
- 02** The vegetation and forest conditions of the Rocky Mountain Front Conservation Management Area provide for public health and safety, recreational settings and user experiences, enhance scenic values, and protect facilities and infrastructure.
- 03** Nonmotorized recreation trail opportunities enable access to the primitive and semiprimitive recreation opportunity spectrum settings within the conservation management area.

### Standards (RM-CMA-STD)

- 01** No new or temporary roads shall be constructed within the Rocky Mountain Front Conservation Management Area, except:
  - To reroute or close an existing route to protect resources.
  - To allow motorized access for timber management activities not more than ¼ mile from Teton Road, South Fork Teton Road, Sun River Road, Beaver Willow Road, or Benchmark Road.
  - To allow for administrative access, permitted access, and access to valid existing rights.
  - For emergency purposes.
- 02** Temporary roads that are constructed for vegetation management projects shall be restored within 3 years of project completion, including site preparation and planning activities.

### Guidelines (RM-CMA-GDL)

- 01 Management framework found in the Rocky Mountain Ranger District Invasive Plant Management Strategy (2015), and any subsequent amendments, should provide for the control, prevention, and eradication of terrestrial and aquatic nonnative invasive species within the Rocky Mountain Front Conservation Management Area to maintain the native landscape.

### Suitability (RM-CMA-SUIT)

- 01 The Rocky Mountain Front Conservation Management Area is not suitable for timber production. However, timber harvest may occur to provide for other multiple use values.
- 02 Permitted grazing is suitable in the Rocky Mountain Front Conservation Management Area.

### Plan Components – Green Timber Basin-Beaver Creek Area (GB)

The Green Timber Basin-Beaver Creek botanical area encompasses an area with unusually high orchid diversity area with ten documented orchids present across various habitats. Two of these species, sparrow's egg lady slipper (*Cypripedium passerinum*) and round-leaved orchid (*Amerorchis rotundifolia*) are species of conservation concern that are rare in Montana and exhibit a high fidelity to a very narrow range of ecological tolerance. It is uncommon in Montana for conditions to exist that support large populations of these rare species. This emphasis area is approximately 2,910 acres in size and provides a valuable opportunity for plant enthusiasts to enjoy viewing multiple orchid species.

### Desired Conditions (RM-GB-DC)

- 01 The diversity and density of orchid and other plant species that make this area botanically unique is maintained.

### Guidelines (RM-GB-GDL)

- 01 Any management activities that occur in this area should be designed to avoid or minimize impacts to botanical resources, primarily the unique diversity and density of orchid species.

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## Snowies Geographic Area

### General Overview

The Snowies is the GA farthest to the east within the HLC NF plan area. This remote GA is primarily in Fergus County with smaller portions in Golden Valley County. Lewistown is the largest nearby population center.

Please see maps (appendix A) for detailed information.

### Distinctive Roles and Contributions

#### Ecological Characteristics

The Snowies GA includes both the Big and Little Snowy Mountain ranges, which constitute portions of an extensive series of low, rolling hills. This GA displays prominent changes in elevation accentuated by the surrounding grassland, high plains, and conifer timbered foothills.

The Little Snowies are separated from the Big Snowies by a subtle break in topography. They are characterized by nonforested and warm dry forested potential vegetation types, with foothills that are partially forested primarily with limber pine, ponderosa pine, and Douglas-fir. The Little Snowies are especially noted for unique expanses of ponderosa pine which transition from a 3-needled to a 2-needled variety that typifies populations in the eastern part of Montana. Due to its position in the rain shadow created by the Big Snowies, the country is semi-arid and dominated by grassy vegetation. The landform is rolling with slopes that are gentle to flat, except where creeks have dissected them. The area lacks prominent high points.

The Big Snowies is the largest and most prominent landform in this GA, higher in elevation and larger than the Little Snowies, dominated by cool moist potential vegetation types. The spine of this landform runs east-west for approximately 25 miles, and 10 miles north-south. Middle elevations are clad with coniferous trees. At the highest elevations, the forest transitions into a treeless plateau of alpine that is characterized by rock and tundra. Floristically, the Big Snowies are unique with many vegetation types compressed into the same area. Fire was the historic driver of plant communities. Slopes vary from steep, rocky canyons to gentle benches. The northern portion of the GA receives abundant moisture and supports dense forests of Douglas-fir, lodgepole pine, subalpine fir, and Engelmann spruce with some whitebark pine. These moist forests create a unique setting not found in the more arid GAs nearby. The southern portion of the GA supports a notably expansive aspen complex.

The Snowies GA includes habitat for big game species such as moose, elk, mule deer, white-tailed deer, black bear, and mountain lion. These mountain ranges historically supported bighorn sheep, as well as a transplanted mountain goat population that is now extinct or nearly so. An introduced population of wild turkeys provides a valued hunting opportunity in the Little Snow Mountains.

Streams flowing out of the north side of the Big Snowies flow into the Judith River. Major streams on the north side of the Big Snowies include Rock, Cottonwood, Flatwillow, and Half Moon Creeks. Those flowing out of the south side flow into the Musselshell River. South side streams include Careless and Swimming Woman Creeks; both flow south out of a unique geologic feature known as a pseudo cirque. Westslope cutthroat trout are present in the Cottonwood, Big Spring, and Half Moon drainages. The populations in Cottonwood and Big Spring are aboriginal and at the easternmost extent of westslope cutthroat trout range.

Snow in the Big Snowies is a primary source of water recharge that feeds the underlying Madison limestone aquifer and discharges to Big Spring. Big Spring is a first-magnitude artesian spring and surfaces approximately 6 miles south of Lewistown. The spring discharges approximately 50,000 to 64,000 US gallons per minute, providing Lewistown's water supply, which requires no treatment for use by consumers. See municipal watershed map. Halfmoon, Big Spring, and Cottonwood Creeks support westslope cutthroat trout. The major drainages in the Little Snowies are Willow Creek and the North Fork of Pole Creek, both of which drain south to the Musselshell River.

### Social and Economic Characteristics

Most of the Little Snowies is used for dispersed recreation opportunities, such as hunting and camping. The area is known for its wild turkey populations and wildlife viewing is a popular activity. Crystal Lake is one of the Big Snowy Mountain's crown jewels. It is a shallow lake of natural origin, roughly 15 feet at its deepest and underlain by a bed of limestone. There are several developed recreation sites along Crystal Lake and Crystal Lake Guard station still actively facilitates FS stewardship and is available as a cabin rental. Several dispersed trails take off from this location and provide access to interpretive points such as the Ice Caves, which is one of many caves in the area.

The Big Snowies Wilderness Study Act area (approximately 88,000 acres) is located in the center of the Big Snowy mountain range. This undeveloped area is managed to preserve opportunities for inclusion in the National Wilderness Preservation System and includes opportunities for a more primitive recreation experience.

Livestock grazing in the Little Snowies also supports the local economy.

### Cultural and Historical Characteristics

The Little Snowy Mountain range has a rich cultural history, beginning with Native Americans and then later with homesteaders. Today, large ranches maintain the open character of the area. Pine Grove Cemetery continues to be the final resting place for early Euro-American occupants.

The Big Snowy Mountains have long been a unique and revered destination. Early Native Americans visited its basins and summits. Their artifacts and art still sporadically adorn the range. Lower slopes and foothills were homesteaded and have become large, iconic ranches. Unique, biophysical phenomena, such as ice caves, continue to attract visitors.

### Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 101 and associated map(s) in appendix A display the designated areas in this GA. Note that there can be overlap between the different areas and that there can also be portions of the GA outside of a designated area, so the sum of these acreages may differ from the total GA acreage.

**Table 101. Designated areas in the Snowies GA**

Designated area	Acres/miles	Percent of GA <sup>1</sup>	Percent forestwide total <sup>2</sup>
Big Snowies Wilderness Study Act Area	87,968	74	52
Inventoried roadless areas (2)	97,113	82	7
Research natural areas (3)	3,483	3	21
Eligible wild and scenic rivers (1)	9.1	N/A	N/A
Crystal Lake Loop National Recreation Trail	2	N/A	N/A

<sup>1</sup> Percentage of total NFS lands in the GA, rounded to the nearest whole number. Not applicable to linear features.

<sup>2</sup> Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number. Not applicable to linear features.

## GA Emphasis Areas

GA emphasis areas are not congressionally designated but do have specific plan components. See Table 102.

**Table 102. Emphasis areas in the Snowies GA**

Area	Acres	Percent of GA
Big Spring Creek municipal watershed	9,649	8
Grandview Recreation Area	32,296	27

## Recreation Opportunity Spectrum

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components as well as the definitions of the ROS classes in the glossary. Table 103 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter. In addition, the associated map(s) in appendix A display the recreation opportunity spectrum categories in this GA.

**Table 103. Recreation opportunity spectrum classes for the Snowies GA**

ROS class	Summer		Winter	
	Acres	Percent of GA <sup>1</sup>	Acres	Percent of GA <sup>1</sup>
Primitive	95,628	81	82,216	70
Semi-primitive nonmotorized	0	0	0	0
Semi-primitive motorized	6,541	5	35,500	30
Roaded natural	15,328	13	456	<1
Rural	676	1	0	0
Urban	0	0	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

## Scenic Integrity Objectives

The scenic character for the Snowies GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural characteristics commonly found throughout this GA. The locations of scenic integrity objectives (Table 104) for the Snowies GA are displayed in the scenic integrity objectives maps (appendix A). Please refer to FW-SCENERY for plan components that apply to scenery and aesthetics. Also, please see appendix G and the glossary for more information.

**Table 104. Scenic integrity objectives for the Snowies GA**

Scenic integrity objective	Acres	Percent of GA <sup>1</sup>
Very high	95,628	81
High	4,316	4
Moderate	7,765	6
Low	10,463	9
Very low	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

**Lands Suitable for Timber Production**

Lands suitable for timber production are areas where timber production is an appropriate management objective. Please see chapter 2 for information on timber suitability and plan components for harvest on lands identified as suitable and unsuitable for timber production. This GA contributes a small proportion of the forestwide total area of lands suitable for timber production. Table 105 and associated map(s) (appendix A) display the lands suitable for timber production in this GA.

**Table 105. Lands suitable for timber production in the Snowies GA**

Acres	Percent of the GA <sup>1</sup>	Percent of forestwide total <sup>2</sup>
9,531	8	3

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

<sup>2</sup> Percentage of the total NFS lands suitable for timber production forestwide, rounded to the nearest whole number

**Recommended Wilderness**

Table 106 and associated map(s) in appendix A display the recommended wilderness areas in this GA.

**Table 106. Recommended wilderness in the Snowies GA**

Area	Acres	Percent of the GA <sup>1</sup>
Big Snowies	66,894	57

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

**Plan Components – Watershed (WTR)**

**Desired Conditions (SN-WTR-DC)**

- 01** Big Spring Creek municipal watershed provides a clean water supply for the city of Lewistown. See FW-WTR-STD-01.

**Goals (SN-WTR-GO)**

- 01** Coordinate management of the municipal watershed with the state of Montana and municipality.

**Guidelines (SN-WTR-GDL)**

- 01** Within the Big Spring Creek municipal watershed, management activities should emphasize restoration and resiliency.



## Plan Components – Terrestrial Vegetation (VEGT)

### Desired Conditions (SN-VEGT-DC)

01 Table 107 shows the desired condition for cover types in the Snowies GA.

**Table 107. Snowies GA existing and desired conditions for cover type (percent of area)**

Cover type <sup>1</sup>	Existing (percent) <sup>3</sup>	Desired range (percent)
Nonforested <sup>2</sup>	9 (4-14)	5-15
Aspen/hardwood	1 (1-3)	2-5
Ponderosa pine	22 (15-30)	15-30
Douglas-fir	37 (24-50)	15-25
Lodgepole pine	10 (5-16)	15-25
Spruce/fir	20 (13-27)	15-30

<sup>1</sup> Cover types reflect the most common species in a stand (see appendix D).

<sup>2</sup> Nonforested areas include grass and shrub cover types, which may support widely scattered trees in some cases.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data. Existing condition represents 2018 conditions and will change through time. Estimates are rounded to the nearest whole number unless the value is less than 1%, in which case it is rounded to the nearest 10th. The totals do not necessarily equal 100% due to non-vegetated areas (water or rock).

## Plan Components - Forested Vegetation (VEGF)

### Desired Conditions (SN-VEGF-DC)

01 Table 108 shows the desired condition for tree species presence in the Snowies GA.

**Table 108. Snowies GA existing and desired conditions for tree species presence (percent of area)<sup>1, 2, 3</sup>**

Tree species	Existing (percent)	Desired range (percent)
Limber pine	26 (19-34)	5-25
Rocky Mountain juniper	2 (2-4)	1-5
Ponderosa pine	26 (19-34)	20-35
Douglas-fir	62 (54-70)	35-50
Aspen	2 (2-5)	5-15
Engelmann spruce	48 (39-56)	15-30
Lodgepole pine	18 (12-25)	20-35
Subalpine fir	19 (13-27)	15-30
Whitebark pine	1 (1-2)	5-15

<sup>1</sup> Percent of area where at least one tree of the species is present.

<sup>2</sup> Totals may be greater 100% because more than 1 species can be present on a site. Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

<sup>3</sup> Distributions include trees that occur on nonforested potential vegetation type.

02 Table 109 shows the desired condition for forest size class in the Snowies GA.

**Table 109. Snowies GA existing and desired conditions for forest size class (percent of area)<sup>3</sup>**

Size class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Seedling/sapling (0-4.9")	14 (9-23)	1-20
Small (5-9.9")	47 (39-56)	5-25

Size class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Medium (10-14.9")	27 (19-34)	5-30
Large (15.0-19.9")	1 (1-3)	20-30
Very large (20"+)	1 (1-3)	5-25

<sup>1</sup> Size class = the average diameter class of live trees based on basal area weighted diameter, shown as ranges of diameter at breast height, or 4.5' above ground level. A stand within a size class may contain trees smaller and/or larger than the class range.

<sup>2</sup> Total may less than 100% because nonforested areas (grass, shrub, savanna) are excluded.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

**03** Table 110 shows the desired condition for forest density class in the Snowies GA.

**Table 110. Snowies GA existing and desired conditions for forest density class (percent of area)**

Density class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Low/med (< 39.9%)	18	25-55
Med/high (40-59.9%)	19	30-50
High (60+%)	63	10-35

<sup>1</sup> Density class = the average canopy cover of live trees, shown as ranges of canopy cover percent.

<sup>2</sup> Existing condition is from the SIMPPLLE input landbase, based on VMap imagery.

**04** Juniper recruitment into mule deer and elk summer range in the Little Snowies portion of the GA is minimal, although the species persists at the GA scale.

## Plan Components – Nonforested Vegetation (VEGNF)

### Guidelines (SN-VEGNF-GDL)

**01** When conducting management activities, vegetation should be managed to enhance and maintain high quality forage on big game summer range, particularly on the northern slopes of the Big Snowy Mountains.

## Plan Components – Benefits to People (TIM)

### Guidelines (SN-TIM-GDL)

**01** When timber harvest and other vegetation management activities are conducted, projects should be designed to emphasize ponderosa pine restoration, wildlife habitat, reduction of hazardous fuels, protection of communities and values at risk, and/or public safety.

## Plan Components – Benefits to People (EMIN)

### Standards (SN-EMIN-STD)

**01** Within the Snowies GA new leases for leasable minerals shall include a no surface occupancy stipulation.

## Plan Components – Grandview Recreation Area (GVRA)

The Grandview Recreation Area is in the western portion of the Big Snowies GA, south of the community of Lewistown, Montana in the Big Snowy Mountain range. This recreation area is approximately 32,296 acres and includes the Crystal Lake Campground complex and a portion of the Big Snowies Wilderness Study Area. The Grandview Recreation Area contains several challenging mountain bike trails that lead to

prominent features and vistas, as well as popular motorized over-snow areas. The Grandview Recreation Area abuts the Big Snowies Recommended Wilderness Area which is located in the eastern portion of the mountain range.

Since a portion of this recreation area also falls within the Big Snowies Wilderness Study Area, plan components for the wilderness study area will also need to be followed. Please also see Forestwide, Designated areas, Wilderness Study Areas.

### Desired Conditions (SN-GVRA-DC)

- 01** Recreation activities within the Grandview Recreation Area enhance and support the primitive character and wilderness characteristics of the area. Also see Forestwide Designated Areas, Wilderness Study Areas.
- 02** The Crystal Lake Complex provides developed recreation experiences and trailhead opportunities for the greater Grandview Recreation Area.
- 03** Trails within the Grandview Recreation Area offer dispersed, nonmotorized recreation opportunities. These opportunities range in complexity from those that are easy and readily accessible to those that are more difficult and require greater skills. Also see Forestwide Recreation Opportunities, Dispersed Recreation.

### Goals (SN-GVRA-GO)

- 01** Partners and volunteer groups work collaboratively with the FS in the planning, management, and offering of recreation experiences and settings within the Grandview Recreation Area.

### Suitability (SN-GVRA-SUIT)

- 01** The entire Grandview Recreation Area is unsuitable for timber production. The Crystal Lake Campground complex, outside of the Big Snowies WSA, is suitable for timber harvest to provide for other multiple use values.
- 02** Within the Grandview Recreation Area, mechanized means of transportation (such as mountain bikes) are suitable on FS established roads and trails as long as the total amount of mountain bike use maintains the wilderness characteristics within the WSA as they existed in 1977. Mechanized means of transportation off of NFS roads and trails in the Grandview Recreation Area is not suitable.
- 03** Within the Grandview Recreation Area, motorized over-snow uses are suitable within winter recreation areas as authorized by the current travel plan.

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## Upper Blackfoot Geographic Area

### General Overview

The Upper Blackfoot GA spans Lewis and Clark and Powell counties. The community of Lincoln is within the GA, and the city of Helena is relatively nearby. The Upper Blackfoot GA lies primarily west of the Continental Divide and is therefore influenced by a more maritime climate than the other GAs. It is not an island mountain range, but rather a portion of the greater Continental Divide landscape that extends across Montana. The Rocky Mountain Range GA and Flathead National Forest are directly north and the Divide GA is to the south. Montana Highway 200 cuts east-west through the center of the GA, crossing over Rogers Pass to follow the Blackfoot River. The northwest corner is a part of the Scapegoat Wilderness and the greater Bob Marshall Wilderness complex. This GA is a critical component of the Southwest Crown of the Continent ecosystem.

Please see maps (appendix A) for detailed information.

### Distinctive Roles and Contributions

#### Ecological Characteristics

The landform west of the continental divide is characterized by mostly rolling hills and mountains that are underlain by various types of rock. High peaks are topped with volcanic rocks with areas of exposed rock. The effects of glaciation are present. The landforms east of the divide are characterized by rounded mountains that are underlain by volcanic rocks and sedimentary rocks that have changed through geologic processes. Summits lack much exposed rock and the effects of glaciation are absent. There are a few notable passes over the Continental Divide: Rogers, Stemple, and Flesher.

The Upper Blackfoot GA contains a mosaic of nonforested and forested potential vegetation types. Most of the area is forested with conifers, predominantly lodgepole pine, Douglas-fir, and subalpine fir with some Rocky Mountain juniper, ponderosa pine, limber pine, Engelmann spruce, and whitebark pine. Notably, western larch occurs in low amounts at the far eastern edge of its range. This species is not present in any other GA within the plan area. Aspen stands are intermittent. Grasslands are limited but do occur along valley bottoms and sun exposed aspects. Wetland complexes (such as Indian Meadows), fens, and other groundwater dependent ecosystems harbor rich assemblages of plants. Fire is a major driver in the structure and composition of plant communities. The unique climate of this area, being west of the Divide and subject to more maritime influences than the rest of the plan area, gives rise to unique species associations at higher elevations, such as ponderosa pine and limber pine mixed with whitebark pine. There is also a unique botanical area near Granite Butte containing a montane rough fescue grassland, a snowglade feature, and a whitebark pine ribbon forest.

The species and habitats on the Upper Blackfoot GA differ from most of the plan area due to it being predominantly west of the Continental Divide. Two species (grizzly bear and Canada lynx) that are currently listed as threatened under the federal Endangered Species Act are present in this GA. The north half of the Upper Blackfoot GA is part of the Northern Continental Divide Ecosystem Recovery Zone (also the Primary Conservation Area) for grizzly bears – which is the southernmost extent of the Northern Continental Divide Ecosystem Grizzly Bear Recovery Zone. The south half of the Upper Blackfoot GA is within management Zone 1 identified in the Northern Continental Divide Ecosystem Grizzly Bear Conservation Strategy. This GA is also within Unit 3 of federally designated Canada lynx Critical Habitat. Other uncommon species that are present include the harlequin duck, wolverine, and occasional fisher. The Upper Blackfoot GA also provides habitat for moose, white-tailed deer, elk, wolves, and mule deer. Mountain goats may occasionally be present in higher elevations near the boundary with the Rocky

Mountain Range GA. The Upper Blackfoot GA provides important connectivity for a variety of wildlife species between larger blocks of public land to the north and the south.

The Blackfoot River has its headwaters here in the GA. This highly valued recreational and scenic river clips other portions of the GA. This GA has many important headwater streams emanating from the high country's snow melt. All streams west of the divide feed into the Blackfoot River on its way to the Clark Fork of the Columbia River. Major drainages east of the divide flow towards the Missouri River. Many natural lakes occur throughout. High value populations of bull trout, currently listed as threatened under the federal Endangered Species Act, and westslope cutthroat trout are found throughout the GA, including Landers Fork and Poorman Creek. This GA contains all the designated critical habitat for bull trout on the HLC NF.

### Social and Economic Characteristics

Recreation use in the Upper Blackfoot GA varies by location. The northern area includes the south part of the Scapegoat Wilderness (part of the greater Bob Marshall Wilderness complex), and recreation activities such as backpacking, horseback riding, and outfitter guiding take place across the landscape. There are a few developed recreation sites within the GA, including a couple of campgrounds and a few larger developed trailheads. Additionally, there is dispersed recreation use with both motorized and nonmotorized trails and dispersed camping in many of the stream bottoms. Snowmobiling and dog sledding are the primary winter activities along with cross country skiing, particularly on Stemple Pass. The Continental Divide National Scenic Trail transects the GA, north to south. Numerous snowmobile trails lead from the community of Lincoln onto NFS lands. This GA also has the Lincoln Airstrip.

Mineral production occurs via small mining operations, primarily for gold, silver, lead, and copper. There are several inholdings as well as extensive reclamation activities associated with historic mining, including a state superfund site at the Upper Blackfoot Mining Complex/Mike Horse.

### Cultural and Historical Characteristics

Native American groups once occupied, seasonally used, or traveled through this large river valley and the adjacent foothills and mountains. Native Americans attach great cultural significance to the ancient campsites, hunting and plant gathering places, tool stone quarries, paint pigment sources, vision questing sites, and old trails found throughout the GA.

The Euro-American settlement mirrors that of Montana in general. Portions of the Lewis and Clark Trail traverse the Blackfoot River and Alice Creek. The trail passes over the Continental Divide at Lewis and Clark Pass. The Lewis and Clark Expedition of 1804-1806 gave way to fur trapping and trading, then early military expeditions and railroad route explorations. A gold strike in Abe Lincoln Gulch brought permanent settlement at the Old Lincoln townsite. Remnants of former communities dot the landscape, such as the post offices and dwellings of McClellan Gulch, Rochester, Gould, Stemple Pass, and Mike Horse. Relics of historic mining infrastructure and tools are frequent. Three historic buildings, Webb Lake Guard Station, Stonewall Lookout, and Granite Butte Lookout stand testament to the FS's administration.

### Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 111 and associated map(s) in appendix A display the designated areas in this GA. Note that there can be overlap between the different areas and that there can also be portions of the GA outside of a designated area, so the sum of these acreages may differ from the total GA acreage.

**Table 111. Designated areas in the Upper Blackfoot GA**

Designated area	Acres/miles	Percent of GA <sup>1</sup>	Percent forestwide total <sup>2</sup>
Scapegoat Wilderness	83,519	26	15
Inventoried roadless areas	152,724	46	10
Research natural areas (existing and proposed)	3,283	1	18
Eligible wild and scenic rivers (many)	43	N/A	N/A
Continental Divide National Scenic Trail	65	N/A	N/A
Lewis and Clark National Historic Trail	12	N/A	N/A

<sup>1</sup> Percentage of total NFS lands in the GA, rounded to the nearest whole number. Not applicable to linear features.

<sup>2</sup> Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number. Not applicable to linear features.

### GA Emphasis Areas

GA emphasis areas are not congressionally designated but do have specific plan components.

#### *Recreation Opportunity Spectrum*

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components as well as the definitions of the ROS classes in the glossary. Table 112 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter. In addition, the associated map(s) in appendix A display the recreation opportunity spectrum categories in this GA.

**Table 112. Recreation opportunity spectrum classes for the Upper Blackfoot GA**

ROS Cclass	Summer		Winter	
	Acres	Percent of GA <sup>1</sup>	Acres	Percent of GA <sup>1</sup>
Primitive	134,429	40	133,591	40
Semi-primitive nonmotorized	109,744	33	60,523	18
Semi-primitive motorized	15,240	5	93,394	28
Roaded natural	73,723	22	45,628	14
Rural	481	<1	481	<1
Urban	0	0	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

#### *Scenic Integrity Objectives*

The scenic character for the Upper Blackfoot GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural characteristics commonly found throughout this GA. The locations of scenic integrity objectives (Table 113) for the Upper Blackfoot GA are displayed in the scenic integrity objectives maps (appendix A). Please refer to FW-SCENERY for plan components that apply to scenery and aesthetics. Also, please see appendix G and the glossary for more information.

**Table 113. Scenic integrity objectives for the Upper Blackfoot GA**

Scenic integrity objective	Acres	Percent of GA <sup>1</sup>
Very high	134,429	40
High	151,544	45

Scenic integrity objective	Acres	Percent of GA <sup>1</sup>
Moderate	38,698	12
Low	8,948	3
Very low	0	0

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

**Lands Suitable for Timber Production**

Lands suitable for timber production are areas where timber production is an appropriate management objective. Please see chapter 2 for information on timber suitability and plan components for harvest on lands identified as suitable and unsuitable for timber production. This productive GA contributes a substantial proportion of the forestwide total of lands suitable for timber production. Table 114 and associated map(s) in appendix A display the lands suitable for timber production in this GA.

**Table 114. Lands suitable for timber production in the Upper Blackfoot GA**

Acres	Percent of the GA <sup>1</sup>	Percent of forestwide total <sup>2</sup>
42,348	13	11

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

<sup>2</sup> Percentage of the total NFS lands suitable for timber production forestwide, rounded to the nearest whole number

**Recommended Wilderness**

Table 115 and associated map(s) in appendix A display the recommended wilderness areas in this GA.

**Table 115. Recommended wilderness in the Upper Blackfoot GA**

Areas	Acres	Percent of the GA <sup>1</sup>
Nevada Mountain <sup>2</sup>	17,234	5
Red Mountain	2,500	1
Silverking	18,568	6
Total	38,302	12

<sup>1</sup> Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

<sup>2</sup> Portions of the Nevada Mountain RWA are located within both the Divide and Upper Blackfoot GA's.

**Plan Components – Fisheries and Aquatic Habitat (FAH)**

**Desired Conditions (UB-FAH-DC)**

- 01** Bull trout spawning, rearing, and migratory habitat is widely available and inhabited. Bull trout have access to historic habitat, and appropriate life history strategies (for example, resident, fluvial, and adfluvial) are supported.
- 02** The bull trout population trends towards recovery.

**Goals (UB-FAH-GO)**

- 01** Bull trout population recovery is supported through the Bull Trout Conservation Strategy, the Bull Trout Recovery Plan, and the Columbia Headwaters Recovery Unit Implementation Plan or the latest guiding documents through cooperation and coordination with the USFWS, tribes, state agencies, other federal agencies, and interested groups.



## Plan Components – Terrestrial Vegetation (VEGT)

### Desired Conditions (UB-VEGT-DC)

01 Table 116 shows the desired condition for cover types in the Upper Blackfoot GA.

**Table 116. Upper Blackfoot GA existing and desired conditions for cover type (percent of area)**

Cover type <sup>1</sup>	Existing (percent) <sup>3</sup>	Desired range (percent)
Nonforested <sup>2</sup>	16 (12-20)	5-15
Aspen/hardwood	<1 (0.4-1.2)	2-5
Ponderosa pine	2 (0.6-4)	10-25
Douglas-fir	33 (26-42)	15-25
Western larch	<1 (0-0.1)	1-5
Lodgepole pine	26 (20-30)	20-30
Spruce/fir	10 (7-14)	15-25
Whitebark pine	1 (1-2)	2-5

<sup>1</sup> Cover types reflect the most common species in a stand (see appendix D).

<sup>2</sup> Nonforested areas include grass and shrub cover types, which may support widely scattered trees in some cases.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data. Existing condition represents 2018 conditions and will change through time. Estimates are rounded to the nearest whole number unless the value is less than 1%, in which case it is rounded to the nearest 10th. The totals do not necessarily equal 100% due to non-vegetated areas (water or rock).

## Plan Components - Forested Vegetation (VEGF)

### Desired Conditions (UB-VEGF-DC)

01 Table 117 shows the desired condition for tree species presence in the Upper Blackfoot GA.

**Table 117. Upper Blackfoot GA existing and desired conditions for tree species presence (percent of area)<sup>1, 2, 3</sup>**

Tree species	Existing (percent)	Desired range (percent)
Limber pine	9 (7-13)	5-15
Rocky Mountain juniper	2 (1-4)	1-5
Ponderosa pine	1 (1-3)	15-30
Douglas-fir	45 (40-51)	35-50
Aspen	1 (0.2-3)	2-10
Engelmann spruce	15 (11-19)	10-25
Lodgepole pine	46 (40-51)	20-40
Western larch	1 (1-2)	1-10
Subalpine fir	34 (28-39)	15-30
Whitebark pine	7 (3-9)	5-15

<sup>1</sup> Percent of area where at least one tree of the species is present.

<sup>2</sup> Totals may be greater 100% because more than 1 species can be present on a site. Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

<sup>3</sup> Distributions include trees that occur on nonforested potential vegetation type.

02 Table 118 shows the desired condition for forest size class in the Upper Blackfoot GA.

**Table 118. Upper Blackfoot GA existing and desired conditions for forest size class (percent of area)<sup>3</sup>**

Size class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Seedling/sapling (0-4.9")	17 (12-25)	1-20
Small (5-9.9")	30 (25-35)	5-25
Medium (10-14.9")	18 (14-22)	5-30
Large (15.0-19.9")	7 (4-10)	20-30
Very large (20"+)	0 (0.4-1)	10-25

<sup>1</sup> Size class = the average diameter class of live trees based on basal area weighted diameter, shown as ranges of diameter at breast height, or 4.5' above ground level. A stand within a size class may contain trees smaller and/or larger than the class range.

<sup>2</sup> Total may less than 100% because nonforested areas (grass, shrub, savanna) are excluded.

<sup>3</sup> Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

**03** Table 119 shows the desired condition for forest density class in the Upper Blackfoot GA.

**Table 119. Upper Blackfoot GA existing and desired conditions for forest density class (percent of area)**

Density class <sup>1</sup>	Existing (percent) <sup>2</sup>	Desired range (percent)
Low/med (< 39.9%)	28	25-55
Med/high (40-59.9%)	41	35-55
High (60+%)	31	10-35

<sup>1</sup> Density class = the average canopy cover of live trees, shown as ranges of canopy cover percent.

<sup>2</sup> Existing condition is from the SIMPPLLE input landbase, based on VMap imagery.

**04** Lynx habitat (see glossary) provides the amount, distribution, and structural conditions (based on the best available scientific information), at the scale of a reproductive female lynx home range, necessary to support the recovery and persistence of Canada lynx in the plan area.

## Plan Components – Nonforested Vegetation (VEGNF)

### Desired Conditions (UB-VEGNF-DC)

**01** Unique plant communities persist and are in a condition consistent with natural processes. This includes but is not limited to habitats dominated by rough fescue, silver sagebrush, potentilla fruticose, wetland meadows, and the Indian Meadow fens.

## Plan Components – Wildlife (WL)

### Desired Conditions (UB-WL-DC)

**01** The Upper Blackfoot GA provides habitat connectivity for wide-ranging species (grizzly bear, Canada lynx, wolverine, and others) between public lands in northern Montana and those in central and southern Montana, including lands in the Greater Yellowstone Ecosystem.

**02** Ponderosa pine-dominated forests contain large-tree structure (see glossary) comprised of ponderosa pine and/or Douglas-fir trees and snags with relatively open canopy available for nesting by flammulated owls. These areas occur within a larger mosaic of closed-canopy forest and shrub-dominated openings that serve as flammulated owl roosting and foraging areas.

- 03** Known harlequin duck breeding streams are relatively undisturbed by human activities during the brood-rearing time period.

#### Guidelines (UB-WL-GDL)

- 01** Resource management activities in the west-central and east-central portions of the GA, where NFS lands narrow and approach the area of private lands surrounding Highway 200, should maintain or enhance high quality wildlife habitat, wildlife movement areas, and connectivity. In order to improve wildlife security and connectivity in these areas:
- Vegetation management activities should provide for wildlife hiding cover needs
  - Motorized access should not be increased
  - New trails should be constructed only where minimal impacts will occur to wildlife habitats and movement corridors
- 02** In order to minimize potential disturbance to harlequin duck broods, management and recreation activities that have the potential to separate or displace harlequin pairs or broods (for example, timber harvest, road construction and heavy maintenance, boating, rafting) should be avoided on or immediately adjacent to known harlequin duck breeding streams during the brood-rearing period.

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## Glossary

### A

**activity area** a land area affected by a management activity to which soil quality standards are applied. An activity area must be feasible to monitor and includes harvest units within timber sale areas, prescribed burn areas, grazing areas or pastures within range allotments, riparian areas, recreation areas, and alpine areas. Temporary roads, skid trails, and landings are considered to be part of an activity area.

**adaptive management** the general framework encompassing the three phases of planning: assessment, plan development, and monitoring (36 Code of Federal Regulations 219.5). This framework supports decision-making that meets management objectives while simultaneously accruing information to improve future management by adjusting the plan or plan implementation. Adaptive management is a structured, cyclical process for planning and decision-making in the face of uncertainty and changing conditions with feedback from monitoring, which includes using the planning process to actively test assumptions, track relevant conditions over time, and measure management effectiveness.

**adfluvial** the migration of fish between lakes to rivers.

**administrative site** a location or facility constructed for use primarily by government employees to facilitate the administration and management of public lands. Examples on NFS lands include, but are not limited to, ranger stations, warehouses, and guard stations.

**administrative use** a generic term for authorized agency activity. Specifically, in the portion of the NCDE for grizzly bears mapped as the primary conservation area, motorized use of roads closed to the public is permitted for Federal agency personnel or other personnel authorized to perform duties by appropriate agency officials as long as doing so does not exceed either six trips (three round trips) per week or one 30-day unlimited use period during the non-denning season (see also non-denning season).

**aerial retardant avoidance area** mapped areas (interactive map online at <https://www.fs.fed.us/fire/retardant/index.html> ) that are to be avoided during applications of fire retardant; including: habitat for threatened, endanger, proposed, candidate or sensitive species and all waterways. This national direction is mandatory and would be implemented except in cases where human life or public safety is threatened and retardant use within avoidance areas could be reasonably expected to alleviate that threat.

**aircraft** an airplane, helicopter, or other machine capable of flight.

**airstrip** an area of land that is used as a runway for aircraft to take off and land.

**alpine** high elevation ecosystem dominated by grasses and low-lying shrubs.

**animal month** a month's tenure upon range by one animal. Must specify kind and class. Not synonymous with animal-unit month.

**animal unit** considered to be one mature cow of approximately 1,000 pounds, either dry or with calf up to 6 months of age, or their equivalent, based on a standardized amount of forage consumed.

**animal unit month (AUM)** the amount of dry forage required by one animal unit for one month based on a forage allowance of 26 pounds per day.

**aquifer** an underground layer of water-bearing permeable rock, rock fractures or unconsolidated material (gravel, sand or silt) from which groundwater can be extracted using a water well.

**aquatic organism passage** a passage that provides the ability for fish and other aquatic creatures to move up and downstream under a road.

**at-risk community** a community located in the wildland urban interface or a group of homes and other structures with basic infrastructure and services within or adjacent to federal land in which conditions are conducive to a large-scale wildland fire disturbance event, and for which a significant threat to human life or property exists as a result of a wildland fire disturbance event.

**attractant** a nourishing substance, which includes human food or drink (canned, solid or liquid), livestock feed (except baled or cubed hay without additives), pet food, and garbage (from the Northern Continental Divide Ecosystem Food/Wildlife Attractant Storage Order).

## B

**baseline** the environmental conditions at a specific point in time. The baseline for the NCDE is defined as conditions as of December 31, 2011, as modified by changes in numbers that were evaluated and found to be acceptable through the Endangered Species Act Section 7 consultation with USFWS while the grizzly bear was listed as threatened. The baseline will be updated to reflect changes allowed under the standards and guidelines.

**bear management subunit** an area of a bear management unit, in the portion of the NCDE for grizzly bears mapped as the primary conservation area, representing the approximate size of an average annual female grizzly bear home range [e.g., 31-68 square miles, (Mace & Roberts, 2012)].

**bear management unit** an area about 400 square miles, in the portion of the NCDE for grizzly bears mapped as the primary conservation area, that meets yearlong habitat needs of both male and female grizzly bears.

**best management practice** the method(s), measure(s), or practice(s) selected by an agency to meet its nonpoint source control needs. Best management practices include but are not limited to structural and nonstructural controls and operation and maintenance procedures. Best management practices can be applied before, during, and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters (36 Code of Federal Regulations 219.19).

**big game** the term ‘big game’ refers to the ungulate species found on the HLC: deer (both white-tailed and mule deer), elk, moose, bighorn sheep, mountain goat, and pronghorn. The term is used to indicate all or a portion of that suite of species.

**biodiversity** the variety and abundance of plants, animals, and other living organisms and the ecosystem processes, functions, and structures that sustain them. Biodiversity includes the relative complexity of species and communities across the landscape at a variety of scales, connected in a way that provides for the genetic diversity to sustain species over the long-term.

**biological soil crust** a complex mosaic of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria occurring on the soil surface in open spaces within arid and semiarid systems.

**biophysical settings** a grouping of potential vegetation types based on broad climatic and site conditions, such as temperature and moisture gradients. Also see potential vegetation types.

**board foot** a unit of measurement represented by a board one foot square and one inch thick.

**boneyard** an established site that is used repeatedly by a grazing permittee for disposing of entire animal carcasses.

**boreal forest (lynx)** a forest type to which lynx and snowshoe hares are strongly associated. The predominant vegetation of boreal forest is conifer trees, primarily species of spruce (*Picea* spp.) and fir (*Abies* spp.) (USFWS Critical Habitat Final Rule 2009).

**broadcast burn** a management treatment where a prescribed fire is allowed to burn over a designated area within well-defined boundaries. A broadcast burn is used for reduction of fuel hazard, as a resource management treatment, or both.

## C

**candidate species** a status (1) for USFWS candidate species, a species for which the U.S. Fish and Wildlife Service possesses sufficient information on vulnerability and threats to support a proposal to list as endangered or threatened, but for which no proposed rule has yet been published by the U.S. Fish and Wildlife Service; (2) for National Marine Fisheries Service candidate species, a species that is: (i) the subject of a petition to list and for which the National Marine Fisheries Service has determined that listing may be warranted, pursuant to section 4(b)(3)(A) of the Endangered Species Act (16 United States Code (U.S.C.) 1533(b)(3)(A)), or (ii) not the subject of a petition but for which the National Marine Fisheries Service has announced in the Federal Register the initiation of a status review.

**canopy** the forest cover of branches and foliage formed by tree crowns.

**canopy base height** the lowest height above the ground at which there is a sufficient amount of canopy fuel to propagate fire vertically into the canopy; canopy base height is an effective value that incorporates ladder fuels such as shrubs and understory trees.

**canopy fuel** the live and dead foliage, live and dead branches, and lichen of trees and tall shrubs that lie above the surface fuels.

**capability** the potential of an area of land and/or water to produce resources, supply goods and services, and allow resource uses under a specified set of management practices and at a given level of management intensity. Capability depends upon current conditions and site conditions (climate, slope, landform, soils, and geology), as well as the application of management practices (silviculture systems, or protection from fires, insects, and disease).

**capacity (of developed recreation sites within the NCDE primary conservation area)** the number of sites available for overnight use (e.g., the number of sites in a campground; the number of rooms available for lodging (as a commercial rental); or the number of cabins, bunkhouses, or recreation residences managed under a special-use permit).

**carbon pool** an area that contains an accumulation of carbon or carbon-bearing compounds or having the potential to accumulate such substances. May include live and dead material, soil material, and harvested wood products.

**carbon stock** the amount or quantity contained in the inventory of a carbon pool.

**clearcut** a harvest technique: 1) a stand in which essentially all trees have been removed in one operation. Note: depending on management objectives, a clearcut may or may not have reserve trees left

to attain goals other than regeneration. 2). A regeneration or harvest method that removes essentially all trees in a stand (synonym is clearcutting). Also see regeneration method.

**climate change adaptation** an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. This adaptation includes initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects. Adaptation strategies include the following: building resistance to climate-related stressors; increasing ecosystem resilience by minimizing the severity of climate change impacts, reducing the vulnerability and/or increasing the adaptive capacity of ecosystem elements; facilitating ecological transitions in response to changing environmental conditions.

**climax** the final stage of succession in a plant community. A relatively stable condition where plant species on the site are able to perpetuate themselves indefinitely in the absence of disturbance.

**coarse woody debris** a piece or pieces of larger sized dead woody material (for example, dead boles, limbs, and large root masses) on the ground or in streams. Minimum size to be defined as “coarse” is generally 3 inches diameter.

**commercial thinning** a treatment that selectively removes trees large enough to be sold as products, such as sawlogs, poles or fence posts, from an overstocked stand. This treatment is usually carried out to improve the health and growth rate of the remaining crop trees, or to reduce fire hazard.

**commercial use/activity** a use or activity on NFS lands (a) where an entry or participation fee is charged, or (b) where the primary purpose is the sale of a good or service, and in either case, regardless of whether the use or activity is intended to produce a profit (36 Code of Federal Regulations 251.51).

**community wildfire protection plans** strategic plans developed by communities to address issues such as wildfire response, hazard mitigation, community preparedness, or structure protection—or all of the above. The Healthy Forests Restoration Act (HFRA) in 2003 includes statutory incentives for the US Forest Service (USFS) and the Bureau of Land Management (BLM) to give consideration to the priorities of local communities as they develop and implement forest management and hazardous fuel reduction projects. In order for a community to take full advantage of this opportunity, it must prepare a Community Wildfire Protection Plan (CWPP).

**composition** the biological elements within the different levels of biological organization, from genes and species to communities and ecosystems.

**confidence interval** a range of values around the estimated mean that defines a specified probability that the value of a parameter lies within it.

**consultation** see interagency consultation.

**contemporary vegetation management challenges** issues with controlling, restoring or improving vegetation dynamics to achieve certain resource objectives. Some examples include but are not limited to such things as controlling invasive exotic weeds, reducing fire risk in the wildland-urban interface, and finding chemical-free ways to control weeds, etc.

**cohort** a group of trees developing after a single disturbance, commonly consisting of trees of similar age, although it can include a considerable range of tree ages of seedling origin and trees that predate the disturbance.



**connectivity** the ecological conditions that exist at several spatial and temporal scales that provides landscape linkages that permit the exchange of flow, sediments, and nutrients; the daily and seasonal movements of animals within home ranges; the dispersal and genetic interchange between populations; and the long distance range shifts of species, such as in response to climate change (36 Code of Federal Regulations 219.19). Connectivity needs vary by species.

**conservation** the protection, preservation, management, or restoration of natural environments, ecological communities, and species.

**consumptive water use** the act of removing water from an available supply and utilizing it in a manner that it is not returned to a waterbody.

**coppice** a forest regeneration method by which the majority of regeneration is from sprouts or root suckers. The suitable species on the HLC NF for this method is limited to aspen.

**cover** the elements of the environment used by an animal for hiding. Cover varies depending upon the species or the time of year and may include a variety of vegetation types as well as topography. The amount and quality of cover needed depends on the animal's size, mobility, and reluctance or willingness to venture into relatively open areas. Cover can occur as horizontal cover, which may provide security from disturbance by humans or predators, or thermal cover (often provided by vegetation canopy), which can help animals regulate body temperature during periods of extreme heat or cold.

**cover type** the vegetation composition of an area, described by the dominant plant species. Also see forest type.

**Cretaceous** a geologic period and system from  $145 \pm 4$  to 66 million years (Ma) ago.

**critical habitat** (for a threatened or endangered species) (1) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of the Endangered Species Act (16 United States Code 1533), on which are found those physical or biological features (a) essential to the conservation of the species, and (b) which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of the Endangered Species Act (16 USC 1533), upon a determination by the Secretary that such areas are essential for the conservation of the species. Endangered Species Act, sec. 3 (5)(A), (16 USC 1532 (3)(5)(A)). Critical habitat is designated through rulemaking by the Secretary of the Interior or Commerce. Endangered Species Act, sec. 4 (a)(3) and (b)(2) (16 United States Code 1533 (a)(3) and (b)(2)).

**crown** the part of a tree or other woody plant bearing live branches and foliage.

**culmination of mean annual increment of growth** see mean annual increment of growth.

## D

**decision document** a record of decision, decision notice, or decision memo (36 Code of Federal Regulations 220.3).

**dedicated skid trail** a pathway used repeated, and only, to move logs or trees from the stump to a landing, where they are processed and loaded onto trucks.

**deferred trail maintenance** the backlog of trails in need of maintenance.

**deleterious** having a harmful or injurious effect.

**demographic connectivity area** an area intended to allow female grizzly bear occupancy and potential dispersal beyond the NCDE to other recovery areas.

**den emergence time period** the time period in the spring when a grizzly bear emerges from its den and remains in the vicinity before moving to lower elevations. The den emergence time period occurs at the beginning of the non-denning season. Females with cubs usually emerge later and spend more time (a few days to a few weeks) near the den after emergence than do male bears.

**denning season** the typical time period, within the NCDE, during which most grizzly bears are hibernating in dens. There are no restrictions on motorized use related to grizzly bears during the denning season, which occurs

- west of the Continental Divide: from December 1 through March 31.
- east of the Continental Divide: from December 1 through April 15.

**density (stand)** the number of trees growing in a given area usually expressed in terms of trees per acre.

**designated area** an area or feature identified and managed to maintain its unique special character or purpose; some categories of designated areas may be designated only by statute and some categories may be established administratively in the land management planning process or by other administrative processes of the federal executive branch; examples of statutorily designated areas are national heritage areas, national recreational areas, national scenic trails, wild and scenic rivers, wilderness areas, and wilderness study areas; examples of administratively designated areas are experimental forests, research natural areas, scenic byways, botanical areas, and significant caves.

**designated over-the-snow route** a course managed under permit or agreement or by the agency, where use is encouraged, either by on-the ground marking or by publication in brochures, recreation opportunity guides or maps (other than travel maps), or in electronic media produced or approved by the agency. The routes identified in outfitter and guide permits are designated by definition; groomed routes also are designated by definition.

**desired condition (DC)** a description of specific social, economic, and/or ecological characteristics of the plan area, or a portion of the plan area, toward which management of the land and resources should be directed. Also see chapter 1.

**desired plant community** the one species composition (of the many possible within any given ecological site or equivalent) that is most compatible with management objectives for a site. This decision depends on the relative value expected to be obtained from alternative land uses, as well as the feasibility of implementing actions required to change the present vegetation to a more desirable type. It is unlikely that the desired plant community would feature substandard levels of soil protection, biotic integrity and hydrologic function, because it is assumed that maintaining site potential should be an intrinsic goal of any management plan. Desired plant community is in essence the benchmark against which to compare existing vegetation and provides a system to evaluate the success of current practices in meeting management objectives. (Global Rangelands 2016).

**developed recreation site capacity within the NCDE primary conservation area** for purposes of implementing standard NCDE-STD-AR-05, developed recreation site capacity on NFS lands that are designed and managed for overnight use includes

- the number of camp sites available in a campground,
- the number of rooms available for lodging at a ski area or guest lodge,
- the maximum sleeping capacity of a cabin rental or bunkhouse that is available for overnight use by the public, and

- the maximum parking capacity at picnic areas, trailheads, or boat launches that are not closed to overnight use.

**developed recreation site within the NCDE primary conservation area** for purposes of implementing standard NCDE-STD-AR-05, developed recreation sites on NFS lands that are designed and managed for overnight use include campgrounds, lodging at ski areas, cabin rentals, huts, guest lodges, and recreation residences. This standard does not apply to dispersed recreation sites nor to developed recreation sites managed for day-use only (e.g., outfitter camps, roadside trail crossings or interpretive pull-outs; trailheads, picnic areas, or boat launches that are closed at night; and ski areas that do not have overnight lodging).

**diameter breast height (d.b.h.)** the diameter of a tree measured 4.5 feet above the ground on the uphill side of the tree, or diameter of a log measured 4.5 feet from the large end of the log.

**discretionary** the exploration and development of leasable mineral resources are discretionary activities, meaning that leasing them may or may not be allowed.

**dispersed recreation** an area in a national forest or national grassland with limited or no amenities provided for recreational users (36 CFR § 261.2).

**disturbance** an event that alters the structure, composition, or function of terrestrial or aquatic habitats; any relatively discrete event in time that disrupts ecosystem, watershed, community, or species population structure and/or function and changes resources, substrate availability, or the physical environment. Natural disturbances include, among others, drought, floods, wind, fires, wildlife grazing, and insects and pathogens; human-caused disturbances include actions such as timber harvest, livestock grazing, roads, and the introduction of exotic species.

**disturbance activities** activities which result in notable vegetation removal and/or soil disturbance (road construction, timber harvest, etc.).

**disturbance regime** a description of the characteristic types of disturbance on a given landscape; the frequency, severity, size, and distribution of these characteristic disturbance types, and their interactions. The natural pattern of periodic disturbances, such as fire or flooding.

**disturbance/displacement** the repeated avoidance of humans by a species by shifting its habitat use in space or time.

**driver (ecology)** see ecosystem driver.

**duff** the partially decayed organic matter on the forest floor.

## E

**early-seral/successional stage (forest)** the earliest stage in the sequence of plant communities that develop after a stand replacing disturbance, such as fire or regeneration harvest. On the forested communities of the HLC NF, this stage typically occurs in the period from 1 to 30 or 40 years after the disturbance, and is dominated by grass, forbs, shrubs, and seedling/sapling sized trees.

**early successional forest patches** specifically defined for modeling purposes as areas classified into the seedling/sapling size class (less than 5" diameter) and transitional areas reforesting following disturbance (these areas have little to no tree cover but are found on forested potential vegetation types).

**ecological condition** the biological and physical environment that can affect the diversity of plant and animal communities, the persistence of native species, and the productive capacity of ecological systems; ecological conditions include habitat and other influences on species and the environment; examples of ecological conditions include the abundance and distribution of aquatic and terrestrial habitats, connectivity, roads and other structural developments, human uses, and invasive species.

**ecological integrity** the quality or condition of an ecosystem when its dominant ecological characteristics (for example, composition, structure, function, connectivity, and species composition and diversity) occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influence. The quality of a natural unmanaged or managed ecosystem in which the natural ecological processes are sustained, with genetic, species and ecosystem diversity assured for the future.

**ecological site** a distinctive kind of land with specific soil and physical characteristics that differs from other kinds of land in its ability to produce distinctive kinds and amounts of vegetation, and in its ability to respond similarly to management actions and natural disturbances (NRCS, National Range and Pasture Handbook, December 2003).

**ecological sustainability** see sustainability.

**ecosystem** (36 Code of Federal Regulations 219.19) a spatially explicit, relatively homogeneous unit of the Earth that includes all interacting organisms and elements of the abiotic environment within its boundaries. The term ecosystem can be used at a variety of scales; for the forest plan, the ecosystem is referred to spatially at the forestwide and geographic area scales as well as within potential vegetation types. An ecosystem is commonly described in terms of its:

- composition: the biological elements within the different levels of biological organization, from genes and individual plant and animal species to communities (such as cover types).
- structure: the organization and physical arrangement of biological elements such as, snags and down woody debris, vertical (size class and structure class) and horizontal (density) distribution of vegetation, stream habitat complexity, landscape pattern, and connectivity.
- function: ecological processes that sustain composition and structure, such as energy flow, nutrient cycling and retention, soil development and retention, predation and herbivory, and natural disturbances such as wind, fire, and floods.
- connectivity: see connectivity.

**ecosystem driver** a natural or human-induced factor that directly or indirectly causes a change in an ecosystem. Examples include climate change, fire events, invasive species and flooding.

**ecosystem resilience** see resilience.

**ecosystem service** the benefit(s) people obtain from an ecosystem, including: (1) provisioning services, such as clean air and fresh water, energy, fuel, forage, fiber, and minerals; (2) regulating services, such as long-term storage of carbon; climate regulation; water filtration, purification, and storage; soil stabilization; flood control; and disease regulation; (3) supporting services, such as pollination, seed dispersal, soil formation, and nutrient cycling; and (4) cultural services, such as educational, aesthetic, spiritual and cultural heritage values, recreational experiences and tourism opportunities.

**ecosystem stressor** a factor that may directly or indirectly degrade or impair ecosystem composition, structure or ecological process in a manner that may impair its ecological integrity, such as an invasive species, loss of connectivity, or the disruption of a natural disturbance regime.

**ecotone** a zone of transition between two distinctly different plant communities, where they meet and integrate. It may be narrow or wide; local (between a field and forest) or regional (between forest and grassland ecosystems); gradual or manifested as a sharp boundary line. This zone usually exhibits competition between organisms common to both communities. See also xeric ecotone.

**effective separation** spatial or temporal separation between wild sheep and domestic sheep or goats, resulting in minimal risk of contact and subsequent transmission of respiratory disease between animal groups (from WSWG, 2012).

**elk security** the protection inherent in any situation that allows elk to remain in a defined area despite an increase in stress or disturbance associated with the hunting season or other activities (Lyon and Christensen 1992).

**emergency situation** a circumstance on NFS lands for which immediate implementation of all or part of a decision is necessary for relief from hazards threatening human health and safety or natural resources on those NFS or adjacent lands or that would result in substantial loss of economic value to the Federal Government if implementation of the decision were delayed (must meet the requirements of 36 § CFR 218.21).

**endangered species** a species that the Secretary of the Interior or the Secretary of Commerce has determined is in danger of extinction throughout all or a significant portion of its range. Endangered species are identified by the Secretary of the Interior in accordance with the 1973 Endangered Species Act. Endangered species are listed at 50 Code of Federal Regulations sections 17.11, 17.12, and 224.101.

**environmental document** a written analysis that provides sufficient information for a responsible official to undertake an environmental review. Examples include: a categorical exclusion, an environmental assessment, and an environmental impact statement.

**epidemic (outbreak)** the rapid spread, growth, and development of pathogen or insect populations that affect large numbers of a host population throughout an area at the same time.

**evacuation route** roads and/or trails that would be used to evacuate the public during a natural disturbance event.

**even-aged stand** a stand of trees composed of a single age class (cohort). Usually trees in a single age class are within + 20 years of each other.

**even-aged system** a planned sequence of treatments designed to maintain and regenerate a stand with predominantly one age class. Treatments include clearcutting, seedtree, shelterwood, and coppice regeneration methods.

## F

**feed** any non-injurious, edible material having nutritive value when ingested.

**final regeneration harvest** the final timber harvest in a sequence of harvests designed to regenerate a timber stand or release a regenerated stand. A final regeneration harvest could be a clearcut, removal of a shelterwood or seedtree system, or a selectin cut.

**fire-adapted species** a plant type that has evolutionary adaptations to survive and thrive in an ecosystem where fire is a primary driver, including tree species that are termed fire-tolerant as well as trees and other plant species that have a myriad of other types of adaptations. Some examples of adaptations are the serotinous cones of lodgepole pine (which open only when heated in a fire); fast early tree growth for rapid site domination; rhizomatous (below ground) root systems or root crowns; seeds with hard, fire resistant seed-coats; or very lightweight, wind-dispersed seed (also see fire-tolerant tree species).

**fire control** see fire suppression.

**fire hazard** the potential fire behavior for a fuel type, regardless of the fuel type’s weather-influenced fuel moisture content or its resistance to fireline construction. Fire behavior assessment is based on physical fuel characteristics, such as fuel arrangement, fuel load, condition of herbaceous vegetation, and presence of elevated fuels.

**fire-intolerant tree species** a tree type that is susceptible to severe damage or mortality in a fire event. Characteristics typically include thin bark at maturity, crowns that retain lower branches (close to the ground), less protected buds and needles. For example, subalpine fir, grand fir and spruce are fire-intolerant species in the HLC NF.

**fire regime** a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention but including the influence of prehistoric human burning (Agee 1993; Brown 1995; Hann and Bunnell 2001). The five natural fire regimes are classified based on the average number of years between fires combined with the severity of the fire (the amount of vegetation replacement), and its effect on the dominant overstory vegetation (Hann 2005). The five natural fire regimes on the HLC NF are as follows, with detail added to describe conditions found on the HLC NF:

Fire regime group	Frequency (fire return interval)	Severity	Representative vegetation types/habitats
I	0 to 35 years	Nonlethal, low intensity to mixed severity (less than 75 percent of the dominant overstory vegetation replaced)	Ponderosa pine, dry-site Douglas-fir <i>Open forest, woodland, shrub and savanna structures maintained by frequent non-lethal fire; also includes mixed severity fire that create a mosaic of different age classes, post-fire open forests. Mean fire return interval can be greater than 35 years in systems with high temporal variation. These fires result in minimal overstory mortality (&lt;25% of dominant overstory) and small patch size (Agee 1998; Arno et al. 2000; Hessburg et al 2005). The forests that adapted to these fires on the HLC NF were often dominated by ponderosa pine or Douglas-fir; fire maintained these species and promoted open, often uneven-aged, structures. Surviving fire-resistant trees reforest the gaps created by disturbance. These fires also maintained open, dry forest savanna structures and a shifting distribution of dry limber pine/juniper ecotone communities.</i>
II	0 to 35 years	Stand-replacing (greater than 75 percent of the dominant overstory vegetation replaced)	Drier grasslands; cool-site sagebrush (such as Mountain big sagebrush) <i>Shrub or grasslands maintained or cycled by frequent fire; fire typically remove non-sprouting shrubs, tops of sprouting shrubs and most tree regeneration. These fires are important in vegetation communities such as big mountain sagebrush.</i>
III	35 to 100+ years	Nonlethal and mixed severity (less than 75 percent of the dominant overstory)	Interior dry-site shrub communities (such as warm-site sagebrush - Big sage, basin big sagebrush); moist-site Douglas-fir/lodgepole pine forests <i>A mosaic of different ages, open forests, early to mid-seral forest structure stages, and shrub and herb dominated patches is</i>

Fire regime group	Frequency (fire return interval)	Severity	Representative vegetation types/habitats
		vegetation replaced)	<i>maintained by infrequent fire events. Mixed severity fires kill a moderate amount of the overstory, burning with a mosaic of severities but replacing &lt;75% of the overstory (Barrett et al. 2010). Highly variable patch sizes are created, with a mosaic of effects including stand replacement, low severity, and unburned areas (Agee 1998; Arno et al. 2000). This creates an irregular pattern with an abundant amount of edge. Fire tolerant species often survived many fire events, with large, old trees becoming prominent overstory components. These fires also resulted in unburned patches that could develop into climax conditions dominated by shade tolerant species.</i>
IV	35 to100+ years	Stand-replacing, high intensity (greater than 75 percent of the dominant overstory vegetation replaced)	Lodgepole pine <i>Large patches of similar age, post-fire structures and early to mid-seral forests are cycled by infrequent fire events. Stand replacing fires kill most of the trees (&gt;75%) over a substantial area (Barrett et al. 2010) and creating an intermediate amount of edge (Agee 1998; Arno et al. 2000). Lodgepole pine regenerates large areas without a living seed source by storing serotinous cones on trees and in the soil that open under intense heat. Fire return intervals are generally long; however, shorter intervals also occur (USDA 1990; Barrett 1993) and forests may re-burn after the dead trees have fallen. Lodgepole pine produces open cones at a very young age to re-seed re-burned or understocked patches. Serotiny in fire-prone ecosystems is typically expressed from 30-60 years of age (USDA 1983) to ensure that seed is available for regeneration after the next stand-replacing event.</i>
V	200+ year	Stand-replacing, high intensity.	Boreal forest and high elevation conifer forest; lodgepole pine/subalpine fir; subalpine fir; whitebark pine <i>Variable size patches of shrub and herb dominated structures, or early to mid to late seral forest occur depending on the type of biophysical environment and are cycled by rare fire or other disturbance events. These forests often have complex structures influenced by small gap disturbances and understory regeneration. These fires result may result in the regeneration of lodgepole pine but also provide suitable sites for the establishment of whitebark pine at the highest elevations. Many sites become dominated by subalpine fir at the later stages of succession.</i>

**fire risk** the probability or chance of fire starting determined by the presence and activities of causative agents.

**fire suppression** the work and activities connected with fire extinguishing operations, beginning with discovery and continuing until the fire is completely extinguished.

**fire-tolerant tree species** a tree type resistant to severe damage or mortality in a fire event. Characteristics include thick bark at maturity, readily self-pruning (lower branches are shed as the tree grows), and protected buds. Examples of fire-tolerant species on the HLC NF are western larch, ponderosa pine and, to a lesser extent, Douglas-fir.

**fish passage** a clear access for migrating fish through a potential barrier.

**focal species** a small subset of species whose status permits inference to the integrity of the larger ecological system to which it belongs and provides meaningful information regarding the effectiveness of the plan in maintaining or restoring the ecological conditions to maintain the diversity of plant and animal communities in the plan area. Focal species would be commonly selected on the basis of their functional role in ecosystems (36 Code of Federal Regulations 219.19).

**food-conditioned (bear)** a bear that associates humans and areas of human activity (e.g., campgrounds, cabins, dwellings, etc.) with food, usually as a result of repeatedly obtaining food rewards (e.g., garbage, camp food, pet or livestock food, bird seed, etc.) in such areas.

**forage** the browse and herbage available to livestock or wildlife for feed.

**forage allocations for ecological needs** determination of forage production for the dominant ecological sites (or their equivalent) within the grazing allotment (at the allotment management planning level). Forage allocations permitted for livestock grazing are made after analyzing the effects to other resources. Examples of resource areas taken into consideration prior to determining forage availability for livestock grazing include soil health, native plant community viability and resilience, hydrologic function, aquatic habitat quality, and the forage and cover needs of wildlife species.

**forb** a herbaceous (herb-like) plant other than grass or grass-like plants.

**forest connectivity** see ‘connectivity’ above; an area providing those functions for wildlife species that prefer to remain within or close to forested cover.

**forest dominance type** a classification that reflects the most common tree species within a forest stand. The dominant species comprises at least 40 percent of the stocking, as measured by canopy cover, basal area, or trees per acre, depending on available information and stand characteristics.

**forest floor** all organic matter generated by forest vegetation, including litter and unincorporated humus, on the mineral soil surface.

**forest health** the perceived condition of a forest derived from concerns about such factors as its age, structure, composition, function, vigor, presence of unusual levels of insects or disease, and resilience to disturbance. A useful way to communicate about the current condition of the forest, especially with regard to the ability of the ecosystem to respond to disturbances. Note: perception and interpretation of forest health are influenced by individual and cultural viewpoints, land management objectives, spatial and temporal scales, the relative health of the stands that comprise the forest, and the appearance of the forest at a point in time.

**forest land** an area at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for nonforest uses. Lands developed for nonforest use include areas for crops, improved pasture, residential or administrative sites, improved roads of any width and adjoining road clearing, and power line clearings of any width.

**forest management** the practical application of biological, physical, quantitative, managerial, economic, social, and policy principles to the regeneration, management, utilization, and conservation of forests to meet specified goals and objectives while maintaining the productivity of the forest. Note: forest management includes management for aesthetics, fish, recreation, urban values, water, wilderness, wildlife, wood products, and other forest resource values. Forest management varies in intensity from leaving the forest alone, to a highly intensive regime composed of periodic silvicultural treatments.



**forest plan** a document that guides sustainable, integrated resource management of the resources within a plan area and within the context of the broader landscape, giving due consideration to the relative values of the various resources in particular areas (36 Code of Federal Regulations 219.1(b)). Consistent with the Multiple-Use Sustained-Yield Act of 1960 (16 United States Code 528–531), the FS manages NFS lands to sustain the multiple use of its renewable resources in perpetuity while maintaining the long-term health and productivity of the land. Resources are managed through a combination of approaches and concepts for the benefit of human communities and natural resources.

**forest structure** a complex three-dimensional construct consisting of the various horizontal and vertical physical elements of the forest, including tree diameters, tree heights, tree ages, stand density, canopy layers, quantity/quality of deadwood, herbaceous species, and the clumpiness of the stand. There is no one measure to quantify or describe structure. Often individual forest attributes are described and integrated to evaluate forest structure, such as tree sizes or ages or number of canopy layers.

**forest system road** see NFS road.

**forest type** a category of forest usually defined by its vegetation, particularly its dominant vegetation as based on percentage cover of trees (for example, subalpine fir/spruce; lodgepole pine).

**fuel management** an act or practice of controlling flammability and reducing resistance to control of wildland fuels through mechanical, chemical, biological or manual means, or by fire, in support of land management objectives (from Northern Wildfire Coordinating Group 2013).

**fuel treatment** the manipulation or removal of dead or live plant materials to reduce the likelihood of ignition and/or lessen potential damage and resistance to fire control (example treatments include, lopping, chipping, crushing, piling and burning) (from National Wildfire Coordinating Group 2013).

**fuelwood** a term for wood that is used for conversion to a form of energy (for example, firewood, biomass).

**function** ecological processes that sustain composition and structure, such as energy flow, nutrient cycling and retention, soil development and retention, predation and herbivory, and natural disturbances such as wind, fire, and floods.

## G

**geographic area (GA)** a spatially contiguous land area identified within the plan area. A geographic area may overlap with a management area (36 Code of Federal Regulations 219.19).

**geographic information system (GIS)** a computer process that links database software to graphics (spatially explicit) software and provides database and analytic capabilities.

**goals (GO)** broad statements of intent, other than desired conditions, usually related to process or interaction with the public. Also see chapter 1.

**gradient** (stream) the slope of a streambed.

**graminoids** grasses.

**grazing allotment** a designated area of land that is available for livestock grazing and is represented on a map. A grazing allotment can include NFS and non-NFS lands. Permits are issued for the use of allotments or portions of allotments. Allotments may be:

- active: livestock grazing allotments, including pack and saddle stock allotments.
- closed: areas having suitable livestock range that have been closed to livestock grazing by administrative decision or action.
- combined: an allotment that has been combined into another allotment, and therefore, no longer exists as an independent allotment.
- vacant: an allotment that does not have a current grazing permit issued.

**grazing authorizations and reauthorizations** grazing permits with term status of ten years or with temporary status of one year. Upon expiration of an existing grazing permit, the permit can be reauthorized provided eligibility and qualification requirements are met. Upon sale of base property or permitted livestock, a grazing permit with term status may be authorized to the purchaser of base property or permitted livestock as the preferred applicant, provided the eligibility and qualifications requirements are met (36 CFR 222).

**grazing permit** authorizes livestock to use National Forest System or other lands under Forest Service control for the purpose of livestock production. Term permits are issued for up to 10 years with priority for renewal at the end of the term. On-and-off grazing permits are permits with specific provisions on rangelands only part of which is National Forest System lands or other lands under Forest Service control. Private land grazing permits are permits issued to persons who control grazing lands adjacent to or within national forest proclaimed boundary and who waive exclusive grazing use of these lands to the United States for the full period the permit is to be issued (36 CFR 222). Temporary permits are issued for up to 1 year. Examples include livestock use permits for transportation livestock to persons engaged in commercial packing or dude ranching.

**grazing permit in inactive status** a grazing permit for which all permitted uses have expired, been cancelled, or been waived.

**grazing permit in nonuse status** a term that applies to circumstances where a grazing permit holder either does not place any livestock, or at numbers less than 90% of permitted, on an allotment due to personal convenience, resource protection, or range research reasons (FSH 2209.13). Approval for grazing permit non-use is granted by a Forest Service authorized officer prior to livestock turnout for the specific grazing year.

**greenline (riparian)** the first perennial vegetation that forms a lineal grouping of community types on or near the water's edge. Most often it occurs at or slightly below the bankfull stage.

**Grizzly Bear Conservation Strategy (GBCS)** a document published by the U.S. Fish and Wildlife Service that describes the regulatory framework for management of the Northern Continental Divide Ecosystem grizzly bear population and its habitat upon recovery and subsequent removal from the Federal list of Threatened and Endangered Species.

**grizzly bear-human conflict** an interaction between a grizzly bear and human in which bears either do, or attempt to, injure people, damage property, kill or injure livestock, damage beehives, or obtain anthropogenic foods or attractants or agricultural crops.

**grizzly bear management zone 1 (zone 1)** an area surrounding the grizzly bear primary conservation area in the NCDE where the intent is to maintain occupancy by grizzly bears but at expected lower densities than inside the primary conservation area.

**grizzly bear management zone 2 (zone 2)** an area adjacent to the grizzly bear zone 1 and/or zone 3 in the NCDE where grizzly bears, particularly males, would have the opportunity to move between the NCDE and adjacent ecosystems. The intent of the zone 2 area is to allow for resource management and recreational opportunities while responding to grizzly bear-human conflicts with appropriate management actions.

**grizzly bear management zone 3 (zone 3)** the area that primarily consists of areas where grizzly bears do not have enough suitable habitat to support population growth. Grizzly bear occupancy will not be actively discouraged in zone 3, and the management emphasis is on conflict response.

**ground-based logging system** a log skidding method using tracked or wheeled tractors. These tractors or “skidders” typically operate on gentle slopes (for example, on slopes less than 40%). Steeper slopes may require cable logging systems.

**ground cover** the material on the soil surface that impedes raindrop impact and overland flow of water. Ground cover consists of all living and dead herbaceous and woody material in contact with the ground and all rocks greater than 0.75 inches in diameter.

**ground fire** term used to describe organic material, such as duff, organic soils, roots, and rotten buried logs, burning beneath the surface. (from National Wildfire Coordinating Group 2013)

**groundwater-dependent ecosystem** a community of plants, animals, and other organisms whose extent and life processes depend on groundwater. Examples include many wetlands, groundwater-fed lakes and streams, cave and karst systems, aquifer systems, springs, and seeps.

**group selection method** a cutting method to develop and maintain uneven-aged stands by the removal of small groups of trees (generally up to 0.5 acre in size) at periodic intervals to meet a predetermined goal of size distribution and species composition in remaining stands.

**group use** an activity conducted on NFS lands that involves a group of 75 or more people, either as participants or spectators (36 Code of Federal Regulations 251.51).

**guide** to provide services or assistance (such as supervision, protection, education, training, packing, touring, subsistence, transporting people, or interpretation) for pecuniary remuneration or other gain to individuals or groups on NFS lands (36 Code of Federal Regulations 251.51).

**guideline (GDL)** a constraint on project and activity decision-making that allows for departure from its terms, so long as the purpose of the guideline is met. Also see chapter 1.

## H

**habitat type** an aggregation of plant communities of similar biophysical characteristics, and similar function and response to disturbances. A habitat type will produce similar plant communities at climax. On the HLC NF, habitat types are based upon Pfister et al. 1977. Also see potential vegetation type.

**habituated (bear)** a bear that does not display avoidance behavior near humans or in human use areas (e.g., campgrounds, lodges, town sites, cabin or dwelling yards, within 100m of open roads, etc.), as a result of repeated exposure to those circumstances.

**hazard tree** a tree that has the potential to cause property damage, personal injury or fatality in the event of a failure, where failure is the mechanical breakage of a tree or tree part. Failures often result from the interaction of defects, weather factors, ice or snow loading or exposure to wind. Tree hazards may include

dead or dying trees, dead parts of live trees, or unstable live trees (due to structural defects or other factors) that are within striking distance of people or property (a target). Defects are flaws in a tree that reduce its structural strength. Trees may have single or multiple defects, which may or may not be detectable. Failures result in accidents only if they strike a target.

**head month (HM)** one month's use and occupancy of the range by one animal, e.g. one weaned or adult cow with or without calf, bull, steer, heifer, horse, mule or 5 sheep or goats.

**Healthy Forests Restoration Act** public law (108-148), passed in December 2003, which provides statutory processes for hazardous fuel reduction projects on certain types of at-risk NFS and Bureau of Land Management managed public lands. The Healthy Forests Restoration Act also provides other authorities and direction to help reduce hazardous fuel and restore healthy forest and rangeland conditions on lands of all ownerships (from Northern Rockies Lynx Management Direction 2007).

**heterogeneity** exhibiting dissimilarity among members of a group (Helms 1998).

**high-use areas** areas that receive high levels of visitor use such as trailheads, developed campgrounds, etc.

**high value resources** includes things such as but not limited to; communities, watersheds, infrastructure, ecosystem functions, air quality, rangeland values, recreation, timber, and wildlife - as identified through a wildfire risk assessment.

**highway** a term that includes all roads that are part of the National Highway System. (23 Code of Federal Regulations 470.107(b)).

**historic climax** the plant community that existed at the time of European immigration and settlement in North America. It is the plant community that was best adapted to the unique combination of environmental factors associated with the site. The historic climax plant community was in dynamic equilibrium with its environment. It is the plant community that was able to avoid displacement by the suite of disturbances and disturbance patterns (magnitude and frequency) that naturally occurred within the area occupied by the site.

**historical range of variation** the variation in ecological conditions resulting from disturbance regimes and other natural influences under which the ecosystem and forests evolved. Typically refers to the period prior to the dramatic changes in human land uses and patterns beginning with the influx of European-Americans about the mid-1800s. Historical range of variation is considered valuable for providing a context or frame of reference to evaluate current ecosystem conditions and understanding what an ecologically healthy and sustainable condition might look like. Also see natural range of variation.

**home range** an area, from which intruders may or may not be excluded, to which an individual animal restricts most of its usual activities.

**hydrologic unit code (HUC)** the United States is divided and sub-divided into successively smaller hydrologic units (watersheds) which are classified into six levels: regions (HUC 1), sub-regions (HUC 2), basin (HUC 3), subbasin (HUC 4), watershed (HUC 5), subwatersheds (HUC 6). The hydrologic units are arranged or nested within each other, from the largest geographic area (regions) to the smallest geographic area (cataloging units). Each hydrologic unit is identified by a unique hydrologic unit code consisting of two to twelve digits based on the levels of classification in the hydrologic unit system.

**I**

**inherent capability of the plan area** the ecological capacity or ecological potential of an area characterized by the interrelationship of its physical elements, its climatic regime, and natural disturbances.

**integrated pest management** a broad-based approach that includes several techniques, including physical, chemical, biological, and cultural control for long-term and economic control of invasive species.

**integrated resource management** a means to realize many benefits from a forest or other natural area and assure the renewable benefits are there for future generations (from National Wildfire Coordinating Group 2013).

**integrity (ecology)** see ecological integrity.

**interagency consultation** a process required by Section 7 of the Endangered Species Act whereby federal agencies proposing activities in a listed species habitat confer with the USFWS about the impacts of the activity on the species (50 CFR 402).

**intermediate harvest** a removal of trees from a stand between the time of its formation and a regeneration harvest. Most commonly applied intermediate cuttings are release, thinning, improvement, and salvage.

**intermittent stream** a stream that flows only at certain times of the year when it receives water, usually from springs or a surface source such as melting snow.

**introduction** as a result of human activity, the intentional or unintentional escape, release, dissemination, or placement of an organism into an ecosystem to which it is not native (EO 13751).

**invasive plant management activities** methods and practices designed to locate, monitor, prevent and reduce invasive species infestations and introductions. These include prevention, survey, inventory, treatment, and monitoring activities.

**invasive species** with regard to a particular ecosystem, a non-native organism whose introduction causes or is likely to cause economic or environmental harm, or harm to human, animal, or plant health (EO 13751).

**K**

**key ecosystem characteristic** the dominant ecological characteristic(s) that describes the composition, structure, function and connectivity of terrestrial, aquatic and riparian ecosystems that are relevant to addressing important concerns about a land management plan. Key ecosystem characteristics are important to establishing or evaluating plan components that would support ecological conditions to maintain or restore the ecological integrity of ecosystems in the plan area.

**key seasonal habitats** habitats that provide specific characteristics (e.g., hiding or thermal cover, forage, lack of snow, lack of disturbance, etc.) that are required for an animal's survival or other life history needs during specific seasons. Key seasonal habitats provide components that may be limiting to survival or reproduction, that may not be available in other parts of an individual or population's range at that time of year, and that may be needed for specific activities (such as breeding, calving, nesting, or others) occurring seasonally.

**L**

**laccolith** a sheet intrusion (or concordant pluton) that has been injected between two layers of sedimentary rocks. The pressure of the magma is high enough that the overlying strata's are forced upwards forming a dome shape rock formation.

**lacustrine** of, relating to, or associated with lakes.

**ladder fuel** a term to describe plant materials that provide vertical continuity between forest strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease.

**land management plan** see forest plan.

**landscape** a defined area irrespective of ownership or other artificial boundaries, such as a spatial mosaic of terrestrial and aquatic ecosystems, landforms, and plant communities, repeated in similar form throughout such a defined area (36 Code of Federal Regulations 219.19).

**landtype** a unit shown on an inventory map with relatively uniform potential for a defined set of land uses. Properties of soils landform, natural vegetation, and bedrock are commonly components of landtype delineation used to evaluate potentials and limitations for land use.

**lands special uses** authorization to occupancy and use NFS lands by private individuals or companies for a wide variety of uses such as roads, utility corridors, communications sites, and other private or commercial uses that cannot be reasonably accommodated on non-NFS lands. Activities and facilities authorized through a legal document such as a permit, lease or easement. Lands special uses are nonrecreation types of uses. A list of the allowable uses which can be authorized under a special use authorization is found in the Special Uses Handbook 2709.11, Section 19, Exhibit 02.

**large-tree structure** is defined using the following minimum criteria:

- warm dry potential vegetation type: "Large" includes areas with at least 5 trees per acre of trees greater than or equal to 15" diameter. "Very large" includes areas with at least 4 trees per acre greater than or equal to 20" diameter.
- cool moist potential vegetation type: "Large" includes areas with at least 10 trees per acre of trees greater than or equal to 15" diameter. "Very large" includes areas with at least 10 trees per acre greater than or equal to 20" diameter.
- cold potential vegetation type: "Large" includes areas with at least 8 trees per acre of trees greater than or equal to 15" diameter. "Very large" includes areas with at least 8 trees per acre greater than or equal to 20" diameter

**late-seral/successional stage (forest)** a late stage in the sequence of plant communities that develops after a disturbance, such as fire or harvest. On the forested communities of the HLC NF, this stage may begin to develop 140 years or more after the disturbance. Forest structures can be very diverse, with wide range in densities, number of canopy layers and trees sizes. Usually larger trees are dominant (greater than 16 inches diameter breast height).

**Lidar** a detection system that works on the principle of radar but uses a light from a laser.

**linkage** (also linkage habitat, linkage area, or linkage zone) an area that will support a low density population of a species during certain parts of the year, and that facilitates demographic or genetic connectivity between geographically separate patches of habitat suitable for that species. Linkage areas facilitate movements of an animal (for example, dispersal, breeding season movements, exploratory

movements) beyond its home range. Linkage areas may include sizeable areas of nonhabitat and areas influenced by human actions.

**livestock** domestic animals of any kind kept or raised for use or pleasure. Small livestock refers to animals such as sheep, goats, and llamas.

**livestock movement guides** defined utilization limits for key species developed at the allotment management plan level that when achieved would trigger the need for livestock to be moved to the next scheduled pasture/area or off of the allotment depending on the authorized management system in place on any respective allotment.

**losing stream** a stream or river that loses its water as it flows downstream. Water infiltrates into the ground recharging the local groundwater because the groundwater is below the bottom of the stream channel.

**lynx habitat** boreal forest with gentle rolling topography, dense horizontal cover, deep snow, and moderate to high snowshoe hare densities (more than 1 hare/2 ha (0.4 hares/2 ac)). In the western United States, forest cover types dominated by Engelmann spruce, subalpine fir and lodgepole pine provide habitat for lynx (from the Canada Lynx Conservation Assessment and Strategy, 3<sup>rd</sup> Edition).

## M

**maintain** to keep in existence or continuance of the desired ecological condition in terms of its desired composition, structure, and processes. Depending upon the circumstance, ecological conditions may be maintained by active or passive management or both.

**management area** a land area identified within the plan area that has the same set of applicable plan components. A management area does not have to be spatially contiguous (36 Code of Federal Regulations 219.19).

**management system (timber)** an administrative method that includes even-aged stand and uneven-aged stand protocols.

**mature multi-story structural stage (forest)** a phase characterized by understory reinitiation, resulting in several tree age classes and vegetation layers. Fallen trees may be present, creating gaps in the overstory canopy. In lynx habitat, these stands typically have high horizontal cover from young understory trees and lower limbs of mature trees that reach the ground or snow level (from Lynx Conservation Assessment Strategy).

**mature tree** a tree which has achieved its maximum or near-maximum mean annual rate of growth in height or diameter.

**MBF/MMBF** (thousand board feet and million board feet, respectively) a specialized unit of measure for the volume of lumber in the United States and Canada. One board foot is the volume of a 1-foot length of a board 1 foot wide and 1 inch thick.

**MCF/MMCF** (thousand cubic feet and million cubic feet, respectively) a specialized unit of measure for the volume lumber. One cubic foot is a unit of true volume that measures 1x1x1 foot.

**mean annual increment of growth** the total increment of increase in volume of a stand (standing crop plus thinning removals) up to a given age divided by that age. Culmination of mean annual increment of growth is the age in the growth cycle of an even-aged stand at which the average annual rate of increase

of volume is at a maximum. In land management plans, mean annual increment is expressed in cubic measure and is based on the expected growth of stands, according to intensities and utilization guidelines in the plan.

**mechanized means of transportation** a contrivance for moving people or material in or over land, water, or air, having moving parts, that provides a mechanical advantage to the user. This includes, but is not limited to, sailboats, hang gliders, parachutes, bicycles, game carriers, carts, and wagons. It does not include wheelchairs when used as necessary medical appliances. It also does not include skis, snowshoes, rafts, canoes, sleds, travois, or similar primitive devices without moving parts (36 Code of Federal Regulations 2320.5(3)).

**mesic** a type of habitat that is moderately moist.

**mid-seral/successional stage (forest)** a mid-stage in the sequence of plant communities that develop after a disturbance, such as fire or harvest. On the forested communities of the HLC NF, stands may be considered in this stage from about 40 to 140 years after the disturbance. Stand structure, such as density and number of canopy layers, can vary widely. Dominant tree sizes are typically from 5 to 15 inches diameter breast height.

**mine reclamation** the process of restoring land that has been mined to a natural or economically usable state. Although the process of mine reclamation occurs once mining is completed, the preparation and planning of mine reclamation activities occur prior to a mine being permitted or started.

**minerals** FS defines three types of mineral (and energy) resources:

- locatable minerals: commodities such as gold, silver, copper, zinc, nickel, lead, platinum, etc. and some nonmetallic minerals such as asbestos, gypsum, and gemstones.
- salable minerals: common varieties of sand, stone, gravel, cinders, clay, pumice and pumicite.
- leasable minerals: commodities such as oil, gas, coal, geothermal, potassium, sodium phosphates, oil shale, sulfur, and solid leasable minerals on acquired lands.

**mitigate** to avoid, minimize, rectify, reduce, or compensate the adverse environmental impacts associated with an action.

**mixed-severity fire/mixed-severity fire regime** a combination of nonlethal, low-intensity to stand-replacing fire effects within the perimeter of a single fire, or across consecutive events. Mixed-severity fire regimes give rise to unique patch dynamics and ecosystem responses.

**modified thinning technique** a precommercial thin prescription for a stand dominated by seedling or sapling size trees specifying use of techniques designed to develop multiple tree canopy layers over time, enhancing long-term species and structural diversity within forest stands, and contributing to forest conditions more resilient to future disturbance and climate change (also see appendix C, potential management strategies, Canada lynx habitat section).

**monitoring** a systematic process of collecting information to evaluate effects of actions or changes in conditions or relationships.

**motorized equipment** a machine that uses a motor, engine, or other nonliving power sources. This includes, but is not limited to, such machines as chain saws, aircraft, snowmobiles, generators, motorboats, and motor vehicles. It does not include small battery or gas-powered hand carried devices such as shavers, wristwatches, flashlights, cameras, stoves, or other similar small equipment.



**motorized route** a NFS road or NFS trail that is designated for motorized use on a motor vehicle use map pursuant to 36 Code of Federal Regulations 212.51.

**motorized use** the designation of roads, trails, and areas that are open to motor vehicle use as specified in Federal Register / Volume 70, Number 216 / Wednesday, November 9, 2005 /36 Code of Federal Regulations Parts 212, 251, 261, Travel Management; Designated Routes and Areas for Motor Vehicle Use; Final Rule.

**moving window analysis** a geographic information system procedure that quantifies the density of roads and trails by incrementally moving a template across a digital map.

**multiple use** defined by the Multiple-Use Sustained-Yield Act of 1960 (16 United States Code 528–531) as “the management of the various renewable surface resources of the NFS so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.” Additionally, the first paragraph of the MUSY Act states, “Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that, it is the policy of the Congress that the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes” (emphasis added).

**multiscale analysis** an assessment that looks at species and habitat conditions at different scales and takes those conditions into consideration when making a management decision. It can demonstrate project level consistency with forest plan components.

**municipal watershed** a watershed that serves a public water system as defined in Public Law 93-523 (Safe Drinking Water Act) or as defined in state safe drinking water regulations.

## N

**National Forest System** the National Forest lands reserved or withdrawn from the public domain of the United States, all National Forest lands acquired through purchase, exchange, donation, or other means, the National Grasslands and land utilization projects administered under title III of the Bankhead-Jones Farm Tenant Act (50 Stat. 525, 7 United States Code 1010-1012), and other lands, waters or interests therein which are administered by the FS or are designated for administration through the FS as a part of the system.

**native knowledge** a way of knowing or understanding the world, including traditional ecological and social knowledge of the environment derived from multiple generations of indigenous peoples’ interactions, observations, and experiences with their ecological systems. Native knowledge is place-based and culture-based knowledge in which people learn to live in and adapt to their own environment through interactions, observations, and experiences with their ecological system. This knowledge is generally not solely gained, developed by, or retained by individuals, but is rather accumulated over successive generations and is expressed through oral traditions, ceremonies, stories, dances, songs, art, and other means within a cultural context.

**native species** an organism that was historically or is present in a particular ecosystem as a result of natural migratory or evolutionary processes; and not as a result of an accidental or deliberate introduction into that ecosystem. An organism's presence and evolution (adaptation) in an area are determined by climate, soil, and other biotic and abiotic factors.

**natural disturbance regime** the historic patterns (frequency and extent) of natural processes such as fire, insects, wind, and mass movement that affect the ecosystems and landscapes in a particular area.

**natural fire regime** see definition of "fire regime"

**natural range of variation (NRV)** the variation of ecological characteristics and processes over scales of time and space that are appropriate for a given management application. Also see historical range of variation. The natural range of variation (or historic range of variation) is a tool for assessing the ecological integrity and does not necessarily constitute a management target or desired condition. The natural range of variation can help identify key structural, functional, compositional, and connectivity characteristics, for which plan components may be important for either maintenance or restoration of such ecological conditions.

**natural regeneration** a renewal of a tree crop by natural seeding, sprouting, suckering, or layering.

**naturally ignited wildfire** see wildfire.

**net change** (as used for NCDE grizzly bear plan components) the difference in a measurement (such as road density) after on-the-ground changes are accounted for pre- and post-project; allows for temporary changes during a project.

**NFS road** see road

**no surface occupancy** a stipulation in a fluid mineral lease that prohibits use or occupancy of the land surface in order to protect identified resource values. Lessees may develop the oil and gas or geothermal resources under the area restricted by this stipulation through the use of directional drilling from sites outside the no surface occupancy area.

**nonattainment area** an area within a state that exceeds the national ambient air quality standards.

**nonconsumptive water use** the act of removing water from an available supply and utilizing it in a manner that it returns to a waterbody.

**non-denning season** the time period when grizzly bears typically are not hibernating:

- West side of the Continental Divide: from 1 April through 30 November.
- East side of the Continental Divide: from 16 April through 30 November.

**nondiscretionary** activities involving the exploration and development of locatable mineral resources, meaning that the Forest Service cannot prohibit reasonably necessary activities required or the exploration, prospecting, or development of valuable mineral deposits.

**non-native species** with respect to a particular ecosystem, an organism, including its seeds, eggs, spores, or other biological material capable of propagating that species, that occurs outside of its natural range (Executive Order 13751).

**nonpoint source pollution** a discharge from a diffuse source, such as polluted runoff from an agricultural area or precipitation, to a water body.

**Northern Continental Divide Ecosystem** a region identified in the Grizzly Bear Conservation Strategy encompassing about 27.3 million acres of land in western and central Montana that is one of five areas in the lower 48 states where grizzly bear populations occur.

**Northern Continental Divide Ecosystem (NCDE) Coordinating Committee** an interagency group that evaluates implementation of the NCDE Grizzly Bear Conservation Strategy, promotes the exchange of data and information about the NCDE grizzly bear population among agencies and the public, and makes recommendations to the management agencies regarding implementation of the strategy. Members of the interagency group may include Montana Fish, Wildlife & Parks; U.S. Fish & Wildlife Service; U.S. National Park Service; U.S. Forest Service; U.S. APHIS Wildlife Services; U.S. Geological Survey; U.S. Bureau of Land Management; the Blackfoot Tribe; and the Confederated Salish and Kootenai Tribes.

**noxious weed** any exotic plant species established, or that may be introduced in the state, that may render land unfit for agriculture, forestry, livestock, wildlife, or other beneficial uses, or that may harm native plant communities (MCA 7-22-2101).

## O

**objective (OBJ)** a concise, measurable, and time-specific statement of a desired rate of progress toward a desired condition or conditions. Also see chapter 1.

**occupied lynx habitat** mapped lynx habitat is considered occupied by lynx when (2006 Amendment to the Canada Lynx Conservation Assessment):

1. there are at least 2 verified lynx observations or records since 1999 on the national forest unless they are verified to be transient individuals; or
2. there is evidence of lynx reproduction on the national forest

**off-highway vehicle** a motor vehicle designed for, or capable of, cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (36 Code of Federal Regulations 212.1).

**old growth** an ecosystem distinguished by old trees and related structural attributes. For the HLC NF, old growth stands are specifically defined as those that meet the definitions in Green et al. 1992 (errata corrected 12/11). Those definitions include the discussion in that document titled “USE OF OLD GROWTH TYPE DESCRIPTIONS” (pages 11 and 12). If that document is revised or replaced by the Northern Region, the updated version will be used. Old growth identification and mapping is dynamic through time to reflect changing conditions on the landscape.

**old-growth associated species** the group of wildlife species that is associated with old-growth forest plant communities on the HLC NF.

**opening** (as pertaining to maximum opening size standard for timber harvest) a forest patch in a seedling/sapling size class (average stand diameter breast height is less than five inches) created as a result of one even-aged harvest operation (clearcut, seedtree or shelterwood seed cutting). Legacy or reserve trees left to meet other desired conditions are not counted in the calculation of size class for determining the seedling/sapling classification. Adjacent seedling/sapling stands created as a result of an earlier harvest operation are not considered part of an opening.

**open motorized route density** a moving window analysis calculation that applies to the primary conservation area portion of the NCDE and includes Federal, State, and tribal roads and motorized trails that are open to wheeled motor vehicle use by the public for any part of the non-denning season. Open

motorized route density is reported as the percent of a bear management subunit that exceeds 1 mile/mile<sup>2</sup> open motorized route density calculated using a moving window analysis. Temporary changes as allowed by specific plan components (e.g., PCA-NCDE-STD-04) refer to changes to the percent of a subunit that exceeds 1 mile/mile<sup>2</sup> open motorized route density, calculated using a moving window analysis. Note: Motorized routes closed only by sign or order are considered to be open for purposes of this calculation. See also moving window analysis.

**ordinary high water mark** the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas (US Army Corps of Engineers).

**outfitting** to rent on, or deliver to, NFS lands for pecuniary remuneration or other gain any saddle or pack animal, vehicle, boat, camping gear, or similar supplies or equipment (36 Code of Federal Regulations 251.51).

**over-snow motorized use** an activity involving a motor vehicle that is designed for use over snow and that runs on a track or tracks and/or a ski or skis, while in use over snow (36 Code of Federal Regulations 212.1, Definitions).

**over-snow standard season** the time period for over snow motorized use. Generally, the season is defined as December 1 to March 31 of each year; however exceptions apply in specific areas and are noted at the applicable locations as well as in Over Snow Vehicle Use Maps for the HLC NF.

**overstory** the portion of the trees that form the uppermost canopy layer in a forest of more than one story.

## P

**Palustrine** any inland wetland which lacks flowing water. Wetlands within this category include inland marshes and swamps, as well as bogs, fens and floodplains.

**passive crown fire** a type of fire in which individual or small groups of trees torch out, but solid flaming in the canopy cannot be maintained except for short periods. Passive crown fire encompasses a wide range of crown fire behavior from the occasional torching of an isolated tree to a nearly active crown fire. Also called torching and candling.

**patch** an area distinguished from its surroundings by environmental discontinuities, such as a small area of early seral/successional forest (seedling/sapling size class) surrounded by mid-seral and late-seral/successional forest (small to large tree size classes).

**pathway** the mechanism and processes by which non-native species are moved, intentionally or unintentionally, into a new ecosystem (Executive Order 13751).

**perennial** a stream that flows continuously throughout most years and whose upper surface generally stands lower than the water table in the region adjoining the stream.

**permit** a special use authorization which provides permission, without conveying an interest in land, to occupy and use NFS land or facilities for specified purposes, and which is both revocable and terminable (36 Code of Federal Regulations 251.51).

**permit modification** the revision of one or more grazing permit terms and conditions made in accordance with 36 Code of Federal Regulations 222.4(a)(7) or (a)(8) (or applicable Code of Federal Regulations as revised).

**piscicide** a chemical substance which is poisonous to fish.

**plan** a document, or set of documents, that provides management direction for an administrative unit of the NFS developed under the requirements of the 2012 Planning Rule or a prior planning rule. Also see forest plan.

**plan area** the NFS lands covered by a forest plan.

**planned fire** any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and where applicable, National Environmental Policy Act requirements must be met, prior to ignition.

**Pleistocene** the geological epoch which lasted from about 2,588,000 to 11,700 years ago, spanning the world's recent period of repeated glaciations.

**point source pollution** a discharge from a known pollutant source, such as a sewage treatment plant, to a water body from a single location.

**pole** a tree at least 5 inches diameter breast height and smaller than 8 inches diameter at breast height.

**potential vegetation type/potential vegetation group** an assemblage of habitat types on the basis of similar biophysical environments, such as climate, slope and soil characteristics. This biophysical environment influences the vegetation characteristics and ecosystem processes that occur. The vegetation communities and conditions that would develop over time given no major natural or human disturbances (the climax plant community) would be similar within a particular potential vegetation type classification.

**Precambrian** the largest span of time in Earth's history before the current Phanerozoic Eon. It spans from the formation of Earth about 4.6 billion years ago (Ga) to the beginning of the Cambrian Period, about 541 million years ago (Ma), when hard-shelled creatures first appeared in abundance.

**precommercial thinning** the selective felling, deadening, or removal of trees in a young stand dominated by trees less than 5 inches diameter breast height. Primary purposes for thinning include to accelerate diameter increment on the remaining stems, to maintain a specific stocking or stand density range, to develop desired tree species composition, and/or to improve the vigor and quality of the trees that remain.

**prescribed burning or prescribed fire** a fire ignited via management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and National Environmental Policy Act requirements (where applicable) must be met, prior to ignition (from National Wildfire Coordinating Group 2013).

**primary conservation area** an area identified in the NCDE Grizzly Bear Conservation Strategy to be managed as a source area for the grizzly bear population where continuous occupancy by grizzly bears would be maintained. Habitat within the primary conservation area would receive the most stringent protection. The primary conservation area is the same area as the NCDE grizzly bear recovery zone identified in the Grizzly Bear Recovery Plan (USFWS, 1993).

**productivity** the capacity of NFS lands and their ecological systems to provide the various renewable resources (such as timber) in certain amounts in perpetuity. In land management, productivity is an ecological term, not an economic term.

**project** an organized effort to achieve an outcome on NFS lands identified by location, tasks, outputs, effects, times, and responsibilities for execution (36 CFR § 219.19).

**project** (in grizzly bear habitat in the NCDE) for purposes of the motorized access standards and guidelines in the primary conservation area of the NCDE, refers to any temporary activity requiring construction of new roads, temporary roads, reconstruction or opening of restricted roads during the non-denning season, if such use exceeds administrative use levels (see administrative use). Activities involving recurring helicopter use (see recurring helicopter use) are also considered to be a project.

**projected timber sale quantity** the estimated quantity of timber meeting applicable utilization standards that is expected to be sold during the plan period. As a subset of the projected wood sale quantity, the projected timber sale quantity includes volume from timber harvest for any purpose from lands in the plan area based on expected harvests that would be consistent with the plan components. The projected timber sale quantity is also based on the planning unit's fiscal capability and organizational capacity. Projected timber sale quantity is not a target nor a limitation on harvest and is not an objective unless the responsible official chooses to make it an objective in the plan.

**projected wood sale quantity** the estimated quantity of timber and other wood products that is expected to be sold from the plan area for the plan period. The projected wood sale quantity consists of the projected timber sale quantity as well as other woody material such as fuelwood, firewood, or biomass that is also expected to be available for sale. The projected wood sale quantity includes volume from timber harvest for any purpose based on expected harvests that would be consistent with the plan components. The projected wood sale quantity is also based on the planning unit's fiscal capability and organizational capacity. Projected wood sale quantity is not a target nor a limitation on harvest, and is not an objective unless the responsible official chooses to make it an objective in the plan.

**project** an organized effort to achieve an outcome on NFS lands identified by location, tasks, outputs, effects, times, and responsibilities for execution (36 Code of Federal Regulations 219.19).

**proposed action** a project, activity, or action that a federal agency aims to implement or undertake, and which is the subject of an environmental analysis. Proposed action is a specific term defined under the National Environmental Policy Act.

**proposed species** a type of animal or plant that is proposed by the USFWS, or the National Marine Fisheries Service, through the Federal Register to be listed for protection under Section 4 of the Endangered Species Act.

**public involvement** a process designed to broaden the information base upon which agency decisions are made. The process involves informing the public about FS activities, plans, and decisions, and participation in the planning processes which lead to final decision making.

## R

**rangelands** land on which the indigenous vegetation (climax or natural potential) is predominantly grasses, grass-like plants, forbs, or shrubs and is managed as a natural ecosystem. If plants are introduced, they are managed similarly. Rangelands include natural grasslands, savannas, shrublands, many deserts, tundra, alpine communities, marshes, and wet meadows (Society for Range Management 1999). Also included in this definition are oak and pinyon-juniper woodlands.

**rangeland health** the degree to which the integrity of the soil and ecological processes are sustained.

**range improvements** developments and/or activities (treatments) intended to improve rangeland and watershed conditions, enhance wildlife habitat, enhance or improve livestock grazing management or serve similar purposes. There are two kinds of range improvements: nonstructural and structural. Seedings or prescribed burns are examples of nonstructural range improvements. Fences or facilities such as wells or water pipelines are examples of structural improvements.

**reach** a length of stream channel, lake, or inlet exhibiting, on average, uniform hydraulic properties and morphology.

**rearing habitat** a stable and protected micro-environment for a species to birth and rear their young. For example, for juvenile westslope cutthroat trout, rearing habitat is primarily the pool environment found in streams.

**reasonable assurance** a judgment made by the Responsible Official based on the best available scientific information and local professional experience that practices based on existing technology and knowledge are likely to deliver the intended results. Reasonable assurance applies to average and foreseeable conditions for the area and does not constitute a guarantee to achieve the intended results.

**recently burned forest** a forest area that has burned (via natural or planned ignition) in the last 10 years. These areas contain specific vegetation characteristics including recently burned snags.

**recovery** the improvement in the status of a listed species to the point at which listing as federally endangered or threatened is no longer appropriate (36 Code of Federal Regulations 219.19). This definition is for the purposes of the land management planning regulation at 36 Code of Federal Regulations part 219 and Land Management Planning Handbook 1909.12, and with respect to threatened or endangered species.

**recovery plan** a document that details actions or conditions necessary to promote improvement in the status of a species listed under the Endangered Species Act, to the point at which listing is no longer appropriate.

**recreation** the set of recreation settings and opportunities on the NFS that is ecologically, economically, and socially sustainable for present and future generations. Also see sustainable recreation.

**recreation development scale** a relative scale of development that is used in Forest Service recreation management and planning to describe the level of development associated with the diverse recreation opportunity spectrum settings within the forest.

**recreation development scale 1** recreation sites with minimum site modification. Rustic or rudimentary improvements designed for protection of the site rather than comfort of the users. Use of synthetic materials excluded. Minimum controls are subtle. No obvious regimentation. Spacing informal and extended to minimize contacts between users. Motorized access not provided or permitted. Development scale 1 recreation sites are most associated with Primitive ROS settings.

**recreation development scale 2** recreation sites with little site modification. Rustic or rudimentary improvements designed primarily for protection of the site rather than the comfort of the users. Use of synthetic materials avoided. Minimum controls are subtle. Little obvious regimentation. Spacing informal and extended to minimize contacts between users. Motorized access provided or permitted. Primary access over primitive roads. Interpretive services informal.

Development scale 2 recreation sites are most associated with Semi-primitive ROS settings (both non-motorized and motorized).

**recreation development scale 3** recreation sites with moderate modification. Facilities about equal for protection of natural site and comfort of users. Contemporary/rustic design of improvements is usually based on use of native materials. Inconspicuous vehicular traffic controls usually provided. Roads may be hard surfaced and trails formalized. Development density about three family units per acre. Primary access may be over high standard roads. Interpretive services informal, but generally direct. Development scale 3 recreation sites are most associated with Roded Natural ROS settings.

**recreation development scale 4** recreation sites that are heavily modified. Some facilities designed strictly for comfort and convenience of users. Luxury facilities not provided. Facility design may incorporate synthetic materials. Extensive use of artificial surfacing of roads and trails. Vehicular traffic control usually obvious. Primary access usually over paved roads. Development density about three to five family units per acre. Plant materials usually native. Interpretive services often formal or structured. Development scale 4 recreation sites are most associated with Rural ROS settings.

**recreation development scale 5** recreation sites with a high degree of site modification. Facilities mostly designed for comfort and convenience of users and usually include flush toilets; may include showers, bathhouses, laundry facilities, and electrical hookups. Synthetic materials commonly used. Formal walks or surfaced trails. Regimentation of users is obvious. Access usually by high-speed highways. Development density about five or more family units per acre. Plant materials may be foreign to the environment. Formal interpretive services usually available. Designs formalized and architecture may be contemporary. Mowed lawns and clipped shrubs not unusual. Development scale 5 recreation sites are most associated with Urban ROS settings.

**recreation event** a recreational activity conducted on NFS lands for which an entry or participation fee is charged, such as animal, vehicle, or boat races; dog trials; fishing contests; rodeos; adventure games; and fairs.

**recreation opportunity spectrum** the opportunity to participate in a specific recreation activity in a particular recreation setting to enjoy desired recreation experiences and other benefits that accrue. Recreation opportunities include nonmotorized, motorized, developed, and dispersed recreation on land, water, and in the air. The six classes are the following:

- **primitive** large, remote, wild, and predominately unmodified landscapes. There is no motorized activity and little probability of seeing other people. Primitive ROS settings are managed for quiet solitude away from roads, people, and development. There are few, if any facilities or developments. Most of the primitive recreation opportunity spectrum settings coincide with designated wilderness boundaries.
- **semi-primitive nonmotorized** large, semi-remote, areas of the forest that provide for backcountry nonmotorized uses. Mountain bikes and other mechanized equipment are often present. Rustic facilities are present for the primary purpose of protecting the natural resources of the area. These settings are not as vast or remote as the primitive ROS settings, but offer opportunities for exploration, challenge, and self-reliance.
- **semi-primitive motorized** large, semi-remote areas of the forests that provide for motorized backcountry motorized on designated routes or in designated areas. Routes are designed for off highway vehicles and other high clearance vehicles. This setting offers visitors motorized



opportunities for exploration, challenge, and self-reliance. Mountain bikes and other mechanized equipment are also sometimes present. Rustic facilities are present for the primary purpose of protecting the natural resources of the area or providing portals to adjacent areas of primitive, or semi-primitive, nonmotorized areas.

- **roaded natural** the roaded natural setting is managed as natural appearing with nodes and corridors of development that support higher concentrations of use, user comfort, and social interaction. The road system is well defined and can typically accommodate sedan travel. System roads also provide easy access to adjacent in semi-primitive motorize, semi-primitive nonmotorized and primitive areas.
- **rural** the rural settings represent the developed recreation sites and modified natural settings with higher concentrations of use and increased opportunities for group recreation activities and social interactions. Facilities are designed primarily for user comfort and convenience. The road system is well defined, often paved, and can easily accommodate all forms of transportation. Rural settings often include a combination of private lands intermixed with FS lands.
- **urban** the urban setting is characterized by a substantially developed environment although the background may have natural appearing elements. Highly developed ski areas, visitor centers, interpretive centers, and resorts are examples of an urban setting on National FS lands. Urban areas offer visitor comfort and convenience and modern building materials, such as concrete and asphalt, are a common occurrence.

**recreation setting** the social, managerial, and physical attributes of a place that, when combined, provide a distinct set of recreation opportunities. The FS uses the recreation opportunity spectrum to define recreation settings and categorize them into six distinct classes: primitive, semi-primitive nonmotorized, semi-primitive motorized, roaded natural, rural, and urban. Also see recreation opportunity.

**recurring helicopter use** a type of helicopter flight that involves multiple trips/passes each day consisting of low-altitude (< 500 meters above-ground-level) flights that continues for a duration longer than 48 consecutive hours.

**reforestation** the renewal of forest cover by planting, seeding, and natural means (such as seed from existing trees on the site).

**reference watershed** designated watersheds that have been minimally managed and meet the following criteria: no grazing for the past 40 years, low road density, no apparent hard rock mining in the riparian zone, and less than 10% of upstream catchment has been harvested.

**refugia** location and habitats that support populations of organisms that are limited to small fragments of their geographic range.

**regeneration** the renewal of a forest, whether by natural or artificial means. This term may also refer to a tree crop itself.

**regeneration harvest** any removal of trees intended to assist in the regeneration of a new age class or to make regeneration of a new age class possible. Regeneration harvest may be through even-aged or uneven-aged methods.

**regeneration method** the cutting approach used to regenerate a stand. Example methods include clearcut, seedtree and shelterwood cutting methods.

**relative return on investment** is a means to evaluate the conservation benefits of an invasive plant control project in relation to cost (Murdock et al. 2007).

**resilience (ecology)** the capacity of a (plant or animal) community or ecosystem to maintain or regain normal function and development following disturbance.

**resistance** the ability of a community to avoid alteration of its present state by a disturbance (Helms 1998).

**resource selection function** the relative probability of an animal using a unique set of habitat (landscape) characteristics. For studies involving radio-collared animals, “use” of landscape combinations is compared to the “availability” of those combinations in a designated study area.

**restocked** the condition of the growing space occupancy of trees to be achieved after a disturbance that has substantially altered the existing stocking (see “stocking”).

**restoration** the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed; ecological restoration focuses on reestablishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystems sustainability, resilience, and health under current and future conditions (36 Code of Federal Regulations 219.19).

**riffle** a shallow rapid where the water flows swiftly over completely or partially submerged obstructions (rocks, etc.) to produce surface agitation, but standing waves are absent.

**riparian area** a three-dimensional ecotone of interaction that include terrestrial and aquatic ecosystems that extend into the groundwater, above the canopy, and outward across the floodplain, up the near-slopes that drain to the water, laterally into the terrestrial ecosystem, and along the water course at variable widths.

**riparian ecosystem** a transition between the aquatic ecosystem and the adjacent upland terrestrial ecosystem. A riparian ecosystem is identified by soil characteristics and by distinctive vegetative communities that require free or unbounded water.

**riparian management zone (RMZs)** are portions of watersheds where riparian-associated resources receive primary emphasis, and management activities are subject to specific plan components including standards and guidelines. RMZs include traditional riparian corridors, wetlands, intermittent streams, and other areas that maintain the integrity of aquatic ecosystems.

RMZs shall be delineated on the ground based on site conditions as follows:

- **Category 1 fish-bearing streams:** RMZs consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet total, including both sides of the stream channel), whichever is greatest.
- **Category 2 permanently flowing non-fish bearing streams:** RMZs consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance (300 feet total, including both sides of the stream channel), whichever is greatest.
- **Category 3 *constructed ponds and reservoirs, and wetlands greater than 1 acre*** – RMZs consist of the body of water or wetland and: the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or the extent of unstable and potentially unstable areas, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance from the edge

of the wetland greater than 1 acre or the maximum pool elevation of constructed ponds and reservoirs, whichever is greatest.

*lakes and natural ponds* - RMZs consist of the body of water and: the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or to the extent of unstable and potentially unstable areas, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance, whichever is greatest.

- **Category 4** *seasonally flowing or intermittent streams, wetlands, seeps and springs less than 1 acre, and unstable and potentially unstable areas* - This category applies to features with high variability in size and site-specific characteristics. At a minimum, the RMZs should include:
  - The extent of unstable and potentially unstable areas (including earthflows).
  - The stream channel and extend to the top of the inner gorge.
  - The stream channel or wetland and the area from the edges of the stream channel or wetland to the outer edges of the riparian vegetation, extending from the edges of the stream channel to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest. A site-potential tree height is the average maximum height of the tallest dominant trees for a given site class.
  - Intermittent streams are defined as any non-permanent flowing drainage feature having a definable channel and evidence of annual scour or deposition. This includes what are sometimes referred to as ephemeral streams if they meet these two physical criteria. Fish-bearing intermittent streams are distinguished from non-fish-bearing intermittent streams by the presence of any species of fish for any duration. Many intermittent streams may be used as spawning and rearing streams, refuge areas during flood events in larger rivers and streams or travel routes for fish emigrating from lakes. In these instances, the guidelines for fish-bearing streams would apply to those sections of the intermittent stream used by the fish.

In order to achieve watershed desired conditions, the RMZ is broken into two areas called the inner and outer RMZs. Some activities are prohibited or restricted in the inner RMZ, whereas more active management is allowed in the outer RMZ. RMZs are not intended to be “no touch zones,” but rather “carefully managed zones” with an increase in protections in close proximity to water resources.

**riparian wildlife habitat** an environment that occurs along lakes, rivers, streams, springs, and seeps where the vegetation and microclimate are influenced by year-round or seasonal water and associated high water tables. Plant and animal species in these areas are more productive and diverse than on nearby uplands, making these areas very important to many wildlife species.

**road** a motor vehicle route more than 50 inches wide, unless identified and managed as a trail. (36 Code of Federal Regulations 212.1, FS Manual 7705):

- decommissioned: the stabilization and restoration of an unneeded road to a more natural state (36 Code of Federal Regulations 212.1).
- forest road or trail: a route wholly or partly within or adjacent to and serving the NFS that is necessary for the protection, administration, and utilization of the NFS and the use and development of its resources (36 Code of Federal Regulations 212.1 – Definitions)
- impassable: a road that has been treated in such a manner that the road is blocked and there is little resource risk if road maintenance is not performed on a regular basis (self-maintaining).
- intermittent stored service/intermittent service road, closed to traffic: The road is in a condition that there is little resource risk if maintenance is not performed.

- **maintenance level:** a term for the level of service provided by, and maintenance required for, a specific road, consistent with road management objectives and maintenance criteria (FS Handbook 7709.59, 62.32)

Level 1: these are roads that have been placed in storage between intermittent uses. The period of storage must exceed 1 year. Basic custodial maintenance is performed to prevent damage to adjacent resources and to perpetuate the road for future resource management needs. Emphasis is normally given to maintaining drainage facilities and runoff patterns.

Level 2: assigned to roads open for use by high clearance vehicles. Passenger car traffic, user comfort, and user convenience are not considerations.

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

Level 4: assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds

Level 5: assigned to roads that provide a high degree of user comfort and convenience.

- **NFS:** a forest road other than a road which has been authorized by a legally documented right-of-way held by a state, county, or other local public road authority (36 Code of Federal Regulations 212.1)
- **temporary:** a road necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road and that is not included in a forest transportation atlas (36 Code of Federal Regulations 212.1. In the Northern Continental Divide Ecosystem primary conservation area, temporary roads will meet the definition of impassable when no longer needed.

**rotation** the number of years (including the regeneration period) required to establish and grow timber under an even-aged management system to a specified condition or maturity for regeneration harvest.

**running average** A method for computing the average of a stream of numbers for a specified period. A 10-year running average computes the mean for the values in the current year plus the previous 9 years. A running average is commonly used with time series data to smooth out short-term fluctuations and highlight longer-term trends or cycles.

## S

**salvage harvest** the removal of dead trees or trees being damaged or dying due to injurious agents other than competition, to recover value that would otherwise be lost and/or to meet other resource objectives.

**sanitation cutting** removal of trees to improve stand health by stopping or reducing the actual or anticipated spread of insects and disease.

**sapling** young tree that is larger than a seedling but smaller than a pole or small tree; typically 5 to about 25 feet tall and 1 to 5 inches diameter breast height.

**savanna** a lowland grassland with a wide scattering of trees (generally 5-10% canopy cover) that typically occurs on the driest habitats in the Warm Dry broad potential vegetation type, where the dominance of grasses and shrubs would historically be maintained by frequent fire.

**sawtimber** a collection of logs cut from trees with minimum diameter (typically greater than 6 or 7 inches diameter breast height) or trees of the same minimum diameter and of sufficient length and stem quality suitable for conversion to lumber.

**scarification** the removal of the surface organic material (duff) of an area, typically to prepare the site for reforestation.

**scenery management system** describes the existing and desired conditions of scenic character within a plan area

**scenic character** a combination of the physical, biological, and cultural images that gives an area its scenic identity and contributes to its sense of place; scenic character provides a frame of reference from which to determine scenic attractiveness and to measure scenic integrity.

**scenic integrity objectives** a measure of the degree to which a landscape is visually perceived to be complete when compared to the scenic character of that area.

- very high: landscapes where the valued landscape character “is” intact with minute if any deviations. The existing landscape character and sense of place is expressed at the highest possible level. These landscapes generally provide for ecological change only.
- high: landscapes in which the valued landscape character “appear” intact. Deviations may be present but must repeat the form, line, color, texture, and pattern common to the landscape character so completely and at such a scale that they are not evident. Management activities do not dominate the landscape.
- moderate: landscapes in which the valued landscape character “appears slightly altered”. Noticeable deviations must remain visually subordinate to the landscape character being viewed. Management activities are subordinate to the attributes described within the described scenic character of the area.
- low: landscapes in which the valued landscape character “appears altered”. Deviations begin to dominate the landscape character being viewed but borrow valued attributes such as size, shape, edge effect and pattern of natural openings vegetation type changes or architectural styles outside of the landscape being viewed. Management activities are visible and sometimes dominant features on the landscape.
- very low: landscape where the valued landscape character “appears heavily altered”. Deviations may strongly dominate the valued landscape character. They may not borrow from valued attributes such as sized, shape, edge effect and pattern of natural opening, vegetative type changes or architectural styles within or outside of the landscape being viewed. Management activities are visible and dominate the views of the overall landscape.

**scion** a detached living portion of a plant, such as a bud or shoot, often a branch tip, that is grafted onto the root-bearing part of another plant.

**secure core** (grizzly bear).. an area of the NCDE primary conservation area 500 meters or more from (1) a route open to public wheeled motorized use during the grizzly bear non-denning season, (2) a gated route, or (3) a route closed only with a sign that is greater than or equal to 2,500 acres in size. Roads restricted with physical barriers (not gates), decommissioned roads, impassable roads, temporary roads, over-the-snow motorized routes/areas, and non-motorized trails are allowed within secure core, unless otherwise restricted (e.g., by other national forest plan direction). Secure core is reported as the percent of a bear management subunit meeting this definition, as calculated using a moving windows analysis.

Temporary changes as allowed by specific plan components (e.g., PCA-NCDE-STD-04) refer to changes to the percent of a subunit meeting this definition, as calculated using a moving windows analysis.

**security habitat** an area with low levels of human disturbance or habitat that allows a wildlife species to remain in a defined area despite an increase in stress or disturbance. The components of security habitat can include vegetation, topography, the size of the patches of vegetation, road density, distance from roads, intensity of the disturbance, and seasonal timing of the disturbance. This general definition covers most uses of the term security habitat, except for elk and grizzly bear, which have specific definitions.

**sediment** solid material, both mineral and organic, that is in suspension, being transported, or has been moved from its site of origin by air, water, gravity, or ice.

**seedling** a young tree that has just germinated but has not yet reached sapling size, typically 1 to 5 feet tall.

**seedling/sapling** a size category for forest stands in which trees less than 5 inches in diameter and less than about 25 feet tall are the predominant vegetation.

**seedtree method** a cutting technique used to regenerate a stand in which nearly all trees are removed from an area, except for a small number of trees that are left singly or in small groups.

**seedtree with reserves** the application of the seedtree method with the intention of retaining or reserving all or a portion of the seed trees for future stand structure.

**selection method** a cutting technique used to regenerate a forest stand and maintain an uneven-aged structure, by periodically removing some trees within multiple size classes either singly or in small groups or strips.

**sensitive soils** riparian and hydric soils, mollic soils, ash and loess influenced soils, soils developed in igneous intrusive rocks, shallow soils, and landslide prone areas

**seral** a biotic community that is developmental; a transitory stage in an ecologic succession.

**seral/structural stage** a phase of development of an ecosystem in ecological succession from a disturbed, relatively unvegetated state to a complex, mature plant community.

**shade-intolerant** a plant species that does not grow well or dies from the effects of too much shade.

**shade-tolerant** a plant species that can develop and grow successfully in the shade of other plants.

**shelterwood method** a cutting technique used to regenerate an even-aged stand in which some of the mature trees are left to provide protection for regeneration species (greater numbers of trees are left in this method than with the seedtree method). This technique may be performed uniformly throughout the stand, in strips, or in groups. Regeneration may be natural or artificial (planting).

**shelterwood with reserves** the application of the shelterwood cutting technique with the intention of retaining or reserving all or a portion of the shelterwood trees for future stand structure.

**silvicultural diagnosis** the compiling, summarizing, evaluation and analyzing of forest stand and/or landscape data. Includes describing desired conditions, interpreting management direction and determining feasible alternative silvicultural systems and initial treatments. Integrates other resource conditions and considerations, such as soils, wildlife habitat and visual sensitivity.

**silvicultural prescription** a written document that describes management activities needed to implement one or more silvicultural treatments, or a treatment sequence. The prescription documents the results of the analysis during the diagnosis phase.

**silvicultural system** a management process whereby forests are tended, harvested, and replaced, resulting in a forest of distinctive form. It includes cultural management practices performed during the life of the stand, such as regeneration cutting, thinning, and use of genetically improved tree seeds and seedlings to achieve multiple resource benefits.

**silviculture** the theory and practice of controlling the establishment, composition, growth, and quality of forest stands in order to achieve the objectives of management.

**site preparation** a general term for a variety of activities that remove competing vegetation, slash, and other debris that may inhibit the reforestation effort.

**site productivity** the combined effect of physical and climate properties, soil depth, texture, nutrient load, precipitation, temperature, slope, elevation, and aspect, on tree growth of a specific area of land.

**ski area** a site and attendant facilities expressly developed to accommodate alpine or Nordic skiing and from which the preponderance of revenue is generated by the sale of lift tickets and fees for ski rentals, for skiing instruction and trail passes for the use of permittee-maintained ski trails. A ski area may also include ancillary facilities directly related to the operation and support of skiing activities (36 Code of Federal Regulations 251.51).

**slash** the residue left on the ground after felling and other silvicultural operations, or that has accumulated there as a result of storms, fire, or natural pruning.

**snag** a standing dead tree usually greater than 5 feet in height and 6 inches in diameter breast height.

**Source Water Protection Area (SWPA)** the area delineated by the state for a public water system (PWS) or including numerous PWSs, whether the source is ground water or surface water or both, as part of the state SWPA approved by EPA under section 1453 of the Safe Drinking Water Act.

**species of conservation concern (SCC)** a species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the Regional Forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area (36 Code of Federal Regulations 219.9(c)).

**stand** a community of trees occupying a specific area and sufficiently uniform in canopy composition, age, and size class to be a distinguishable unit, forming a single management entity.

**standard (STD)** a mandatory constraint on project and activity decision making, established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements. Also see chapter 1.

**stand-replacing disturbance** an agent such as fire, blowdown, insect or disease epidemic, or timber harvest, which kills or removes enough trees (usually considered 80% or more of the tree component) to result in an early seral/successional forest.

**stem exclusion structural stage** (or closed canopy structural stage) a phase when trees initially grow fast and quickly occupy the growing space, creating a closed canopy. Because the trees are tall, little light

reaches the forest floor so understory plants (including smaller trees) are shaded and grow more slowly. Species that need full sunlight usually die; shrubs and herbs may become dormant. New trees are precluded by a lack of sunlight or moisture (Oliver and Larson, 1996) (Northern Rockies Lynx Management Direction).

**stocking** a measure of timber stand density as it relates to the optimum or desired density to achieve a given management objective.

**storm proofing** measures taken to reduce the risk or amount of damage to roads from major storms.

**stressor** (ecology) see ecosystem stressor

**structural stage** a particular forest condition, characterized by a set of forest structural characteristics (such as tree diameters, tree heights, tree densities, canopy layers) that is representative of a particular period of stand development. Also see stand initiation structural stage, stem exclusion structural stage, and understory reinitiation structural stage.

**structure** the organization and physical arrangement of biological elements such as, snags and down woody debris, vertical and horizontal distribution of vegetation, stream habitat complexity, landscape pattern, and connectivity. Also see forest structure.

**stubble height** the measure or height (in centimeters or inches) of herbage left ungrazed at any given time (FSTR 1743-3 1999).

**substrate** a mineral and/or organic material that forms the streambed (stream bottom).

**subwatershed** a 6th level/12 digit hydrologic unit code watershed. They range in size from 10,000 to 40,000 acres, as defined in the U.S. Geological Survey hierarchical system of watersheds.

**succession/successional stage** a predictable process of changes in structure and composition of plant and animal communities over time. Conditions of the prior plant community or successional stage create conditions that are favorable for the establishment of the next stage. The different stages in succession are often referred to as “seral,” or “successional” stages.

**suitability of lands** a determination made regarding the appropriateness of various lands within a plan area for various uses or activities, based on the desired conditions applicable to those lands. The terms suitable and suited and not suitable and not suited can be considered the same.

**summer range** a part of the overall range of a species where the majority of individuals are located between spring green-up and the first heavy snowfall; in some areas or for some species winter range and summer range may overlap.

**sustainability** the capability to meet the needs of the present generation without compromising the ability of future generations to meet their needs. For purposes of this part, “ecological sustainability” refers to the capability of ecosystems to maintain ecological integrity; “economic sustainability” refers to the capability of society to produce and consume or otherwise benefit from goods and services including contributions to jobs and market and nonmarket benefits; and “social sustainability” refers to the capability of society to support the network of relationships, traditions, culture, and activities that connect people to the land and to one another, and support vibrant communities (36 Code of Federal Regulations 219.19).



**sustainable recreation** the set of recreation settings and opportunities on the NFS that is ecologically, economically, and socially sustainable for present and future generations.

**sustained yield limit** the amount of timber, meeting applicable utilization standards, “which can be removed from [a] forest annually in perpetuity on a sustained-yield basis” (National Forest Management Act at section 11, 16 United States Code 1611; 36 Code of Federal Regulations 219.11(d)(6)). It is the volume that could be produced in perpetuity on lands that may be suitable for timber production. Calculation of the limit includes volume from lands that may be deemed not suitable for timber production after further analysis during the planning process. The calculation of the sustained yield limit is not limited by land management plan desired condition, other plan components, or the planning unit's fiscal capability and organizational capacity. The sustained yield limit is not a target but is a limitation on harvest, except when the plan allows for a departure.

**system road** see road (NFS road).

## T

**threatened species** a species that the Secretary of the Interior or the Secretary of Commerce has determined is likely to become an endangered species within the foreseeable future throughout all, or a significant portion, of its range. Threatened species are identified by the Secretary of the Interior in accordance with the 1973 Endangered Species Act. Threatened species are listed at 50 Code of Federal Regulations sections 17.11, 17.12, and 223.102.

**thrust fault** a type of low angle fault, or break in the Earth's crust across which there has been relative movement, in which rocks of lower stratigraphic position are pushed up and over higher strata. They are often recognized because they place older rocks above younger.

**timber** wood, other than fuelwood, potentially usable for lumber.

**timber harvest** the removal of trees for wood fiber use and other multiple-use purposes (36 Code of Federal Regulations 219.19).

**timber management** the growing of, tending to, commercial harvesting of, and regeneration of crops of trees (from Northern Rockies Lynx Management Direction).

**timber production** the purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use (36 Code of Federal Regulations 219.19).

**total maximum daily load** is a pollution budget and includes a calculation of the maximum amount of a pollutant that can occur in a waterbody and allocated the necessary reductions to one or more pollutant sources (metals, sediment, turbidity, etc.). A total maximum daily load serves as a planning tool and potential starting point for restoration or protection activities with the ultimate goal of attending or maintaining water quality standards.

**total motorized route density** a moving window analysis calculation that applies to the primary conservation area portion of the NCDE and includes Federal, State, and tribal roads and motorized trails that do not meet the definition of an impassable road. See also moving window analysis. Total motorized route density is reported as the percent of a bear management subunit that exceeds 2 mile/mile<sup>2</sup> total motorized route density calculated using a moving window analysis. Temporary changes as allowed by specific plan components (e.g., PCA-NCDE-STD-04) refer to changes to the percent of a subunit that exceeds 2 mile/mile<sup>2</sup> total motorized route density, calculated using a moving window analysis.

**total soil resource commitment** the conversion of a productive site to an essentially nonproductive site (0 to 40 percent of natural productivity) for a period of more than 50 years. Examples include system roads, administrative sites, developed campgrounds, rock quarries, mine sites, livestock watering facilities, and home ignition zones.

**trail** a route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail (36 Code of Federal Regulations 212.1).

**trail class** the prescribed scale of development for a trail, representing its intended design and management standards.

**trailhead** an area that provides parking for or access to a singular trail or trails through the forest.

**transitory range** forested lands that are suitable for grazing for a limited time following a complete or partial forest removal.

**transportation livestock** livestock used as pack and saddle stock for travel on NFS lands.

**two-aged stand** a stand containing two distinctive age classes or cohorts.

## U

**underburning** a fire that consumes surface fuels but not trees and some large shrubs.

**understory** the trees and other woody species which grow under a more or less continuous cover of branches and foliage formed collectively by the upper portion of adjacent trees and other woody growth.

**understory re-initiation structural stage** establishment of a new age class of trees after overstory trees begin to die, are removed, or no longer fully occupy their growing space. The stand of trees begins to stratify into vertical layers, with some small shade-tolerant trees in the understory (from Lynx Conservation and Assessment Strategy).

**uneven aged stand** a stand of trees of three or more distinct age classes, either intimately mixed or in groups.

**uneven aged system** a planned sequence of treatments designed to regenerate or maintain a timber stand with three or more age classes. Treatments include single-tree, selection, and group selection regeneration methods.

**untrammelled** a term defined in the context of the Wilderness Act as an area where human influence does not impede the free play of natural forces or interfere with natural processes in the ecosystem.

**unique and/or limited ecological sites** ecological sites (or their equivalent) that are limited in size/area and/or distribution.

**utilization standards** utilization standards are specifications for merchantable forest products offered in a timber sale.

## V

**values at risk** the elements of a community or natural area considered valuable by an individual or community that could be negatively impacted by a wildfire or wildfire operations. These values can vary by community and can include diverse characteristics such as homes, specific structures, water supply,

power grids, natural and cultural resources, community infrastructure, and other economic, environmental, and social values.

**vegetation management** a management activity that changes the composition and structure of vegetation to meet specific objectives that may be done with a variety of implementation methods (such as by hand or with machinery), including but not limited to activities such as prescribed fire, timber harvest, tree planting, noncommercial stand tending, or re-arrangement and/or removal of hazardous fuels. For the purposes of this decision, the term does not include removing vegetation for permanent developments like mineral operations, ski runs, roads and the like, and does not apply to fire suppression or to wildland fire.

**viable population** a population of a species that continues to persist over the long term with sufficient distribution to be resilient and adaptable to stressors and likely future environments (36 Code of Federal Regulations 219.19).

**viewshed** the visible portion of the landscape seen from viewpoints. Viewpoints can include residences, recreational facilities, and travelways.

## W

**water quality** the physical, chemical, and biological properties of water.

**water yield** the runoff from a watershed, including groundwater outflow.

**watershed** a region or land area drained by a single stream, river, or drainage network; a drainage basin.

**watershed condition** the state of a watershed based on physical and biogeochemical characteristics and processes.

**watershed condition framework** a comprehensive approach for proactively implementing integrated restoration on priority watersheds on national forests and grasslands.

**weighted average/weighted mean** similar to an arithmetic mean or average, where instead of all data points contributing equally to the final average, some data points contribute more than others. In the example of patch sizes of early successional seedling/sapling forests, the data point is the patch. Patches are “weighted” by their acreage, and thus larger patches will contribute more to the determination of average than the smaller patches. This statistic gives insight into how large the largest patches really are, and how the individual patches are distributed along the range from smallest to largest patch size.

**wetland** an area that under normal circumstances has hydrophytic vegetation, hydric soils, and wetland hydrology.

**wild and scenic river** a waterway designated by Congress as part of the National Wild and Scenic Rivers System, which was established in the Wild and Scenic Rivers Act of 1968 (16 United States Code 1271, 1271–1287).

**wilderness** an area of land designated by Congress as part of the National Wilderness Preservation System that was established in the Wilderness Act of 1964 (16 United States Code 1131–1136).

**wilderness character** a measure that reflects the nature of wilderness being untrammeled, undeveloped, natural, and having outstanding opportunities for solitude or a primitive and unconfined type of recreation.

- **untrammeled** unhindered and free from modern human control or manipulation.

- **natural** wilderness ecological systems are substantially free from the effects of modern civilization
- **undeveloped** an area retaining its primeval character and influence, without permanent improvements or human habitation
- **solitude or a primitive unconfined type of recreation** recreation opportunities where people can experience wilderness without signs of modern civilization, recreation facilities, and/or management restrictions on visitor behavior.

**wildfire** unplanned ignition of a wildland fire or an escaped prescribed fire. Wildfire includes unplanned fires that are human-caused and those that are naturally-ignited by lightning.

**wildland fire** any nonstructure fire that occurs in the wildland. There are two types of wildland fire: unplanned (natural or human-caused ignitions) and planned (prescribed fire).

**wildland-urban interface** defined by the Healthy Forest Restoration Act § 101:

(A) an area within or adjacent to an at-risk community that is identified in recommendations to the Secretary in a community wildfire protection plan; or

(B) in the case of any area for which a community wildfire protection plan is not in effect—

(i) an area extending 1/2-mile from the boundary of an at-risk community;

(ii) an area within 1 1/2 miles of the boundary of an at-risk community, including any land that—

(I) has a sustained steep slope that creates the potential for wildfire behavior endangering the at-risk community;

(II) has a geographic feature that aids in creating an effective fire break, such as a road or ridge top; or

(III) is in condition class 3, as documented by the Secretary in the project-specific environmental analysis; and

(iii) an area that is adjacent to an evacuation route for an at-risk community that the Secretary determines, in cooperation with the at-risk community, requires hazardous fuel reduction to provide safer evacuation from the at-risk community.

**wildlife security** the protection inherent in any situation that allows animals to remain in a defined area despite an increase in stress or disturbance associated with human activities.

**windthrow** a tree or stand of trees that have been blown over by the wind.

**winter range** the portion of the overall area a species inhabits where the majority of individuals are found from the first heavy snowfall to spring green-up, or during a specific period of winter. In the Rocky Mountains, winter range areas tend to have a relatively low amount of snow cover.

**X**

**xeric** (of an environment or habitat) containing little moisture; very dry.

**xeric ecotone** the zone of transition between nonforested grass/shrub communities and forested communities, and may often blend with savannas. This zone is found on dry potential vegetation types and shifts in location and condition based on climate influences, successional processes, and disturbance processes. See also “ecotone.”

## Y

**yarding** the operation of hauling timber from the stump to a collecting point.

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