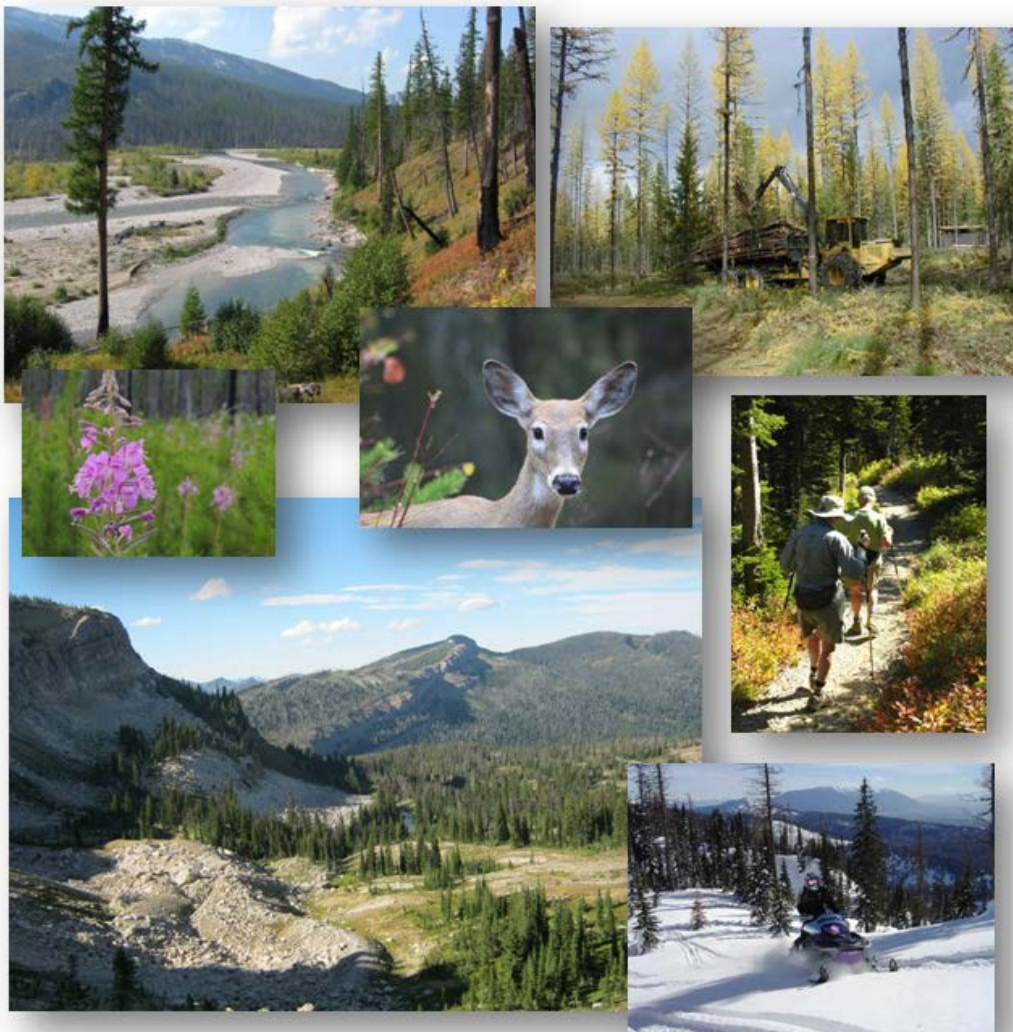




United States Department of Agriculture

Volume 2—Final Environmental Impact Statement for the Forest Plan

Flathead National Forest



Forest Service

Northern Region

December 2017

"...for the greatest good of the greatest number for the longest time." —Gifford Pinchot, founding chief of the Forest Service, 1905

Cover (images described from clockwise from upper left):

- South Fork of the Flathead River, Spotted Bear Ranger District
- Forwarder working on the Paint Emery Resource Management Project, Hungry Horse–Glacier View Ranger District
- Two hikers
- Snowmobiler
- View from trail to Pentagon Cabin in the Bob Marshall Wilderness (photo by Peter Borgesen)
- Fireweed
- White-tailed deer (photo by John Littlefield)

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Volume 2—Final Environmental Impact Statement for the Forest Plan

Flathead National Forest

Lead agency: USDA Forest Service

Responsible official: Chip Weber, Forest Supervisor
Flathead National Forest
650 Wolfpack Way
Kalispell, MT 59901
406-758-5204

For information, contact: Joe Krueger, Planning Team Leader Forest Plan Revision
Flathead National Forest
650 Wolfpack Way
Kalispell, MT 59901
406-758-5243

Abstract: This is second of four volumes of the final environmental impact statement (EIS) that documents analysis of the preferred alternative, two other action alternatives, as well as a no-action alternative developed for programmatic management of the 2.4 million acres administered by the Flathead National Forest. The Forest Service has identified alternative B modified as the preferred alternative. The Forest Service has identified alternative B modified as the preferred alternative. The Flathead National Forest encompasses 2.4 million acres in Flathead, Lake, Lewis and Clark, Lincoln, Missoula, and Powell Counties, Montana.

The Forest Service is concurrently amending the forest plans of the Helena-Lewis and Clark, Kootenai, and Lolo National Forests (referred to as the “amendment forests”) to incorporate habitat management direction for the Northern Continental Divide Ecosystem (NCDE) grizzly bear population (refer to volume 3 of the final EIS for the evaluation of effects of the amendments).

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List of Abbreviations

Terms

For use in EIS	Additional information/full name
amendment forests	Collective term for the Helena-Lewis & Clark, Kootenai, and Lolo National Forests
the Forest	Flathead National Forest
assessment	Assessment of the Flathead National Forest
forest plan	Flathead National Forest Revised Land Management Plan
1986 forest plan	Flathead National Forest Land and Resource Management Plan (1986)
2012 planning rule	National Forest System land management planning rule (effective 2012)

List of Abbreviations

CFR	Code of Federal Regulations
d.b.h.	diameter at breast height
DC	desired condition (forest plan component)
DCA	demographic connectivity area
EIS	environmental impact statement
FW	forestwide (forest plan component)
GA	geographic area
GBCS	Grizzly Bear Conservation Strategy
GDL	Guideline (forest plan component)
GIS	geographic information system
INFISH	Inland Native Fish Strategy
MA	management area
mi	mile
mmbf	million board feet
mmcf	million cubic feet
MFWP	Montana Fish Wildlife and Parks
NCDE	Northern Continental Divide Ecosystem
NEPA	National Environmental Policy Act
NFS	National Forest System
NRLMD	Northern Rockies Lynx Management Direction
PACFISH	Pacific Fish Strategy
PCA	primary conservation area
PIBO	PACFISH/INFISH Biological Opinion
STD	standard (forest plan component)
TMDL	total maximum daily load
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service

Chapter 3. Affected Environment and Environmental Consequences (continued)

Human Uses, Benefits, and Designations of the Forest

This volume of the EIS addresses the following topics:

- sustainable recreation and access
- scenery
- infrastructure
- lands and special uses
- designated and recommended wilderness
- inventoried roadless areas
- wild and scenic rivers
- national scenic trails
- special areas and research natural areas
- forest products
- mineral resources
- livestock grazing
- cultural resources
- American Indian rights and interests
- social and economic environment

3.10 Sustainable Recreation and Access

3.10.1 Introduction

Regulatory framework

Laws and Executive Orders

Organic Administration Act of June 4, 1897 (30 Stat. 11, as amended): This act authorizes the establishment of national forests.

Term Permit Act of March 4, 1915 (Pub. L. 63-293, Ch. 144, 38 Stat. 1101, as amended; 16 U.S.C. 497): This act provides direction to the NFS lands to authorize occupancy for a wide variety of uses through permits not exceeding 30 years.

Multiple-Use Sustained-Yield Act of June 12, 1960 (Pub. L. 86-517, 74 Stat. 215): This act provides direction to the NFS lands to provide access and recreation opportunities. The act states, “The policy of Congress is that national forests are established and administered for outdoor recreation . . .”

National Forest Roads and Trails Act of October 13, 1964 (Pub. L. 88-657, 78 Stat. 1089, as amended): This act declares that an adequate system of roads and trails should be constructed and maintained to meet the increasing demand for recreation and other uses. The act authorizes road and trail systems for the national forests. It authorizes granting of easements across NFS lands, construction and financing of maximum-economy roads (Forest Service Manual 7705), and imposition of requirements on road users for maintaining and reconstructing roads, including cooperative deposits for that work.

Land and Water Conservation Fund Act of 1965 (Pub. L. 88-578, 78 Stat. 897 as amended; 16 U.S.C. 4601-4604 (note); 4601-4604 through 6a, 4601-4607 through 4601-4610, 4601-4610a-d, 4601-4611): “The purposes of this act are to assist in preserving, developing, and assuring accessibility to all citizens of the United States of America . . . [to] such quality and quantity of outdoor recreation resources . . . [and] providing funds” to States for acquisition, planning, and development of recreation facilities and Federal agencies for acquisition and development of certain lands and other areas.

Architectural Barriers Act of August 12, 1968 (Pub. L. 90-480, 82 Stat. 718 51 U.S.C. 4151-4154, 4154a, 4155-4157): This act establishes additional requirements to ensure that buildings, facilities, rail passenger cars, and vehicles are accessible to individuals with disabilities. It covers architecture and design, transportation, and communication elements of recreational site planning and development.

National Trails System Act of October 2, 1968 (Pub. L. 90-543, 82 Stat. 919, as amended): This act establishes the National Trails System and authorizes planning, right-of-way acquisition, and construction of trails established by Congress or the Secretary of Agriculture.

Rehabilitation Act of September 26, 1973 (Pub. L. 93-112, Title V, 87 Stat. 390, as amended; 29 U.S.C. 791, 793-794, 794a, 794b): This act requires that programs and activities conducted by Federal agencies and by entities that receive funding from, or operate under a permit from, Federal agencies provide an equal opportunity for individuals with disabilities to participate in an integrated

setting, as independently as possible. The only exception to the requirement is when the program would be fundamentally altered if changes were made solely for the purpose of accessibility.

Forest and Rangeland Renewable Resources Planning Act of August 17, 1974 (Pub. L. 93-378, 88 Stat. 476, as amended): This act declares (per Sec. 10) that “the installation of a proper system of transportation to service the NFS . . . shall be carried forward in time to meet anticipated needs on an economical and environmentally sound basis.”

Federal Land Policy and Management Act of October 21, 1976 (Pub. L. 94-579, 90 Stat. 2742, as amended): This act declares (per Sec. 102) that “the public lands be managed in a manner that . . . will provide for outdoor recreation and human occupancy and use.”

Omnibus Parks and Public Lands Management Act of November 12, 1996 (Pub. L. 104-333, Div. I, Title VII, Sec. 701, 110 Stat. 4182; 16 U.S.C. 497c): Section 701 of this act

- establishes a system to calculate fees for ski area permits issued under the National Forest Ski Area Permit Act of 1986 (16 U.S.C. 497b);
- provides for holders of ski area permits issued under other authorities to elect this permit fee system (Forest Service Handbook 2709.11, sec. 38.03a);
- includes provisions concerning compliance with NEPA when issuing permits for existing ski areas (Forest Service Manual 2721.61f and Forest Service Handbook 2709.11, sec. 41.61b); and
- withdraws leasable and locatable minerals, subject to valid existing rights (Forest Service Handbook 2709.11, sec. 41.61c).

Secure Rural Schools and Community Self-Determination Act of October 30, 2000 (Pub. L. 106-393, 114 Stat. 1607; 16 U.S.C.500 note): This act provides provisions to make additional investments in, and create additional employment opportunities through, projects that improve the maintenance of existing infrastructure; implement stewardship objectives that enhance forest ecosystems; and restore and improve land health and water quality.

Federal Lands Recreation Enhancement Act of December 8, 2004 (Pub. L. 108-447, as amended): This act gives the Secretaries of Agriculture and Interior the authority to establish, modify, charge, and collect recreation fees at Federal recreational lands where a certain level of amenities have been developed.

The **Federal Cave Resources Protection Act of 1988** (Pub. L. 101-691): This act aims to “secure, protect, and preserve significant caves on Federal lands for the perpetual use, enjoyment, and benefit of all people; and to foster increased cooperation and exchange of information between governmental authorities and those who utilize caves located on Federal lands for scientific, education, or recreational purposes.” Specific effects of the act include prohibiting the disclosure of location of significant caves, the removal of cave resources, and vandalizing or disturbing cave resources.

Executive Order 12862, Setting Customer Service Standards: Requires information about the quantity and quality of recreation visits for national forest plans.

Executive Order 11644, as amended: Establishes policy and procedure “that will ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources

of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands.”

Key indicators

- Acres of desired summer and winter recreation opportunity spectrum settings
- Desired summer and winter recreation opportunity spectrum settings
- Acres of NFS lands suitable/not suitable for motorized over-snow vehicle use
- Acres and miles of late-season motorized over-snow vehicle use (outside of denning season)
- Acres and miles of NFS lands open yearlong to motorized over-snow vehicle use

Methodology and analysis process

For comparison purposes, the desired recreation opportunity spectrum for summer and winter was mapped across the Forest for each alternative. The methodology for mapping the recreation opportunity spectrum for each alternative follows Forest Service handbook direction. Each alternative was then analyzed for the total number of acres and percentage of the desired recreation opportunity spectrum settings on the Forest.

For comparison purposes, the total number of acres where motorized over-snow vehicle use and late-season motorized over-snow vehicle use would be suitable was analyzed for each alternative. A motorized over-snow vehicle suitability map was completed for each alternative to reflect where motorized use would be suitable. A geographic information system (GIS) was then used to calculate the number of acres suitable for each alternative.

When the phrase “wheeled motor-vehicle use” is used in this final EIS relative to road, trail, and area or cross-country travel, it refers to all types of motor vehicles as defined in 36 CFR § 212.1 except over-snow vehicles. This generally includes wheeled motor vehicles such as automobiles, four-wheel-drive vehicles, and off-highway vehicles (except over-snow vehicles), but it also includes vehicles that have the driving wheels moving inside endless tracks (or that are capable of such conversion) when operating outside snow-covered ground conditions. Over-snow vehicles are defined as motor vehicles designed for use over snow that run on a track or tracks and/or a ski or skis while in use over snow (36 CFR § 212.1). Effects of these two recreation opportunities are analyzed as separate activities in this document and are referred to as either “wheeled motor vehicle use” or “motorized over-snow vehicle use.” When the term motorized access or motorized recreation is used, it refers to all vehicles—both wheeled motor vehicles and motorized over-snow vehicle use. Mechanized or mechanical transport is bicycles, wagons and carts. Electric bikes, commonly called e-bikes, are considered motorized and are not allowed on roads, trails, and/or areas that prohibit motorized use.

Information sources

Much of the recreation data used in this analysis comes from the Forest Service infrastructure database (INFRA). This Forest-level database is a collection of Web-based data entry forms, reporting tools, and mapping tools (a geographic information system that enables Forests to manage and report accurate information about their inventory of constructed features and land units). Use of the geographic information system allows Forest staff to visualize, analyze, interpret, and understand data to reveal relationships and patterns.

Analysis area

The geographic scope of the analysis is the NFS lands administered by the Flathead National Forest (hereinafter referred to as the “Forest”). All lands of all ownership within the Forest boundary form the geographic scope for cumulative effects. The temporal scope is the anticipated life of the plan (15 years).

3.10.2 Affected environment (existing condition)

Recreation setting and access

People choose a specific setting for recreational activities in order to achieve a desired set of experiences. For example, camping in a large undeveloped area with few facilities offers a sense of solitude, challenge, and self-reliance. In contrast, camping in a setting that is easy to access and that has developed facilities such as toilets and tables offers more comfort, security, and social opportunities. A goal of the Forest Service is to provide opportunities for recreationists to obtain satisfying recreational experiences through offering choices in both types of settings and activities. The Forest Service utilizes a framework called the recreation opportunity spectrum, pictured in figure 68, to describe different settings across the landscape and the attributes associated with those settings. The Forest Service defines a recreation opportunity setting as the combination of physical, biological, social, and managerial conditions that give value to a place. Thus, an opportunity includes qualities provided by nature (vegetation, landscape, topography, scenery), qualities associated with recreational use (levels and types of use), and conditions provided by management (developments, roads, regulations).

The recreation opportunity spectrum is the framework for settings and opportunities and is determined, in part, by the suitability by management area for motorized and nonmotorized vehicles use. Travel management decisions are separate, project-level decisions that determine the specific areas and routes for motorized recreation consistent with areas identified in the plan as suitable for motorized recreation use.

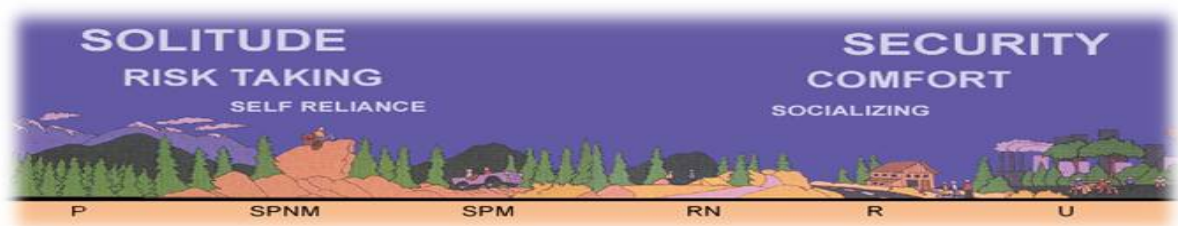


Figure 68. Illustration of the recreation opportunity spectrum settings

(P = primitive, SPNM = semiprimitive nonmotorized, SPM = semiprimitive motorized, RN = roaded natural, R = rural, U = urban)

The recreation opportunity spectrum has six distinct classes in a continuum that describe settings ranging from highly modified and developed to primitive and undeveloped (Clark & Stankey, 1979). Five of the recreation opportunity spectrum classes apply to the Flathead National Forest: primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, and rural. There are no urban recreation opportunity spectrum classes on the Forest. These five recreation opportunity classes are briefly described as follows:

Primitive—This setting is large, remote, wild, and predominantly unmodified landscapes. There is no motorized activity and little probability of seeing other people. Primitive settings are

managed for quiet solitude away from roads, people, and development. There few, if any facilities or developments. Most of the primitive settings coincide with designated wilderness boundaries and recommended wilderness areas.

Semiprimitive nonmotorized—The semiprimitive nonmotorized settings include areas of the Forest managed for nonmotorized use. Mechanized transport such as mountain bikes 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 settings, but they also offer opportunities for exploration, challenge, and self-reliance.

Semiprimitive motorized—This setting is managed for backcountry motorized use on designated routes. 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 transport 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 primitive or semiprimitive nonmotorized areas.

Roaded natural—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 generally well defined in this setting and can typically accommodate passenger car travel. System roads also provide access to other recreation opportunity spectrum settings of semiprimitive motorized, semiprimitive nonmotorized, and primitive areas.

Rural—This setting represents the most developed recreation sites and modified natural settings on the Forest. Facilities are designed primarily for user comfort and convenience.

The existing recreation opportunity spectrum is based on modeling of travel routes and terrain. Recreation opportunity spectrum classes on the Forest were mapped for summer and winter seasons to address the changes in motorized and nonmotorized opportunities during these seasons.

Summer recreation opportunity spectrum

As shown in table 100, the three largest summer recreation opportunity spectrum classes on the Forest are primitive (48 percent), roaded natural (25 percent), and semiprimitive nonmotorized (24 percent). Refer to figure 1-52 for a map of the existing summer recreation opportunity spectrum.

Combining the two nonmotorized classes (primitive and semiprimitive nonmotorized), 72 percent of the Forest is in a nonmotorized setting. This is primarily because of three designated wilderness areas (Bob Marshall, Great Bear, and Mission Mountains) and large amounts of inventoried roadless areas (478,757 acres) on the Forest. Combining the motorized classes (semiprimitive motorized, roaded natural, and rural), 28 percent of the Forest is in a motorized setting.

Winter recreation opportunity spectrum

As shown in table 100, the three largest winter recreation opportunity spectrum settings on the Forest are primitive (48 percent), semiprimitive motorized (34 percent), and semiprimitive nonmotorized (14 percent). Refer to figure 1-53 for a map of the existing winter recreation opportunity spectrum.

As shown in table 100, there is a shift in recreation opportunity spectrum settings between summer and winter. The semiprimitive nonmotorized and roaded natural settings shift to semiprimitive motorized. The roaded natural setting decreases because most Forest roads are not plowed and therefore are not open in the winter, providing a semiprimitive motorized setting. The semiprimitive

nonmotorized setting decreases because there are more areas open to motorized over-snow vehicles across the Forest.

Combining the two nonmotorized classes (primitive and semiprimitive nonmotorized), 62 percent of the Forest is in a nonmotorized setting. Combining the motorized classes (semiprimitive motorized, roaded natural, and rural), 38 percent of the Forest is in a motorized setting.

Table 100. Existing summer and winter recreation opportunity spectrum settings on the Forest

Recreation Opportunity Spectrum	Primitive (percent)	Semiprimitive nonmotorized (percent)	Semiprimitive motorized (percent)	Roaded Natural (percent)	Rural (percent)
Summer	48	24	3	25	< 1
Winter	48	14	34	4	< 1

Developed recreation sites

Developed recreation sites provide much of the infrastructure necessary for the enjoyment of a wide variety of recreation activities in the analysis area. The Forest Service definition of developed recreation site is a recreation site on NFS lands that has a development scale of 3, 4, or 5. See the glossary for the full definition, which includes development scale delineation.

Table 101 identifies the number of Forest Service recreation sites on the Forest by categories of developed recreation sites. In addition to specific categories such as campgrounds or trailheads, the other developed recreation category includes day-use sites such as boat and fishing facilities and administrative sites such as cabin rentals.

Table 101. Number of Forest Service developed recreation sites on the Forest

Site Type	Total Sites
Boating Site	19
Campground	22
Fishing Site	1
Group Campground	1
Group Picnic Site	1
Interpretive Site	2
Lookout/Cabin	13
Observation Site	1
Picnic Site	5
Ski Area Nordic	1
Snow Park (Snowmobile)	2
Swimming Site	2
Trailhead	10
TOTAL	80

The Forest also has two privately developed ski resorts under permit with the Forest Service that provide a developed recreation opportunity, primarily for alpine winter activities. Refer to table 102 for downhill skier visits conducted under Forest special-use permits from 2003 to 2013 and to the Flathead assessment (USDA, 2014a) for additional information on use numbers.

Table 102. Downhill skier visits conducted under the Flathead National Forest special-use permits from 2003 to 2013 (source: Special-use database, retrieved Dec. 19, 2014)

Year	Whitefish Mountain Resort	Blacktail Mountain	Visitor Days
2003	235,018	30,887	265,905
2004	258,738	31,051	289,789
2005	213,409	19,191	232,600
2006	304,366	37,356	341,722
2007	260,278	40,215	300,493
2008	296,708	41,657	338,365
2009	280,484	36,815	317,299
2010	282,933	34,733	317,666
2011	318,222	40,641	358,863
2012	294,261	42,271	336,532
2013	322,589	42,516	365,105

The draft NCDE grizzly bear conservation strategy was written by and is applicable to multiple land management agencies, and therefore the definition of a developed recreation site varies from the standard Forest Service definition and applies only to the NCDE management zones. Throughout this document, the phrase (NCDE definition) follows the phrase “developed recreation site(s)” when referring to the NCDE definition. If (NCDE definition) does not follow the phrase developed recreation site, then the phrase is referring to the Forest Service definition of a developed recreation site. See the glossary for both definitions of developed recreation site.

Forest plan standard FW-STD-REC-01 applies to overnight developed recreation sites, defined as follows: “Developed recreation sites on National Forest System 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). [NCDE]”

Table 103 shows the number of developed recreation sites (NCDE definition) by category within the primary conservation area on the Forest. The largest category is trailheads that primarily provide day-use opportunities but sometimes have overnight facilities and are counted as overnight developed recreation sites (NCDE definition). The second largest category is day-use sites such as picnic areas, boating sites, and fishing sites. There are 63 campgrounds, 63 recreation residences, and 20 overnight sites/buildings that are considered overnight facilities. Note that these are not all owned by the Forest Service; but some are under special-use permits (e.g., recreation residence, lodges). Administrative sites are agency-owned buildings such as bunkhouses, and work centers.

Table 103. Number of developed recreation sites (NCDE definition) by category on the Forest within the primary conservation area

Area	Developed campgrounds	Day-Use Sites	Trailheads ^a	Administrative sites	Overnight sites/buildings	Residences
Primary conservation area	63	73	198	52	20	63

- a. The NCDE definition of developed sites includes trailheads; the Forest Service definition of developed site does not generally include trailheads unless they are specifically designed for overnight camping or have associated improvements such as a stock corral. Thus, the number of trailheads under the NCDE definition of developed sites (198) is much larger than the number of trailheads under the Forest Service definition (10).

Table 104 shows the capacity of overnight developed sites within the primary conservation area.

Table 104. Capacity of overnight developed sites (NCDE definition) on the Forest within the primary conservation area

Site Type	Capacity ¹
Campgrounds	552
Cabins	48
Residences	63
Rooms in Lodges	13
Bunkhouses	7

- a. In the NCDE, measurement of capacity varies by site type. Campground capacity is defined as the number of sites in the campground; cabins and residences as the number of cabins and residences; lodge capacity as the number of rooms; and bunkhouses as the number of bunkhouses.

Dispersed recreation

Dispersed recreation consists of those activities that take place *outside* of developed recreation areas. Dispersed sites generally do not have fees associated with them and have little or no facilities such as toilets, tables, or garbage collection.

Over two thirds of Forest visitors come to the Forest to engage in dispersed activities. Once on the Forest, according to 2015 monitoring, 38 percent of visitors participate in dispersed recreation (USDA, 2017). Types of dispersed activities that occur on the Forest include, but are not limited to, camping, hiking, fishing, skiing, hunting, gathering huckleberries, horseback riding, river use, and snowmobiling. The Forest's motor vehicle use map indicates concentrated dispersed areas where visitors park in order to camp, fish, hunt, hike, etc.

Cross-country motor vehicle travel is prohibited except when authorized in certain areas and on roads and trails open to motorized vehicles. These areas, roads, and trails are shown on the Flathead National Forest motor vehicle use map for each district. The motor vehicle use maps also show where limited cross-country travel is allowed solely to access a dispersed camping site.

In the winter, recreation staging (parking) becomes concentrated because many roads are closed by snow. Access to over-snow recreation depends on the major routes that are plowed throughout the season. Both motorized and nonmotorized uses become concentrated in the frontcountry areas. Once in the backcountry, winter use is often more dispersed since more acres are open to motorized use (an increase from 3 to 34 percent of the Forest in semiprimitive nonmotorized, and the use is not as limited in the winter to designated routes as it is in the summer).

There are a large number of caves and related geologic features on Forest lands. Caving and rock-climbing are popular recreational activities in some areas and may increase in the future, but these activities require specialized training and/or equipment and they are not likely to increase as rapidly as other types of recreation. Cave resources are both fragile and non-renewable, and special considerations are required to provide resource protection and recreational opportunities. On Federal lands, the Federal Cave Resources Protection Act of 1988 (102 Stat. 4546; 16 U.S.C. § 4301-4309) provides for the protection and preservation of caves.

There are 45 “significant caves” (see glossary) and over one hundred nonsignificant caves on the Forest. A significant cave is a cave located on National Forest System lands that has been determined to meet the criteria in § 290.3(c) or (d) and has been designated in accordance with § 290.3(e). A significant cave has one of the following features, characteristics or values: biota, cultural, geological/mineralogic/paleontologic, hydrologic, recreational, or educational or scientific.

Although the majority of caves on the Forest are not accessible to humans for much of the year, one cave that is very accessible has been vandalized in the past, requiring installation of a protective door. This cave requires a permit to enter. Caves in designated wilderness are not signed or marked on the Forest visitor map. Refer to “Cliff, cave, scree, and rock habitats” in section 3.7.4 for additional information about caves and their use by wildlife.

Recreational use

National visitor use monitoring

A national visitor monitoring program takes place across the entire NFS every five years in which each Forest monitors its recreational use through exit surveys of visitors. The national visitor use monitoring program provides science-based estimates of the volume and characteristics of recreation visitation to the NFS. The Flathead National Forest last collected data in 2015, and this data is shown in table 105 and discussed in the narrative. The table displays visitation results for the Forest, the year it was sampled, recreation visits, wilderness visits, percentage of visitors living within 100 miles of the Forest, and percentage of visitors from Flathead County (USDA, 2017). As shown in table 105, the Flathead National Forest serves primarily a local area, with the most visitation from within 100 miles (83 percent of visitors), although about 10 percent of visitors travel over 500 miles to visit the Forest. A sizeable number of users of the Forest (70 percent) visit the Forest more than five times a year. Out of the total visits to the Forest, most visitors (95 percent) use areas of the Forest outside of designated wilderness.

Between 2010 and 2015, the total number of visits reported to the Forest increased by 213,000 while visits to designated wilderness areas decreased by 4,000. The percentage of visitors that live within 100 miles of the Forest increased from 75 percent to 83 percent, and visitors from Flathead County increased from 70 percent in 2010 to 79 percent in 2015. The recession in the United States occurred between 2007 and 2009, with the recovery period 2009 to 2011; thus, the 2010 visitor use data was collected during the recovery period, which influenced recreational activities. Since this data reflects only three points in time and survey protocols evolved between each round of surveys, it is not feasible to represent this data as a trend.

Table 105. Flathead National Forest recreational visits, wilderness visits, and percentage of visitors living within 100 miles, and percentage of visitors from Flathead County for the years 2015, 2010, and 2005 (source: (USDA, 2017))

Year sampled	Recreational visits	Wilderness visits (% of total recreation visits)	Visitors living within 100 miles of forest (%)	Visitors from Flathead County (%)
2015	1,098,000	54,000 (5)	83	79
2010	885,000	58,000 (7)	75	70
2005	852,000	20,000 (2)	73	75

Visitor use

Main recreational activities

Figure 69 represents the Forest visitor's main activity which is the reason the visitor came to the Flathead National Forest. Visitors then identified how many hours spent participating in that main activity during their visit (see table 101). Most Forest visitors participate in several recreational activities during each visit in addition to their main activity. For example, a visitor may come to the Forest to camp at one of the campgrounds (main activity), but they may participate in other activities such as swimming, relaxing, and viewing scenery.

As shown in figure 69, the top four main activities for Forest visitors in 2015 were downhill skiing (37 percent), hiking/walking (11 percent), viewing natural features (9 percent) and fishing (6 percent). These four activities make up over 63 percent of total activities on the Forest. Five years earlier, in 2010, the following were the main activities visitors came to the Forest: downhill skiing (29 percent), hunting (17 percent), hiking (12 percent), and viewing natural features (6 percent).

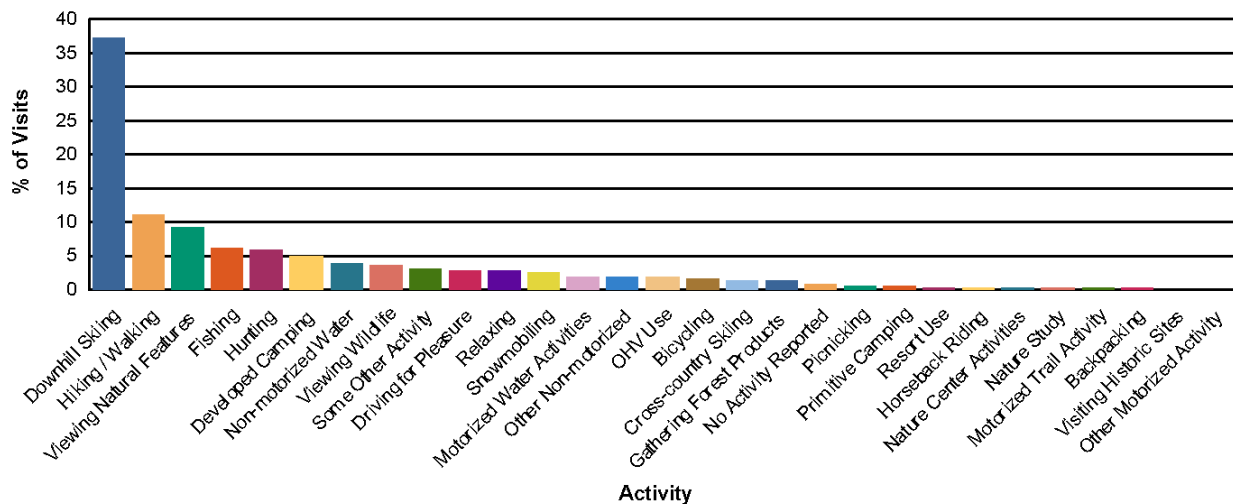


Figure 69. Percentage of visits by activity in 2015 on the Flathead (USDA, 2017)

Participation rates by activity are shown in table 106. As an example, this table shows that 32 percent of visitors identified viewing natural features as a recreational activity in which they participated but only 6 percent of visitors identified it as their main activity (figure 69) during their Forest visit.

Table 106 compares the top activities by participation rate reported in the 2010 and 2015 reports. Viewing natural features went from first in participation in 2010 to second in 2015, downhill skiing went from fifth in participation to first, and relaxing went from third in participation to fifth. Generally, the top 10 activities by percentage participation in 2010 were still within the top 10 activities in 2015, although gathering forest products and nature study activities fell off the top ten activities and were replaced by developed camping and other nonmotorized activities.

Table 106. Top 10 activities by participation rate on the Forest, 2010 and 2015

2010 Top 10 Activities	Participation (%)	2015 Top 10 Activities	Participation (%)
1. Viewing Natural Features	42.2	1. Downhill Skiing	37.7
2. Viewing Wildlife	35.8	2. Viewing Natural Features	31.8
3. Relaxing	33.7	3. Hiking/Walking	26.5
4. Hiking / Walking	33.5	4. Viewing Wildlife	21.7
5. Downhill Skiing	30.1	5. Relaxing	20.4
6. Driving for Pleasure	20.3	6. Driving for Pleasure	11.9
7. Hunting	18.0	7. Fishing	9.3
8. Nature Center Activities	12.2	8. Developed Camping	8.7
9. Fishing	11.7	9. Hunting	6.7
10. Gathering Forest Products	9.4	10. Other Nonmotorized	5.8

Source: (USDA, 2017)

Access

Travel routes include NFS roads and trails. Table 107 shows the miles of wheeled motorized access routes and areas open for travel (year-round or seasonally) and are based on the motorized baseline density. Open motorized access routes and areas for wheeled vehicles are further distinguished by the miles within the primary conservation area and the miles outside the primary conservation area but within zone 1 (within and outside of the demographic connectivity area). A few designated areas (500 acres total) on the Forest are open to wheeled motorized use.

Table 107. Miles of Flathead National Forest open roads and motorized trails for wheeled vehicles, within the primary conservation area (PCA) and within zone 1 both within and outside the demographic connectivity area (DCA)

Area	Open Roads (miles)	Motorized Trails (miles)	Open for Travel (acres)
Flathead National Forest	1,427	226	501
PCA within the Forest	818	120	500
Zone 1, within DCA	212	16	0
Zone 1, no DCA	357	86	1

See section 3.12, particularly subsection “National Forest System Roads,” for detailed information on NFS roads.

Trails

About 2,220 miles of system trails on the Flathead National Forest are documented in the national infrastructure database, which is the official database for the Forest Service. There are about 1,107 miles of trails located outside of designated wilderness areas and about 1,115 miles within designated wilderness areas. In the last five years, the Forest maintained about 1,000 miles of trails per year and improved/reconstructed an average of 30 miles of trails.

Table 108 shows the total miles of summer trails for the different types of allowable uses. Trails can have multiple types of allowable use on them, so many trails are duplicative in this table and cannot be totaled.

Table 108. Allowed summer trail use on the Flathead National Forest, in miles, as of 2015

Mechanized transport	Hiking	Pack and Saddle	Wheeled Motorized
836	2,053	2,012	226

Source: Flathead National Forest GIS layer and INFRA data, Sept. 18, 2015.

Motorized over-snow vehicles

Areas suitable for motorized over-snow vehicle use on the Flathead National Forest were determined by the winter use provisions of the Flathead's Winter Motorized Recreation Plan (USDA, 2006), which is amendment 24 to the 1986 forest plan. Areas were identified as suitable and not suitable for motorized over-snow vehicle use, including four late-season (outside of grizzly bear denning season) areas within the primary conservation area (Canyon Creek, Challenge-Skyland, Lost Johnny, and Six Mile areas as identified in amendment 24) where motorized over-snow vehicle use is allowed during April and May (see figure 1-46).

In addition to these late-season areas, there are route corridors in the North Fork and Salish geographic areas with a 200-foot corridor (100 feet on either side of the road) that are designated as open yearlong to over-snow vehicle use, conditions permitting. Because these are linear features, these routes are described in *miles* (for routes) and *acres* (for areas) in table 109.

The Flathead National Forest and Montana Fish, Wildlife and Parks monitor motorized over-snow vehicle use, as well as known grizzly bear den locations and grizzly bears emerging from their dens, and report this information to the USFWS. The agencies have not detected any conflicts due to motorized over-snow vehicle use on the Flathead National Forest thus far. Motorized over-snow vehicle use is suitable on about 31 percent (753,497 acres) of the Flathead National Forest. Table 109 shows motorized over-snow vehicle use according to the three separate seasons (denning season for grizzly bears, late spring season, and yearlong as conditions permit) across the Forest as well. These numbers reflect the Flathead National Forest Winter Motorized Recreation Plan, or amendment 24; any differences in acres and miles are due to GIS mapping realignments and updates to the database and not because of changes in routes or areas on the ground.

A correction was made to amendment 24 to the forest plan motorized over-snow suitability map to reflect the amendment 24 decision that designated intermingled private and NFS lands in the North Fork suitable for motorized over-snow vehicle use. These had been incorrectly mapped as not suitable for motorized over-snow vehicles use on the Forest's over-snow vehicle use maps. As a result, these additional 2,122 acres are now suitable for motorized over-snow vehicles for all alternatives in this analysis, which reflects the existing condition.

Table 109. Miles and acres of motorized over-snow vehicle routes and areas on the Forest by season allowed¹

Season When Use Is Allowed	Motorized Over-Snow Vehicle Routes in Miles	Motorized Over-Snow Vehicle Areas in Acres (Percent)
Dec. 1 to March 31	295 miles	459,255 acres (19%)
April 1 to Nov. 30 ²	623 miles	53,905 acres (2%)
Yearlong ³	1,046 miles	240,337 acres (10%)

1. Numbers in this table reflect the Flathead National Forest Winter Motorized Recreation Plan (amendment 24); differences in acres and miles are due to GIS mapping realignments and updates to the database.

2. Routes and areas are open for a portion of this time period, snow conditions permitting. In addition, they are open December 1 to March 31.

3. Yearlong routes are open to motorized over-snow vehicle use, conditions permitting.

3.10.3 Environmental consequences

Alternative A—No action

Recreation opportunity spectrum

The existing recreation opportunity spectrum is described above under the “Affected environment” section. Refer to table 100 for the recreation opportunity spectrum class allocation.

Recreation

Recreational use is expected to increase in the analysis area. The capacity of developed campgrounds in many of the campgrounds is reached during peak time periods (July and August weekends). Use of dispersed recreation (recreation outside of developed sites) may increase as developed sites reach capacity. The existing 80 developed sites on the Flathead National Forest would be retained, and there would not be limits on future development other than those resulting from budget limitations. Dispersed recreation opportunities would continue to be available.

Focused recreation areas (management area 7 in the draft plan) were not a management area in the 1986 forest plan. A comparison of management areas from the 1986 forest plan (alternative A) with alternatives B modified, C, and D has been developed. The 1986 forest plan generally included developed recreation sites, downhill ski resorts, and Nordic ski areas such as Round Meadow in management area 7. Alternative A includes approximately 5,655 acres of recreation areas that are similar in character to focused recreation management area 7.

Access

See the “Access” subsection in section 3.10.2 for a description of alternative A existing conditions for motorized over-snow vehicle use.

The 1986 forest plan components under alternative A created management requirements for additional closures and reclamation of roads and motorized trails. Approximately 518 miles of roads may need to be reclaimed in order to fully meet amendment 19 numeric objectives in each bear management subunit, unless site-specifically amended (see final EIS section 3.7.5 for more details). This could affect recreational activities that depend on roads either to access NFS lands by vehicle or to engage in activities that occur adjacent to roads, such as dispersed car camping. Because these roads would not be passable by vehicle, the type of use that could occur on them would be nonmotorized, but it could also include mechanized transport such as bicycle use.

For example, one scenario that would move towards fully implementing amendment 19 grizzly bear security requirements for the Lion Creek bear management subunit would be to close Van Lake Road (NFS Road 9882), which would eliminate motorized access to Van Lake and the campground there (Ake, 2015).

Additionally, 57 miles of trails would no longer allow wheeled motorized use (see table 110). This figure is an estimated programmatic assessment of the number of miles needed to meet amendment 19 requirements. The actual number might be higher or lower depending upon changing access conditions on adjacent lands and the site-specific factors that must be considered when evaluating access and grizzly bear habitat needs. Amendment 19 does not apply to portions of the Salish geographic area (e.g., west of Highway 93 or subunits where NFS lands are minimal) (see section 3.7.5 for more details); therefore, road and trail motorized use would not be reduced in that area.

If the estimated 518 miles of roads are closed and/or reclaimed, this could cause a shift in the recreation opportunity spectrum classes in these areas from a roaded natural to a semiprimitive nonmotorized experience.

Table 110. Bear management subunits on the Flathead National Forest and the estimated miles of wheeled motorized trails that need to be closed to fully meet the requirements of amendment 19

Bear Management Subunit Name	Estimated miles of wheeled motorized trails that need to be closed to meet amendment 19 standards
Peters Ridge	28 miles
Swan Lake	27 miles
Skyland Challenge	1 mile

This estimated reduction in wheeled motorized trails could reduce the current motorized trail system by 57 miles, resulting in a total of 171 miles of wheeled motorized trails on the Forest. Wheeled motorized trails would then comprise about 8 percent of the system trails on the Forest. Wheeled motorized use would be concentrated on the 171 miles of trails, which could cause negative user experiences due to crowding at trailheads and on the trails. Some Forest users might be displaced to other areas that allow wheeled motorized use. The majority of wheeled motorized use would occur in the Salish Mountains geographic area which, includes the Blacktail Wild Bill Off-Highway Vehicle Trail System and trails on the Tally Lake Ranger District; and the Hungry Horse geographic area, which includes the Cedar Flats Off-Highway Vehicle Area and the Hungry Horse Off-Highway Vehicle Area. The majority of wheeled motorized use would be in low-elevation and roaded areas and would not provide the higher-elevation backcountry experience.

For example, a possible scenario to meet amendment 19 security requirements for the Peters Ridge bear management subunit could close all motorized trails and the only access to the Alpine 7 trail would be from the Hungry Horse Reservoir side (Ake, 2015).

Although this alternative would provide both motorized and nonmotorized recreational opportunities as well as opportunities for mechanized transport (e.g., mountain bikes) and motorized over-snow vehicle use, there would be a 25 percent reduction in wheeled motorized trails on the Forest.

The Forest's trail system would increase by roughly 25 miles because trailheads most likely would be relocated to where roads end, and to meet amendment 19 security requirements they might be nonmotorized, which could increase nonmotorized trails on the Forest's trail system.

Alternatives B modified, C, and D effects

Recreation opportunity spectrum

The desired recreation opportunity spectrum varies by alternative, in part based on changes in management area allocation. Differences in management area allocation by alternative have a direct effect on acres of recreation opportunity spectrum classes. Management areas in which the allocation of recreation opportunity spectrum classes changes by alternative are primarily 1b, 5a, 5b, 5c, and 5d, as well as 7.

Visitor use is expected to continue to increase regardless of the alternative selected. Management actions can be taken to reach the desired recreation opportunity spectrum settings, as described in

chapter 2 of the forest plan (see the “Summer Recreation Settings” and “Winter Recreation Settings” subsections of the “Sustainable Recreation” section) and depicted in figures B-19 to B-24, the desired recreation opportunity spectrum maps for all alternatives, both summer and winter.

The desired recreation opportunity spectrum is used to show the general effect of alternatives to recreation settings and opportunities across the Forest.

Table 111 displays the allocation of the summer recreation opportunity spectrum and table 112 the winter recreation opportunity spectrum for each alternative (refer to figures B-19 to B-24). In winter compared to summer, a shift from roaded natural to semiprimitive motorized normally occurs because most Forest Service roads are not plowed. There is also a decrease in semiprimitive nonmotorized acreage because there are areas open to motorized over-snow vehicle use across the Forest, creating a semiprimitive motorized setting.

In summer and winter, the nonmotorized recreation opportunity spectrum classes (primitive and semiprimitive nonmotorized) are the highest under alternative C. This is because of this alternative’s increase in recommended wilderness and decrease in management areas 5b and 5c compared to the other alternatives. Alternative D has the fewest acres in the nonmotorized recreation opportunity classes because of reduced acres allocated to recommended wilderness and an increase in allocation to management areas 5b and 5c. The summer and winter total nonmotorized recreation opportunity classes remain very similar under alternative B modified compared to under alternative A, with a slight decrease under alternative B modified in the summer and a slight increase in the winter.

Conversely, the summer and winter motorized recreation opportunity classes (semiprimitive motorized and roaded natural) are higher under alternative D and lower under alternative C compared to under alternative A. Alternative D provides the most motorized recreation opportunity setting, and alternative C provides the least. The summer and winter total motorized recreation opportunity spectrum settings remain similar under alternative B modified compared to under alternative A, with a slight increase under alternative B modified in the summer and a slight decrease in the winter.

Table 111. Percentages of desired summer recreation opportunity spectrum classes on the Flathead National Forest by alternative

Alternative	Primitive (%)	Semiprimitive nonmotorized (%)	Semiprimitive motorized (%)	Roaded Natural (%)	Rural (%)
A	48	24	3	25	< 1
B modified	53	16	2	29	< 1
C	66	9	1	24	< 1
D	45	13	8	34	< 1

Table 112. Percentages of desired winter recreation opportunity spectrum classes on the Flathead National Forest by alternative

Alternative	Primitive (%)	Semiprimitive nonmotorized (%)	Semiprimitive motorized (%)	Roaded Natural (%)	Rural (%)
A	48	14	34	4	< 1
B modified	53	11	32	4	< 1

C	66	5	25	4	< 1
D	45	16	34	5	< 1

Effects common to all action alternatives

Recreational use is expected to increase in the analysis area. With restrictions on new overnight development (NCDE definition) within the primary conservation area, the number and capacity of developed recreation sites (NCDE definition) on NFS lands that are designed and managed for overnight use by the public during the non-denning season shall be limited to one new developed recreation site per decade per bear management unit, or one increase in the overnight capacity at one site per decade per bear management unit above the baseline (see glossary), with listed exceptions. A change in the number or capacity of developed recreation sites might be offset by an equivalent reduction at another site or sites in the same bear management unit. Overnight developed recreation sites (NCDE definition) on the Forest include campgrounds, cabins, recreation residences, and lodges. Overnight developed recreation sites might reach capacity, with limited ability to expand to meet increased demand within the primary conservation area. Outside of the primary conservation area, the limitation on overnight developed recreation sites is not applied. See table 113 for a summary of recreation capacity within the primary conservation area.

Table 113. Current capacity of developed recreation sites in the primary conservation area on the Flathead National Forest

Site Type	Capacity ¹
Campgrounds	552
Cabins	48
Residences	63
Lodges	13
Bunkhouses	7

1. In the Northern Continental Divide Ecosystem, measurement of capacity varies by site type. Campground capacity is defined as the number of sites in the campground; cabins and residences as the number of cabins and residences; and lodges as the number of rooms.

There are 12 bear management units within the primary conservation area on the Forest. Out of these 12, 6 are shared with other Forests or agencies (e.g., National Park Service). Depending on decisions of the other Forests or agencies within the shared bear management units, the Forest has the ability to increase 6 to 12 overnight developed recreation sites in the primary conservation area.

In addition, there are certain exemptions to the one increase in overnight developed recreation (NCDE definition) sites to one per bear management unit per decade that allow the Forest to increase overnight developed recreation sites:

- allowing a change in the number or overnight capacity of developed recreation sites that is necessary to comply with Federal laws (e.g., Federal Rehabilitation Act);
- allowing a change in the number or overnight capacity of developed recreation sites that is necessary to address grizzly bear-human conflicts, resource damage, or human safety concerns;
- allowing an increase in the number of developed recreation sites due to the Forest Service acquiring lands with developed recreation sites.

In addition, if the Forest proposes any further increase in the number or capacity of developed recreation sites that are designed and managed for overnight use in the bear management unit (i.e., more than one per decade), such an increase must be offset by a reduction of an equal amount at another recreation site(s) in the same bear management unit so that there is no net increase in overnight capacity in the bear management unit. This allows some flexibility to increase developed recreation sites that have reached capacity while decreasing sites that may be less used and not meeting capacity.

On the Forest, one developed ski area (Whitefish Mountain Resort) is located in the primary conservation area, and it does not have overnight capacity on NFS lands. There have been no known grizzly bear mortalities at the existing ski area. The Whitefish Mountain Resort special-use permit has mitigation measures in place to reduce grizzly bear-human conflicts, and these would continue to apply under all alternatives.

There is no limitation to dispersed recreation sites, which have minimal to no agency improvements that are made out of manmade materials. Dispersed sites include, but are not limited to, outfitter camps or other primitive camping spots along a road, trail, or waterbody or at a road closure.

Some people may shift their uses to areas not occupied by grizzly bears or rely on uses that give them an increased sense of security, such as using a hard-sided camper, staying at a developed campground or renting a cabin, day hiking on heavily used trails, or relying upon guided services. For other people, recreating in bear country may be an added attraction and an allure of wild country.

As recreational use increases and developed recreation sites are constrained, users may adapt as developed recreation sites reach capacity. Potential outcomes of restricting developed site capacity are

- change in use from developed recreation sites to dispersed recreation sites;
- change in the time visitors use the areas to a different time of year when use is lower, such as spring or fall;
- change in use to other areas outside the primary conservation area on the Flathead National Forest, on the amendment Forests, or off-Forest in areas where use is lower;
- use of the national reservation system at campgrounds that have reached capacity to assist users to reserve sites at specific campgrounds that have reached capacity; and
- creation of new developed sites on private land by private enterprise to accommodate increasing use.

Developed recreation sites

See the section above titled Effects common to all action alternatives.

Focused recreation areas (management area 7)

Focused recreation areas typically feature certain types of recreation activities that take place near or at large lakes or reservoirs, developed ski areas or year-round resorts, large campgrounds, or trail systems. Focused recreation areas recognize a variety of sustainable recreation settings and opportunities throughout the year on the Forest. Recreational use is already occurring in many of these areas, but in some cases the use would be enhanced through an emphasis on trail, road, and facility maintenance; increased visitor contact and education; and/or the development of additional

recreation opportunities such as mountain bike trails, hiking trails, or boat ramps. These areas would accommodate existing as well as additional recreation growth and are intended to benefit local economies by having robust recreation settings that are responsive to changing conditions and changing use patterns and demands. This management area provides a focal point not only for existing recreation but also for new and/or enhanced recreation activities.

Additional motorized and nonmotorized recreation opportunities not specifically designated as management area 7 (focused recreation) are also broadly available across the Flathead National Forest, such as hiking, horseback riding, mountain biking, and motorized over-snow vehicle use. Although table 109 lists the featured activities at particular focused recreation areas, other activities not listed may also take place in these areas, such as dispersed camping, mountain biking, and winter nonmotorized activities.

Table 114 lists the focused recreation areas for each action alternative along with a brief description of featured activities and acres. Alternatives B modified and D have 21 areas in management area 7 covering about 61,000 acres (about 3 percent of the Forest). There are very slight changes in acres between alternative B modified and alternative D due to better mapping of four focused recreation areas. Alternative C has 14 areas totaling about 31,200. Alternatives B modified and D have the highest number of sites and acreage, and alternative C has less than B and C in management area 7.

Table 114. Focused recreation areas (management area 7) by action alternative

Focused Recreation Area	Featured Activities	Alternative B modified (acres)	Alternative C (acres)	Alternative D (acres)
Ashley Lake (two sites: north and south)	Developed recreation, including camping, fishing, and boating	103	103	103
Big Creek Campground and Work Station	Developed recreation, including camping, boating, fishing, and hiking; youth conservation education	57	57	57
Big Mountain (includes Whitefish Mountain Resort)	Downhill skiing, cross-country skiing, hiking, mountain biking, conservation education	4,111	4,111	4,111
Blacktail Mountain Ski Area	Downhill skiing, hiking, mountain biking	911	891	891
Blacktail Wild Bill Off-Highway Vehicle Trail System	Motorized trail riding	4,966	4,966	4,966
Blacktail-Foy's Trails	Hiking, mountain biking, horseback riding close to communities; includes Lakeside to Blacktail and Foy's to Blacktail trails	1,027	N/A	1,047
Camp Misery Trailhead	Access to Jewel Basin hiking area	330	N/A	330
Cedar Flats Off-Highway Vehicle Area	Motorized trail riding	2,008	2,008	2,008
Crane Mountain	Mountain biking and dispersed recreation	1,023	1,023	1,023

Focused Recreation Area	Featured Activities	Alternative B modified (acres)	Alternative C (acres)	Alternative D (acres)
Crystal-Cedar Area	Dispersed nonmotorized recreation, hiking, mountain biking, and horseback riding close to communities	13,395	NA	13,396
Holland Lake Campground	Developed recreation including camping, boating, fishing, and hiking	593	593	593
Hungry Horse Off-Highway Vehicle Area	Motorized trail riding	71	71	71
Hungry Horse Reservoir	Developed and dispersed recreation, including camping, boating, fishing, and hiking	13,113	13,113	13,113
Ingalls Mountain	Single-track wheeled motorized use on existing open roads; n	2,431	N/A	2,431
Krause Basin	Nonmotorized trails and limited motorized trails on designated and signed routes	1,566	N/A	1,578
Lion Lake	Day-use picnic site, hiking, fishing, and, swimming	99	99	99
Nordic groomed ski areas	Groomed cross-country ski areas: Round Meadow, Essex, and Blacktail Mountain	3,906	3,906	3,906
Swan Lake Campground and day-use area	Developed recreation, including camping, boating, fishing, and hiking	95	95	95
Tally Lake Campground	Developed recreation, including camping, boating, fishing, and hiking	159	159	159
Tally Mountain	Mountain bike loop trail opportunities	4,692	N/A	4,692
Werner-Nicola	Dispersed nonmotorized recreation, hiking, mountain biking, and horseback riding close to communities	6,392	NA	6,392

Dispersed sites

Caves

Desired conditions FW-DC-CAVES-01 through 06 and guidelines FW-GDL-CAVES-01 through 03 for cave and karst features protect the cave resource. Caves and karst features provide habitat for wildlife species, particularly bats, that require specialized niches for raising young, roosting, and overwintering. The desired condition to educate cavers about the risk of spreading disease (FW-DC-

CAVES-06) would also help to protect bats. Desired conditions (FW-DC-CAVES-05 and 06) state: “Recreational use or scientific studies in caves/karst features protect and maintain cave-dependent species and paleontological and archaeological resources” and “Educational/informational materials are available to cavers on topics such as reducing impacts of human disturbance on species, ecological conditions associated with caves, and measures cavers can use to prevent the spread of diseases such as white-nose syndrome from cave to cave.”

There is one specific guideline (MA1s-GDL-04) for caves within designated wilderness areas: “To protect wilderness character and cave resources, wilderness caves should not be signed, disclosed on maps, mentioned in brochures, or have monument markers indicating a cave name or number outside of the cave.” Refer to “Cliff, cave, scree, and rock habitats” in section 3.7.4 for additional discussion of environmental consequences and cumulative effects.

Access

Motorized recreation

Motorized use is analyzed in terms of wheeled motorized use and motorized over-snow vehicle use.

Wheeled motorized use is only on designated roads, trails, or areas and varies by alternative based on management area direction, primarily due to designated wilderness, allocation of recommended wilderness management areas, and backcountry management areas. Future suitability for wheeled motorized use is determined by the desired recreation opportunity spectrum as mapped for each alternative. See figures 1-52 to 1-59 for the recreation opportunity spectrum map for each alternative, summer and winter.

The identified suitability for motorized over-snow vehicle use varies by alternative and is mapped in figures 1-42 to 1-45.

An area may be suitable for motorized use, but that does not mean motorized use is allowable everywhere in that setting. Motorized use (by wheeled and/or over-snow vehicles) is restricted to designated trails, roads, and areas as shown on the motor vehicle use maps for the Flathead National Forest. Travel management decisions are separate, project-level decisions that determine the specific areas and routes for motorized recreation consistent with the desired recreation opportunity spectrum as mapped.

Trails

Currently, there are about 2,220 miles of NFS system trails on the Forest; 1,107 miles (50 percent) of trails are located outside of designated wilderness areas and 1,115 miles (50 percent) are within designated wilderness. Outside of designated wilderness, there are 226 miles (10 percent) of wheeled motorized trails on the Forest. Ninety-one percent of the Forest trail system allows pack and saddle use, with 92 percent of trails allowing hiking (some trails are groomed snowmobile trails; these are not considered hiking trails). Conflict between motorized and nonmotorized uses may sometimes occur because there are a few trails on the Forest where both types of uses are allowed (only 10 percent of the Forest trail system allows both wheeled motorized use and nonmotorized use). In addition, not only are there many trails that nonmotorized users may legally use (compared to the number that motorized users can legally use), but motorized trails are clearly marked as such on the district motorized use map and usually by a physical sign on the trail or trailhead, offering nonmotorized users the choice of whether to share that trail with wheeled motorized users or find a substitute, nonmotorized trail.

Under alternatives B modified and C, existing wheeled motorized use and mechanized transport is not suitable in recommended wilderness areas, reducing the amount of motorized opportunity for wheeled motor vehicles. Under alternative C, about 75 miles of trails that allow wheeled motorized use are within recommended wilderness and would need to be closed to this use after site-specific analysis is completed. Under alternatives B modified and D, there would be no change to wheeled motor vehicle use.

Under alternative B modified, due to the suitability plan component for recommended wilderness, about 96 miles of mechanized transport might be closed, and under alternative C about 417 miles of mechanized transport might be closed after site-specific analysis is completed. Alternative D does not have recommended wilderness, so the suitability plan component would not affect mechanized transport under this alternative.

Under alternatives B modified and C, trails open to public motorized use within the Salish demographic connectivity area portion of the Salish Mountains geographic area would not exceed baseline levels, but some additional motorized trail access could occur in zone 1 outside of the Salish demographic connectivity area. This might result in an overall reduction in opportunities for motorized trails under this alternative.

Motorized over-snow vehicle use

For suitability of motorized over-snow vehicle use for each alternative, refer to figures 1-42 to 1-45. These maps show where motorized over-snow vehicle use is identified as suitable and not suitable on the Forest. Where it is identified as not suitable, motorized over-snow vehicle use is not suitable all year long. Where it shows motorized over-snow vehicle use would be suitable, a portion of the areas change suitability based on season: grizzly bear denning season (December 1 to March 31), outside of grizzly bear denning season (April 1 to November 30), routes/roads open to motorized over-snow vehicle use to May 14 (conditions permitting), and roads open yearlong (conditions permitting). Table 115 shows the acres identified as suitable for motorized over-snow use in areas by alternative. This table displays the miles identified as suitable for motorized over-snow vehicle use on routes by alternative. Some suitable areas have routes going through them, and other areas do not. Any nonlinear feature is listed in table 115 as acres. Any linear routes are listed in table 116 as miles.

Currently, motorized over-snow vehicle use is suitable on about 31 percent of the Forest and not suitable on 69 percent of the Forest. The actual use of the 31 percent of the Forest suitable for motorized over-snow use is less as terrain and vegetation also influence where motorized over-snow vehicles can physically go. Vegetation conditions are dynamic over time and change in response to disturbance and succession. Whereas fire may open up dense forest for over-snow use, succession is closing areas to over-snow use in areas suitable for over-snow use. Nonmotorized and non-mechanized transport winter use such as Nordic skiing, backcountry skiing and snow shoeing are allowable on 100 percent of the Forest. Mechanized transport such as fat-tire bikes that ride over snow are not allowed in designated wilderness and are not suitable in recommended wilderness and specific areas on the Forest that have closure orders prohibiting mechanized transport.

As shown in table 115, alternative D has the most overall acres and miles suitable for over-snow vehicle use (approximately 32 percent of the Forest), while alternative C has the least (25 percent of the Forest). This change in suitability between alternatives is because of changes in management area allocation as some management areas have plan components that prohibit motorized over-snow vehicles use, after site-specific analysis is completed. For instance, management area 1b (recommended wilderness) has a suitability plan component in alternatives B modified and C where

motorized over-snow vehicles are not suitable in recommended wilderness; this management area varies in the amount of acres between alternatives B modified and C.

There are four late-season areas (outside of grizzly bear denning season) within the primary conservation area (Canyon Creek, Challenge-Skyland, Lost Johnny, and Six Mile as identified in amendment 24) where motorized over-snow vehicle use is suitable April 1 to Nov 30 (see table 115 and table 116). These late-season areas also includes routes on the Forest, primarily in the Salish geographic area, that allow motorized over-snow vehicle use until May 14. For late-season motorized over-snow vehicle use there is a slight increase in acres suitable under alternative D and a slight decrease under alternative B modified from current. Under alternative C, no acres are suitable for late-season use.

In addition, there are routes and areas that are open yearlong (conditions permitting) to motorized over-snow vehicle use (see table 116). There are route corridors in the North Fork and Salish geographic areas with a 200 foot corridor (100 feet on either side of the road). There are also roads that are open yearlong (conditions permitting) to motorized over-snow vehicle use in the Hungry Horse, Swan Valley, and Middle Fork geographic areas that do not have the 200-foot corridor. There is no change in miles of routes open to motorized over-snow vehicle use under any of the alternatives.

Table 115. Acreage and forestwide percentage of motorized over-snow areas and corridors within the Forest, by season allowed and by alternative

Alternative	Dec. 1 to March 31 acres (percent)	April 1 to Nov. 30 ¹ acres (percent)	Yearlong ² acres (percent)
A	459,255 (19%)	53,905 (2%)	240,337 (10%)
B modified	458,118 (19%)	55,641 (2%)	240,334 (10%)
C	351,740 (15%)	862 (0%)	240,085 (10%)
D	459,198 (20%)	55,556 (2%)	240,337 (10%)

1. These areas are open Dec. 1 to March 31 and are also open for a portion of April 1 to Nov. 30, snow conditions permitting.

2. Yearlong routes are open to motorized over-snow vehicle use during the rest of the year as conditions permit.

Table 116. Miles of motorized over-snow vehicle routes within the Forest, by season allowed and by alternative

Alternative	Dec. 1 to March 31 miles	April 1 to Nov. 30 ¹ miles	Yearlong ² miles
A	295	623	1,046
B modified	295	623	1,046
C	292	623	1,044
D	295	623	1,046

1. These areas are open Dec. 1 to March 31 and are also open for a portion of April 1 to Nov. 30, snow conditions permitting.

2. Yearlong route are open to motorized over-snow use during the rest of the year as conditions permit.

Consequences to sustainable recreation and access from forest plan components associated with other resource programs or management activities

Effects from vegetation management

Commercial timber harvest activities will generally result in road reconstruction and continued application of best management practices on existing NFS roads. New road construction is likely to

be limited and temporary road construction is likely to be used as a more common method for short-term access needs.

Administrative use of gated roads that normally prohibit motor vehicle use yearlong is likely when management activities such as precommercial thinning, invasive weed treatments, or other noncommercial silvicultural treatments are planned.

Because general forest (management area 6) management area allocations are lowest in alternative C, this alternative would generally be expected to result in the least vegetation management activities and a lower amount of road use compared to alternatives A, B modified, and D. Consequently, reduced traffic (i.e., number of vehicles on roads), both commercial and administrative, could be expected. Associated with reduced commercial use is the reduction of road reconstruction and best management practices work. Road maintenance activities would also occur less often since the need for road maintenance is closely tied to use.

Timber harvest has the potential to affect recreation experiences and opportunities in several ways. Short-term effects may include increased noise and dust levels; the sight of landscapes altered by differing types of harvesting; the presence of slash piles and roads reconstructed or constructed for timber sales; conflicts with logging trucks on roads used by other drivers or by bicyclists; and the removal of snow for winter log hauling from roads frequented by winter recreational users. Users may be temporarily displaced to other locations because of log truck traffic, helicopter operations, or the noise from chainsaws.

Alternative A has the highest number of acres in management areas 6a, 6b, and 6c, where most of the timber harvest and other vegetation management activities will take place, followed by alternatives D, B modified, and C, in that order. Refer to table 3 in volume 1 for the proposed management areas and equivalent 1986 forest plan management areas. Refer to table 5 in volume 1 for a comparison of alternatives by actual acres of management area allocation.

Road development for timber management purposes in undeveloped areas has the potential to attract more visitors to the interior of the Forest where access previously has been limited. As use increases, visitors would experience less solitude and remoteness. Primitive and semiprimitive nonmotorized settings could change to semiprimitive motorized and roaded natural settings. Recreational benefits from vegetation management can include new roads and trails and the opportunity to gather firewood, access for hunting, or collecting other forest products such as mushrooms and huckleberries. In many cases, roads constructed for logging operations are then used by recreationists, although these roads typically are closed and/or decommissioned after completion of the timber harvest activity. Depending on resource objectives, some logging roads can be left open to create additional dispersed recreation opportunities.

Effects from fish and wildlife management

Forest plan management direction for recreation that addresses riparian and aquatics resources (e.g., FW-GDL-REC-06) could affect developed recreation facilities by restricting new facilities in the “inner” riparian management zones (see FW-STD-RMZ-01). However, developed recreation facilities may still be constructed outside of the inner riparian management zones. They may also be constructed within the inner riparian management zone if they are a water-related site such as a boat ramp.

Forest plan wildlife management direction (e.g., GA-SM-GDL-01) can affect motorized recreation opportunities. Restrictions that limit types of access and impose seasonal closures during sensitive periods, such as mating, calving, and when animals emerge from dens, can temporarily displace

recreationists to other areas. The Forest's motor vehicle use map limits motor vehicle use to designated routes or areas, yearlong or seasonally, often in response to wildlife and fish needs. Recreational benefits from wildlife management could include increased hunter and wildlife viewer satisfaction as well as maintaining angler satisfaction. The effect on recreation from wildlife management is the same for all action alternatives.

All alternatives have management direction that would continue to support the recovery of the NCDE grizzly bear population. Alternatives differ in the range of future actions that could occur. Alternative A would close and/or reclaim an additional 518 miles of motorized roads (see "road" in glossary). Additionally, 57 miles of motorized trails would be closed to motorized use. Alternatives B modified, C, and D would be required to maintain the baseline (see glossary) access conditions in the grizzly bear primary conservation area and zone 1.

Effects from fire and fuels management

Fuels management activities (e.g., prescribed burning) are likely to continue. Fuels management effects on recreation are similar to the effects described under vegetation management. An increase in fire extent, creating a long-lasting change to the setting, could cause a shift in recreational use. The degree of these effects is difficult to determine and is based on the size and intensity of a wildfire event. Prescribed fire has some level of predictability of time, location, and intensity, which may decrease the short-term impacts on visitors. These effects are common to all alternatives.

Fire suppression actions are also likely to continue and could result in the use of gated roads, as described above. In some cases, roads that are impassible to motor vehicle use (due to revegetation or other restrictive condition) might be opened in order to facilitate suppression actions. These roads would probably be used for the duration of the suppression efforts and post-fire work and then returned to their previous status.

Effects from minerals management

Proposals for exploration and development are driven by external parties and market forces and are regulated by existing mining law. Access and road development (long-term or temporary) is often associated with mineral exploration and development, but a site-specific analysis is required prior to any approval for exploration or development activities.

If any mine reclamation activities occur, they would likely use existing roads. These might be roads that are not currently designated for motor vehicle use. They would probably be used for the duration of the reclamation work and then returned to their previous status.

Recreation could be affected by mineral exploration and extraction in all alternatives. Short-term effects might include noise and visual impacts from open-pit or underground mining operations. Over the long term, effects might include development from a more naturally appearing landscape; new permanent underground or open-pit mines and physical structures; and new roads and road corridors constructed for mining or drilling operations that might change the recreation setting.

The potential for oil and gas development on the Flathead National Forest varies from low to high across the Forest. Portions of the Forest having a high potential for development are lands east of the Great Bear Wilderness and the lands surrounding the western boundary of the Great Bear Wilderness from the town of West Glacier, Montana, to the north to Horse Ridge near Spotted Bear Ranger Station to the south. The rest of the Forest has moderate or low potential for oil and gas leasing. Mineral facilities could affect visitors, depending on the location of development and the setting affected.

Cumulative effects

The analysis area for cumulative effects includes the Flathead National Forest and adjacent public lands, including the Kootenai, Lolo, and Helena-Lewis and Clark National Forests, Glacier National Park, Montana State lands, Flathead and Missoula Counties, and local parks. These public lands provide a wide range of recreation opportunities in addition to those provided by the Flathead National Forest. However, differences in agency missions often result in different types of recreation experiences. The National Park Service tends to manage visitor activities more closely. They provide highly developed and managed visitor facilities as well as offer permitted backcountry opportunities. The other national forests provide opportunities similar to the Flathead National Forest. Montana's State parks typically emphasize particular land features such as a lake and offer related recreation opportunities such as boating, fishing, swimming, and camping. Local and county park facilities are typically oriented towards day users (some offer camping) and more urban recreation opportunities such as soccer fields, picnic shelters, and playgrounds. Flathead National Forest management emphasizes dispersed recreation over developed recreation, although the Forest does have developed recreation sites such as campgrounds. The Forest provides opportunities for a wide variety of recreational activities, from primitive backcountry backpacking to downhill skiing. Adjacent national forests receive recreation visitation similar to that of the Flathead National Forest, but overall recreation visitation is higher in and around the Flathead National Forest due to the proximity of Glacier National Park. In order to address the impacts associated with increased visitations, all public land agencies have employed additional recreation management actions or have installed additional facilities to prevent damage to natural and cultural resources.

Within the planning period (the next 15 years), human population growth—as well as growth in the demand for a variety of recreation settings, experiences, and opportunities—is expected to increase. The Flathead County population has been growing at a far greater rate than the state and national averages, which is likely to continue throughout the life of this plan. A growing population places increasing demands on recreation, which could result in more human concentration and use at existing recreation areas, increased conflicts, increased number of watercraft and off-highway vehicles, and a reduction in the quality of recreation settings. The increasing use of off-highway vehicles may result in increased conflict among motorized and nonmotorized user groups throughout the cumulative effects analysis area. As use increases, compliance with regulations could become a greater challenge as recreational participants increase in number and compete for space and resources. This is likely to result in the greatest impact on the areas close to communities that offer semiprimitive and primitive recreation settings, which emphasize solitude, challenge, risk, unmodified natural environments, and minimal encounters with and/or signs of other users.

As the population of Montana and especially Flathead County increases, the demand for recreational opportunities and open space will likely grow. Land-management agencies will continue to provide a variety of recreation opportunities but are not likely to be able to meet all the demand for every activity desired. All alternatives accommodate a mix of recreation opportunities and settings for recreationists. Alternative C would provide the most nonmotorized settings for both summer and winter, the most primitive settings, and the fewest focused recreation settings compared to alternatives B modified and D. Alternative D provides the most motorized settings for both summer and winter and the most roaded settings on the Forest compared to alternatives B modified and C. Alternatives B modified and D both provide the most focused recreation management areas. Alternative A provides the fewest focused recreation areas.

Motorized recreation opportunities that are road dependent have decreased over the decades due to road decommissioning and closures that have occurred primarily in grizzly bear recovery areas and bull trout watersheds. A total of 787 miles of NFS and non-NFS roads have been decommissioned

between 1995 and 2015. During this time, the Forest has also constructed 19 miles of NFS roads and acquired 411 miles of roads from land acquisitions, for a net reduction of road mileage by 357 miles. The amount of nonmotorized recreation opportunities has increased with these changes; the amount of motorized or road-related recreation opportunities has decreased across the Forest.

Wheeled motorized trail use opportunities have also decreased, and currently 226 miles (10 percent of the trail system) are wheeled motorized trails. It is problematic to say exactly how much wheeled motorized trails existed in 1995 as the trail database capturing this information was just starting to be populated in 1995; therefore, the data for comparison with the current data is incomplete. Considering that past management and regulations regarding off-highway vehicle use (wheeled motorized use) were not as restrictive regarding access, it is likely there were significantly more miles available for motorized opportunities. The cumulative effect of these reductions has led to concentrated use and maintenance needs on remaining trails open to wheeled motorized use as well as the displacing of motorized recreationists who seek opportunities elsewhere.

Motorized over-snow vehicle use has decreased primarily as a result of a settlement agreement and the subsequent amendment 24 (the winter motorized recreation amendment) to the forest plan. Previous areas available to motorized over-snow vehicle use, especially in the North Fork and Swan Valley geographic areas, are no longer available, which concentrates more use on the remaining motorized over-snow vehicle use areas as well as displaces motorized over-snow vehicle users elsewhere.

3.11 Scenery

3.11.1 Introduction

Regulatory framework

Federal law

Organic Administration Act of June 4, 1897 (30 Stat. 11, as amended): This act authorizes the establishment of national forests.

Multiple-Use Sustained-Yield Act of June 12, 1960 (Pub. L.86-517, 74 Stat. 215): This act provides direction to the NFS lands to provide access and recreation opportunities. The act states, “The policy of Congress is that national forests are established and administered for outdoor recreation . . .”

Key indicator

- Percentage of scenic integrity objectives by alternative.

Methodology and analysis process

The Forest completed an inventory of landscape visibility and scenic attractiveness and compiled scenic classes. In 2011, the Forest Service’s Northern Region completed existing scenic integrity mapping at a regional scale.

The scenery management system is a systematic approach to inventorying, analyzing, and monitoring the Forest’s scenic resources. This system recognizes natural disturbance processes such as fire, insects, and disease as part of the dynamic natural landscape and important in maintaining healthy, sustainable, and scenic landscapes. The scenery management system is used in the context of ecosystem management to determine the relative value, stability, resiliency, and importance of scenery; assist in establishing overall resource objectives; and ensure high-quality scenery for future generations.

Major components of the scenery management system are

- scenic character descriptions,
- scenic attractiveness,
- landscape visibility (concern levels, distance zones, and viewsheds),
- existing scenic integrity, and
- scenic classes.

The 1986 forest plan used the visual management system, which was a systematic approach to inventorying, analyzing, and monitoring scenic resources but did not recognize or incorporate natural disturbance processes such as fire, insects, and disease. Alternative A, the no-action alternative, utilizes this system. Table 117 provides a cross-reference of visual management system terminology (based on visual quality objectives) and scenery management system terminology (based on scenic integrity objectives).

Table 117. Cross-reference of terms used in the visual management system (alternative A) and the scenery management system (alternatives B modified, C, and D)

Visual Management System Terminology	Scenery Management System Terminology
Preservation	Very High
Retention	High
Partial retention	Moderate
Modification	Low
Maximum modification	Very Low

Information sources

Information used to conduct the analysis generally comes from spatial information contained in GIS data. See also Moore (2017), which is the Forest's process paper on mapping scenic integrity objectives.

Analysis area

The analysis area includes the viewsheds of Forest lands and non-Forest lands. The temporal scope is the anticipated life of the plan (15 years).

3.11.2 Affected environment (existing condition)

Flathead National Forest scenic character description

Scenic character is defined as the 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. See appendix F of the forest plan for a description of the scenic character by geographic area.

Located in the heart of the northern Rocky Mountains and amidst the mountains and valleys of western Montana, the Forest is part of a large and intact ecosystem that includes Glacier National Park, multiple national forests (Kootenai, Lewis and Clark, Lolo) and other State, Federal and tribal lands. The Forest is part of the Northern Continental Divide Ecosystem as well as part of the Crown of the Continent.

Awe-inspiring natural features serve to delineate the Forest's boundaries. The North and Middle Forks of the Flathead River and the Continental Divide delineate much of its eastern boundary, while to the west the Forest is bounded by the Mission Range, Flathead Lake, the Salish Mountains, and the Whitefish Range. The Forest abuts Canada to the north and the Swan Range and Swan Valley to the south.

Landforms vary greatly, from the magnificent and craggy, rocky peaks of the Mission Range to the more rounded, glacial landforms of the Swan Valley and Salish Mountains. Diversity in geology, elevation, climate, and annual precipitation result in a wide variety of plant life, from lush groves of cedars cloaked in moss to whitebark pine clinging to the tops of windswept mountain ridges. Forest vegetation types occupy over 90 percent of the Forest's landscapes and are dominated by subalpine fir, lodgepole pine, Douglas-fir, western larch, and Engelmann spruce. Grand fir, western white pine, ponderosa pine, and aspen are less common but are also present in portions of the Forest. Green pockets of maple, willow, and birch are scattered across the northern edge of the Bob Marshall Wilderness. Outstanding multi-colored displays of wildflowers in the alpine meadows and high basins are evident in late summer. Dominant scenery attributes include open, park-like conifer

and mixed-conifer forest settings dominated by large trees with a diverse forest canopy and mosaic vegetative patterns, including vivid fall stands of yellow cottonwoods and aspen groves, contrasting with the reds and oranges of the Rocky Mountain maple and huckleberry shrubs.

Elevations generally range from 3,000 to 9,500 feet. The tree line is generally at about 8,000 feet, with alpine vegetation above tree line. Water is abundant, including rivers, streams, lakes, reservoirs, glacial potholes, fens, and bogs. Mean annual precipitation ranges from 20 to 60 inches. Streams flow into the Swan, Stillwater, and the three forks of the world-renowned Flathead River headwaters. These drainages are moderately to deeply incised. They eventually flow into Flathead Lake, the largest freshwater lake west of the Great Lakes. Many other lakes occur in glaciated terrain and at higher elevations. The abundance of water in this landscape adds to the richness of the scenery. Several large and small crystal-clear lake and lush wetland areas are scattered throughout the Forest, creating thick pockets of vegetation and picturesque landscapes. These distinctive Flathead National Forest landscapes that include a variety of landforms, water features, and vegetation are highly scenic. Research shows that people prefer more visually complex scenes to more monotonous ones (Ryan, 2005).

Cultural features are evident across the Forest and include Native American travel routes and cultural sites, log cabins and other physical remains of early Euro-American settlements, and Forest Service ranger stations and fire lookouts. Many of the structures, trails, and sites have retained their historic integrity and add to the area's character and sense of place.

Flathead National Forest scenic attractiveness

Scenic attractiveness is the primary indicator of the intrinsic beauty of a landscape. It helps determine the level of importance of scenic beauty based on perceptions of landform, vegetation patterns, compositions, water, and land-use patterns and cultural features. Landscape elements are rated at various levels of scenic values or attractiveness, and the Forest scenic character descriptions serve as the frame of reference for determining scenic attractiveness.

Scenic attractiveness classifications were determined for the Forest using information describing the landform, elevation, slope, vegetation, and percentage rock outcrop from soil survey of Flathead National Forest area, Montana (Martinson & Basko, 1998).

Table 118 shows the area of the Flathead National Forest within each scenic attractiveness classification. The majority of the Forest lands are distinctive relative to the surrounding landscape. Higher levels of scenic attractiveness occur in landscapes with a greater degree of naturalness, diversity of features, and uniqueness.

Table 118. Acres and percent of the Forest within each scenic attractiveness rating

Scenic Attractiveness	Areas (acres)	Areas (percent)
A Distinctive: Areas of unusual, unique, or outstanding scenic quality	1,751,382	73
B Typical: Areas that provide ordinary or common scenic quality	474,275	20
C Indistinctive: Areas of low scenic quality	165,141	7

Existing scenic integrity

Scenic integrity measures the degree to which a landscape is free from visible disturbances that detract from its natural or socially valued appearance, including any visible disturbances due to

human activities or extreme natural events outside of the natural range of variation. Scenic integrity measures these disturbance effects in degrees of consistency, harmony, dominance, and contrast with the valued scenic character. Scenic integrity uses a graduated scale of five levels. These levels and photographic examples of each are shown in table 119, and table 120 gives the total acreages of each of these levels.

Table 119. Scenic integrity levels and pictorial examples






Scenic Integrity Level	Example
<p>Very high integrity—The valued scenery appears natural or unaltered. Only minute visual disturbances to the valued scenery, if any, are present.</p>	
<p>High integrity—The valued scenery appears natural or unaltered; visual disturbances are present but remain unnoticed because they repeat the form, line, color, texture, pattern, and scale of the valued scenery</p>	
<p>Moderate integrity—The valued scenery appears slightly altered. Noticeable disturbances are minor and visually subordinate to the valued scenery because they repeat its form, line, color, texture, pattern, and scale.</p>	
<p>Low integrity—The valued scenery appears moderately altered. Visual disturbances are co-dominant with the valued scenery and may create a focal point of moderate contrast. Disturbances may reflect, introduce, or “borrow” valued scenery attributes from outside the landscape being viewed.</p>	
<p>Very low integrity—The valued scenery appears heavily altered. Disturbances dominate the valued scenery being viewed, and they may only slightly borrow from, or reflect, valued scenery attributes within or beyond the viewed landscape.</p>	

Table 120. Existing scenic integrity of the Forest

Scenic Integrity	Area of Forest (%)
Very High	48
High	37
Moderate	4
Low	11

The Forest has a wide range of existing scenic integrity (see figure 1-60). Areas designated for very high scenic integrity are often remote and pristine, such as the Bob Marshall Wilderness and other designated wilderness and recommended wilderness areas. The majority of non-wilderness lands that mostly appear natural are rated high, which includes the majority of Forest lands showing little human-made modifications. Forest lands that have been heavily harvested or that have heavily modified landscapes because of roads or other human-made visually intrusive infrastructure are rated low. For example, portions of the Tally Lake Ranger District and portions of the Swan Lake Ranger District near Lakeside, Montana, show past vegetation harvest units in geometric shapes and contrasting road cut and fill elements that would classify as low scenic integrity.

Scenic classes

Scenic classes represent the relative value of a landscape by combining visibility mapping inventories and scenic attractiveness inventories. Generally, scenic classes 1 and 2 have high public value; classes 3, 4, and 5 have moderate value; and classes 6 and 7 have low value. Scenic classes also identify the relative priority of public scenery concerns during the forest plan alternative formulation process.

Scenic integrity objectives

Scenic integrity objectives are developed in coordination with the recreational settings, management direction, and scenic classes that were developed from the scenic inventory.

3.11.3 Environmental consequences

The scenic resource is affected by management activities that may alter the appearance of the landscape. Short-term effects to scenery are usually considered in terms of degree of deviation from desired conditions. The scenic character can be changed over the long term or cumulatively by the alteration of the landscape. Management activities that have the greatest potential of affecting scenery include the following:

- vegetation management and road construction/reconstruction,
- special-use utility rights-of-way,
- mineral extraction, and
- fire suppression.

Alternative A—No action

Project implementation would meet or move towards desired visual quality objectives in the 1986 forest plan. Timber harvest and road construction/reconstruction would continue to occur on the landscape; approximately 33 percent of the Forest is in management areas 6a to 6c general forest area (low-, medium-, and high-intensity vegetation management), with 29 percent in general forest medium- and high-intensity vegetation management. Combining designated wilderness and

recommended wilderness, approximately 49 percent of the Forest would not be available for timber production or timber harvest. Refer to figure 1-60 for alternative A's existing visual quality objectives map.

See table 117 earlier in this section for a cross-reference of the objectives in the visual management system (alternative A) and the terminology used in the scenery management system (alternatives B modified, C, and D). Alternative A (table 121) has a higher percentage of low scenic integrity objectives than the other three alternatives. This is primarily due to the higher percentage of management areas 6b and 6c (timber production) than the other alternatives and the use of the older scenery system. Alternatives A and D have the same percentage in very high scenic integrity (46 percent) but less than alternatives B modified and C. Refer to figure 1-60 for the alternative A existing visual quality objectives map.

Table 121. Scenic integrity objectives (and corresponding visual quality objectives) for alternative A as percent of the Forest

Scenic Integrity Objective (Visual Quality Objectives)	Area of Forest (%)
Very High (Preservation)	46
High (Retention)	13
Moderate (Partial Retention)	8
Low (Modification)	33

Alternative B modified

Project implementation would meet or move towards desired scenic integrity objectives. Timber harvest and road construction/reconstruction would continue to occur on the landscape; approximately 29 percent of the Forest is in general forest area (low-, medium-, and high-intensity vegetation management), with 11 percent in general forest high-intensity timber management. Combining designated wilderness and recommended wilderness, approximately 53 percent of the Forest would not be available for timber production or timber harvest. These two management areas have a scenic integrity level of very high. Refer to figure 1-61 for the alternative B modified scenic integrity objective map.

Alternative B modified (shown in table 122) has more acreage in very high and high scenic integrity objectives than alternatives A and D but less than alternative C.

Table 122. Scenic integrity objectives for alternative B modified as percent of the Forest

Scenic Integrity Objective	Area of Forest (%)
Very High	53
High	12
Moderate	17
Low	19

Alternative C

Project implementation would meet or move towards desired scenic integrity objectives. Timber harvest and road construction/reconstruction would continue to occur on the landscape; approximately 25 percent of the Forest is in general forest area (low-, medium-, and high-intensity vegetation management), with 5 percent in general forest high-intensity vegetation management. Combining designated wilderness and recommended wilderness, approximately 66 percent of the

Forest would not be available for timber production or timber harvest. Refer to figure 1-62 for the alternative C scenic integrity objective map.

Alternative C (shown in table 123) has the highest acreage in very high and high scenic integrity objectives of all the alternatives and the lowest amount in the low scenic integrity objective.

Table 123. Scenic integrity objectives of alternative C as percent of the Forest

Scenic Integrity objective	Area of Forest (percent)
Very High	66
High	9
Moderate	11
Low	14

Alternative D

Project implementation would meet or move towards desired scenic integrity objectives. Timber harvest and road construction/reconstruction would continue to occur on the landscape. Approximately 30 percent of the Forest is in general forest area (low-, medium-, and high-intensity vegetation management), with 12 percent in general forest high-intensity vegetation management. Designated wilderness is approximately 45 percent of the Forest (there is no recommended wilderness in this alternative) and would not be available for timber production or timber harvest. Refer to Figure 1-63 for the alternative D scenic integrity objective map.

Alternative D has an equal amount in very high scenic integrity objective as alternative A. This alternative has more acreage in the low scenic integrity objective than alternatives B modified and C and less than A.

Table 124. Scenic integrity objectives of alternative D as percent of the Forest

Scenic Integrity Objective	Area of Forest (percent)
Very High	46
High	20
Moderate	12
Low	22

Consequences to scenery from forest plan components associated with other resource programs or management activities

Effects of management area allocation

Alternative C contains the most very high scenic integrity objectives, primarily due to its having the most designated and recommended wilderness. It also has the fewest low scenic integrity objectives. Alternative A has the most acres assigned to the low scenic integrity objectives, followed by alternative D, alternative B modified, and alternative C, in that order.

Effects from fire and fuel management

Blackened vegetation and soil, charred tree trunks, and red needles on dead trees would be the main visual effects of fire, and these would decrease in time. In areas where mechanical equipment was used to suppress fire, a visual contrast from fireline construction could be evident depending on slope, the amount of vegetation removed by the fire, and the amount of mineral dirt exposed. Some

effects from fire in fire-adapted ecosystems might be beneficial to scenery, such as increased overall visual diversity due mosaics of vegetative types that reflect natural conditions. Alternative C would have the least impact from fire and fuel management because this alternative would achieve desired conditions for wildlife and other resources primarily through greater use of natural ecosystem processes, such as planned and unplanned fire ignitions.

Effects from vegetation management and roads

Commercial timber harvest activities might result in road construction and reconstruction. New road construction would likely be limited, with temporary road construction used as a more common method for short-term access needs. Timber harvesting would have a variety of effects that might be evident to visitors based on type of logging system used, type of silvicultural treatment, slope, and visibility from roads and trails. Road construction might introduce unnatural visual elements into the landscape, resulting in form, line, color, and texture contrasts.

Because general forest management area (6b and 6c) allocations are lowest in alternative C, which has a greater emphasis on the use of natural ecosystem processes rather than mechanized methods to achieve desired conditions, alternative C would be expected to result in the least vegetation management activities and a lower amount of constructed/reconstructed roads compared to alternatives B modified, A, and D.

Effects from minerals management

Mining activities can involve major landform alteration, as well as form, line, color and texture contrasts, resulting in adverse scenic impacts. The majority of lands outside of designated wilderness would be suitable for mineral in all alternatives. Therefore, the impacts from minerals management would be similar in all four alternatives.

Cumulative effects

Areas modified by timber harvest would continue to appear highly managed over the next 10 to 15 years, and scenic integrity would remain low to very low in those areas. Timber harvest on adjacent private, State, and Federal lands might influence overall scenic integrity in northwestern Montana. Fuel reduction treatments in the wildland-urban interface might also add to these effects. However, the scenic backdrop above the valleys would remain generally unchanged regardless of alternative. Driving for pleasure and other scenery dependent activities on the Forest could be affected slightly by human disturbance to areas under other administrations. Wildland fire and other disturbance processes, if large in scale and intensity, might result in lowered scenic attractiveness for a few years in those areas affected by the disturbance. These effects cannot be predicted or analyzed, but the area would naturally recover over time.

3.12 Infrastructure

3.12.1 Introduction

The Flathead National Forest expects to maintain an appropriately sized and environmentally sustainable road system that is responsive to ecological, economic, and social concerns. The NFS road system would continue to provide access for recreation and resource management as well as to support watershed restoration and resource protection to sustain healthy ecosystems.

Regulatory framework

Law and regulation

Term Permit Act of March 4, 1915 (Pub. L. 63-293, Ch. 144, 38 Stat. 1101, as amended; 16 U.S.C. 497): This act provides direction authorizing occupancy of NFS lands for a wide variety of uses through permits not exceeding 30 years.

National Forest Roads and Trails Act of October 13, 1964 (Pub. L. 88-657, 78 Stat. 1089, as amended): This act declares that an adequate system of roads and trails should be constructed and maintained to meet the increasing demand for recreation and other uses. This act authorizes road and trail systems for the national forests. It authorizes granting of easements across NFS lands, construction and financing of maximum-economy roads (Forest Service Manual 7705), and imposition of requirements on road users for maintaining and reconstructing roads, including cooperative deposits for that work.

Highway Safety Act of September 9, 1966 (Pub. L. 89-564, 80 Stat. 731, as amended): This act authorizes State and local governments and participating Federal agencies to identify and survey accident locations; to design, construct, and maintain roads in accordance with safety standards; to apply sound traffic control principles and standards; and to promote pedestrian safety. The Highway Safety Improvement Program and the Safety Performance Management Measures Final Rules (effective April 14, 2016) address the requirements of the Moving Ahead for Progress in the 21st Century Act and the Fixing America's Surface Transportation Act. Updates to the existing Highway Safety Improvement Program requirements under 23 CFR § 924 are consistent with Moving Ahead for Progress in the 21st Century Act and the Fixing America's Surface Transportation Act, and clarify existing program requirements. The Safety Performance Management Measures Final Rule adds part 490 to title 23 of the CFR to implement the performance management requirements under 23 U.S.C. 150, including specific safety performance measure requirements for the purpose of carrying out the Highway Safety Improvement Program to assess serious injuries and fatalities on all public roads.

Federal Aid Highway Act of 1968, as amended (23 U.S.C. 109(a) and (h), 144, 151, 319, and 351): This act establishes the National Bridge Inspection Standards (23 CFR § 650, Subpart C) and the requirement that each state have a current inventory of bridges on all public roads, including NFS roads open to public travel (Forest Service Manual 1535.11).

Surface Transportation Assistance Act of 1978 (Pub. L. 95-599, as amended): This act supersedes the Forest Highway Act of 1958 and authorizes appropriations for Forest highways and public lands highways. Establishes criteria for Forest highways; defines Forest roads, Forest development roads, and Forest development trails (referred to as "NFS roads" and "NFS trails" in Forest Service regulations and directives); and limits the size of projects performed by Forest Service employees on Forest roads. Establishes the Federal Lands Highway Program.

Secure Rural Schools and Community Self-Determination Act of October 30, 2000 (Pub. L. 106-393, 114 Stat. 1607; 16 U.S.C.500 note): This act provides provisions to make additional investments in, and create additional employment opportunities through, projects that improve the maintenance of existing infrastructure, implement stewardship objectives that enhance Forest ecosystems, and restore and improve land health and water quality.

National Best Management Practices for Water Quality Management on National Forest System Lands, Volume 1: National Core BMP Technical Guide, April 2012: This is the first volume of guidance for the Forest Service, U.S. Department of Agriculture, and National Best Management Practices Program. The National Best Management Practices Program was developed to improve agency performance and accountability in managing water quality consistent with the Federal Clean Water Act and State water quality programs. Current Forest Service policy directs compliance with required Federal Clean Water Act permits and State regulations and requires the use of the National Best Management Practices Program to control nonpoint source pollution to meet applicable water quality standards and other Federal Clean Water Act requirements. It includes the National Best Management Practices Program for construction, operation, and maintenance of roads and motorized trails.

Moving Ahead for Progress in the 21st-Century Act of July 6, 2012 (Pub. L. 112-141): This act replaces the Federal Lands Highway Program with the Federal Lands Transportation Program and Federal Lands Access Program. This act authorizes funding for Federal lands transportation facilities and Federal lands access transportation facilities under a unified program, with policy similar to Federal-aid highways and other public transportation facilities. It requires Federal land management agencies to identify a comprehensive inventory of public Federal lands transportation facilities that, at a minimum, includes the transportation facilities that provide access to high-use Federal recreation sites or Federal economic generators.

36 CFR § 212—Travel Management This final rule requires designation of those roads, trails, and areas that are open to motor vehicle use. Designations are made by class of vehicle and, if appropriate, by time of year. This rule prohibits the use of motor vehicles off the designated system, as well as use of motor vehicles on routes and in areas that is not consistent with the designations. Subpart B provides for a system of NFS roads, NFS trails, and areas on NFS lands that are designated for motor vehicle use. After these roads, trails, and areas are designated, motor vehicle use, including the class of vehicle and time of year, not in accordance with these designations is prohibited by 36 CFR § 261.13. Motor vehicle use off designated roads and trails and outside designated areas is prohibited by 36 CFR § 261.13. Subpart C provides for a system of NFS roads, NFS trails, and areas on NFS lands that are designated for over-snow vehicle use. After these roads, trails, and areas are designated, motorized over-snow vehicle use not in accordance with these designations is prohibited by 36 CFR § 261.14. Motorized over-snow vehicle use off designated roads and trails and outside designated areas is prohibited by 36 CFR § 261.14.

Methodology and analysis process

Information sources

Information used to conduct the analysis generally comes from the national infrastructure database. This database is a collection of Web-based data entry forms, reporting tools, and mapping tools (geographic information system) that enables the Forest to manage and report accurate information about the Forest's inventory of constructed features and land units.

Analysis area

The geographic scope of the analysis is NFS lands administered by the Forest. All lands within the Forest boundary form the geographic scope for cumulative effects. The temporal scope of the analysis is the anticipated life of the plan (15 years).

Notable changes between draft and final EIS

Under the “Affected environment” section (section 3.12.2), additional information on the 2001 Road Management Rule and the 2014 Flathead travel analysis report was added.

3.12.2 Affected environment (existing condition)

National Forest System roads

The transportation system for the Forest is defined as the system of NFS roads, NFS trails, and airfields on NFS lands (36 CFR § 212.1). This section covers the existing condition of the NFS roads. See section 3.10 for a discussion of access and effects to NFS trails and motorized over-snow vehicle use.

National Forest System roads are roads under the jurisdiction of the Forest Service, wholly or partly within or adjacent to and serving the NFS, that the Forest Service determines are necessary for the protection, administration, and utilization of the NFS and for the use and development of its resources. Roads managed by public road agencies such as States, counties, and municipalities that help provide access to NFS lands are also informally considered part of the overall regional transportation system but do not fall under the jurisdiction or direction of the national forest. These roads are not included in this evaluation.

The Road Management Rule was published in the Federal Register on January 12, 2001. The Rule “removes the [prior rule’s] emphasis on transportation development and adds a requirement for science-based transportation analysis.” In addition, “The intended effect of this final rule is to help ensure that additions to the National Forest System network of roads are those deemed essential for resource management and use; that, construction, reconstruction, and maintenance of roads minimize adverse environmental impacts; and, finally, that unneeded roads are decommissioned and restoration of ecological processes are initiated” (Federal Register Vol. 66, No 9, p. 3206).

Subpart A of the rule pertains to administration of the Forest transportation system. In part, Subpart A requires each unit of the NFS to (1) identify the minimum road system needed for safe and efficient travel and for protection, management, and use of NFS lands (36 § CFR 212.5(b)(1)) and (2) identify roads that are no longer needed to meet forest resource management objectives (36 CFR § 212.5 (b)(2)). In determining the minimum road system, the responsible official must incorporate a science-based roads analysis at the appropriate scale. It is Forest Service policy (Forest Service Manual 7710.3) that the travel analysis process (defined at Forest Service Handbook 7709.55, chap. 20) is to serve as the “science-based roads analysis” required by 36 CFR § 212.5 (b)(1). Travel analysis is not a decisionmaking process. Rather, travel analysis informs decisions relating to administration of the Forest transportation system and helps to identify proposals for change (Forest Service Manual 7712).

The Forest completed a travel analysis report in 2014 (USDA, 2014c). This broad-scale analysis encompasses all existing NFS roads on the Forest. The report provides an assessment of the road infrastructure and a set of findings and opportunities for change to the Forest transportation system. This report provides information to Forest managers regarding the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of NFS lands.

The travel analysis report is used by the Forest to prioritize maintenance needs and identify opportunities to decommission roads or put them into intermittent stored service as the Forest works to identify the minimum number of routes needed for an efficient transportation system, as directed in 36 CFR § 212 subpart A. The travel analysis report identified approximately 54 miles of NFS roads as “not likely needed for future use” that may be considered candidates for conversion to another use, storage for future use, or removal through decommissioning. Other roads that were rated as “high risk” were identified as candidates for storage for future use, reconstruction, relocation of the road, or additional road maintenance. Roads considered “low risk” are the first to be considered for reduced road maintenance (i.e., a change to a lower maintenance level).

Neither the travel analysis report nor the forest plan makes travel management decisions. Site-specific, project-level analysis under the National Environmental Policy Act (NEPA) is required to make travel management decisions, including road closure, storage, or decommissioning.

National forest system roads are designated by the design (vehicle classifications and use) and maintenance standards for each road. Roads are generally constructed and maintained wide enough (> 12 feet) for typical cars and trucks. Since many of the roads were initially constructed for vegetation management objectives, the design vehicles were lowboys or logging trucks. Roads are constructed to grades of usually less than 12 percent to allow travel by most highway vehicles. The Forest Service uses five maintenance levels to define the general design standards, uses, and associated type of maintenance required. These five maintenance levels are as follows:

- Maintenance level 1. Assigned to roads that have been placed in storage between intermittent uses. The period of storage must exceed one 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. Planned road deterioration may occur at this level. Roads managed at this maintenance level are described as being in basic custodial care.
- Maintenance level 2. Assigned to roads open for use by high-clearance vehicles. Passenger car traffic, user comfort, and user convenience are not considerations. Warning signs and traffic control devices are generally not provided. Motorists should have no expectations of being alerted to potential hazards while driving these roads. Traffic is normally minor, usually consisting of one or more of a combination of administrative, permitted, dispersed recreation, or other specialized uses. Roads managed at this maintenance level are described as high-clearance vehicle roads.
- Maintenance level 3. Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Roads in this maintenance level are typically low speed with single lanes and turnouts and are included in the term “passenger car” roads.
- Maintenance level 4. Assigned to roads that provide a moderate degree of user comfort and convenience at slow to moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated.
- Maintenance level 5. Assigned to roads that provide a high level of user comfort and convenience at slow to moderate travel speeds. The roads are normally double-lane, paved facilities. Some may be aggregate surfaced and dust abated.

Maintenance level 3 through 5 roads are collectively maintained for travel by a prudent driver in a standard passenger car. These roads fall under the requirements of the National Highway Safety Act

and the Manual of Uniform Traffic Control Devices. Warning signs and traffic control devices are provided to alert motorists of situations that may violate expectations.

Forestwide, there are 3,559 miles of NFS roads; 60 percent (2,130 miles) of these roads are in custodial care (closed to public motorized use); 40 percent (1,427 miles) are open to public motorized use (either yearlong or seasonally), with 33 percent open for high-clearance vehicles and 66 percent open for passenger cars. The following tables (table 125 through table 128) provide information related to the distribution of roads on the Forest by maintenance level grouping (basic custodial care, high-clearance vehicles, and passenger cars) and availability for public motor vehicle use.

Table 125. Percentage of NFS roads by maintenance level grouping on the Forest, primary conservation area (PCA), demographic connectivity area (DCA), and zone 1

Area	Basic Custodial Care (%)	High-Clearance Vehicles (%)	Passenger Cars (%)
Forest	59	14	27
PCA	64	10	26
Salish DCA	43	25	32
Zone 1, outside DCA	54	18	28

Table 126. Miles of NFS roads open to the public by maintenance level on the Forest, primary conservation area (PCA), demographic connectivity area (DCA), and zone 1

Area	Basic Custodial Care (Miles)	High-Clearance Vehicles (Miles)	Passenger Cars (Miles)
Forest	5	464	958
PCA	4	211	603
Salish DCA	< 1	93	119
Zone 1, outside DCA	1	139	217

Table 127. Miles of NFS roads closed to the public by maintenance level on the Forest, primary conservation area (PCA), demographic connectivity area (DCA), and zone 1

Area	Basic Custodial Care	High-Clearance Vehicles	Passenger Car
Forest	2,101	27	3
PCA	1486	23	3
Salish DCA	161	2	0
Zone 1, outside DCA	414	3	0

Table 128. Miles of NFS roads receiving maintenance, percentage of passenger car system and high-clearance car system receiving maintenance, on the Forest for 2010 to 2015

Year	NFS roads Receiving Maintenance (Miles)	Passenger Car System Receiving Maintenance (%)	High-Clearance Car System Receiving Maintenance (%)
2015	494	73	16
2014	401	66	14
2013	690	62	4
2012	691	62	2

2011	1,446	99	22
2010	1,454	99	20

As shown in table 129, the total number of roads on the Forest has been steadily decreasing since 1995. A total of about 787 miles of NFS roads and non-NFS roads have been decommissioned during this time. Most of this decommissioning has taken place in grizzly bear recovery areas and bull trout watersheds. However, there have been additions to the NFS road system. These additions include the construction of new roads for vegetation management (19 miles), acquisition related to cooperative road right-of-way agreements with the Montana Department of Natural Resources and Conservation (approximately 12 miles), Plum Creek Timber Company acquisition (411 miles), and database cleanup (remapping existing roads). The majority of the increase is due to the acquisition of lands previously owned by Plum Creek Timber Company located in the Swan Valley.

Table 129. Miles of NFS and non-NFS roads decommissioned from 2004 to 2015 on the Forest

Decommissioned Roads	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Miles	42	28	47	42	48	22	55	12	13	4	13	25

Aviation

Public airstrips on the Forest are considered infrastructure and are a segment of the transportation system. Four existing open airstrips on the Forest are available for public use: Schafer Airstrip (a wilderness airstrip), Meadow Creek Airstrip along the South Fork of the Flathead River, Spotted Bear Airstrip, and Condon Airstrip. There are 20 private airstrips in the Flathead Valley area that may be available for public use. The State of Montana in 2011 had a total of 258 airstrips: 121 were open for public use, 15 were commercial service airports, and 134 were private airstrips (Federal Aviation Administration, 2017).

3.12.3 Environmental consequences

Alternative A—No action

The no-action alternative would fully implement amendment 19 of the Flathead forest plan. This amendment requires that bear management subunits that have ≥ 75 percent of NFS lands must meet the following direction, also known as “19-19-68”:

- Open motorized access density: ≤ 19 percent of subunit to be ≤ 1.0 mile/square mile.
- Total motorized access density: ≤ 19 percent of subunits to be ≤ 2.0 miles/square mile.
- Security core: ≥ 68 percent of subunit to be in security core as defined in the glossary.

To achieve this direction, an additional estimated 518 miles of roads on the Forest would need to be reclaimed. About 57 miles of trails would no longer allow motorized wheeled use in order to fully meet amendment 19 in each bear management subunit, unless site-specifically amended. These figures are an estimated programmatic assessment of the number of miles needed to meet amendment 19 management direction. The actual number may be higher or lower depending upon changing access condition on adjacent lands and the site-specific factors that must be considered when evaluating access and grizzly bear habitat needs. About 79 miles of roads that are open either yearlong or seasonally would be closed to public use. This alternative would provide the least opportunity for wheeled motor vehicle use (allowed on designated roads) on 1,262 miles of the Forest.

Amendment 19 applies only to 54 bear management subunits on the Forest within the NCDE primary conservation area that are mostly non-wilderness. It does not apply to the portions of the Salish Mountains geographic area west of U.S. Highway 93 because it is outside of the primary conservation area zone; therefore, motorized use would not be reduced there.

The Forest's trail system could increase by roughly 25 miles because a segment of a road becomes a trail when a road segment is closed and the trailhead has to be relocated. This could result in an increase in nonmotorized as well as motorized trails. See table 130 and table 131 for additional information.

Table 130. List of bear management subunits and the estimated miles of NFS roads to close necessary to meet amendment 19 requirements

Bear Management Subunit Name	Estimated miles of road to close to meet amendment 19 requirements
Hay Creek	11
Canyon McGinnis	2
Peters Ridge	10
Swan Lake	9
Crane Mountain	33
Beaver Creek	13
Emery Firefighter	9
Logan Dry Park	19
Skyland Challenge	4
Buck Holland ²	40
Cold Jim ²	68
Glacier Loon ²	56
Hemlock Elk ²	25
Lion Creek ^{1, 2}	36
Meadow Smith ²	58
Piper Creek ²	43

1. Lion Creek bear management subunit still does not meet the amendment 19 motorized access standards even with this reduction in miles due to mixed ownership.
2. This subunit in the Swan Valley geographic area now has > 75 percent NFS lands due to the recent acquisition of lands from Plum Creek Timber Company through the Montana Legacy Project.

Table 131. Summary of travel management actions needed to meet motorized access direction for full implementation of amendment 19 in all bear management subunits

Current Travel Management	Potential Travel Management	Miles
Open yearlong/seasonal roads	Closed yearlong by gate	7
Open yearlong/seasonal roads	Closed yearlong by physical barrier	55
Open yearlong/seasonal roads	To be reclaimed	17
Closed yearlong signed/gated roads	Closed by physical barrier	91
Gated yearlong roads	To be reclaimed	280
Roads with physical barriers	To be reclaimed	215
Currently impassable roads	To be reclaimed	30

Alternative B modified

Under alternative B modified, bear management subunits within the Forest's primary conservation area would need to maintain or be below baseline levels for motorized road access. This alternative and alternative D would provide the most opportunity for wheeled motor vehicle use—1,431 miles of designated NFS roads on the Forest.

In order to support the continued recovery of the NCDE grizzly bear population, roads open to public motorized use in the Salish geographic area would not exceed baseline levels.

Under alternative B modified, existing wheeled motorized trails and areas are not included in any recommended wilderness areas, so there would be no change in miles or acres. Alternatives B modified and D provide the same amount of wheeled motor trail opportunity, which is higher than under alternatives A or C.

About 4.5 miles of closed roads (maintenance level 1) that are currently within the areas recommended as wilderness under this alternative might need to be removed from the system after site-specific analysis.

Alternative C

Under alternative C, to continue to support the recovery of the NCDE grizzly bear population, roads open to public motorized use in the Salish Mountains geographic area would not exceed baseline levels, but some additional motorized trail access could occur in zone 1, including the Salish demographic connectivity area. For the primary conservation area bear management subunits, motorized access standards would not necessitate additional road closures, but the baseline levels that support the continued recovery of the NCDE grizzly bear population would be maintained.

Under alternative C, existing wheeled motorized use would not be suitable in recommended wilderness areas, which would reduce the motorized trail opportunity for wheeled motorized vehicles by 75 miles on the Forest.

In addition, about 48 miles of closed roads (maintenance level 1) that are currently within the recommended wilderness areas may need to be removed from the system after site-specific analysis.

This alternative provides more wheeled motorized vehicle use than alternative A but less than alternatives B modified and D.

Alternative D

Under alternative D, to support the continued recovery of the NCDE grizzly bear population, roads open to public motorized use in the Salish geographic area would not exceed baseline levels, but some additional motorized trail access could occur in zone 1, including the Salish demographic connectivity area. Bear management subunits in the primary conservation area that do not yet meet the motorized access standards would not need additional road closures, but the baseline levels that support the continued recovery of the NCDE grizzly bear population would be maintained.

Under alternative D, existing motorized use would not be affected. This alternative would provide the opportunity for wheeled motor vehicle use (on designated roads) on 1,427 miles of the Forest. Alternative D and alternative B modified would provide the most opportunity for wheeled motor vehicle use (on designated roads).

Aviation

All action alternatives include a suitability plan component for new airstrip development in desired recreation opportunity spectrum classes of semiprimitive motorized and roaded natural in management areas 6b (general forest medium-intensity vegetation management) and 6c (general forest high-intensity vegetation management). Alternative B modified, has 548,279 acres of semiprimitive motorized and roaded natural recreation opportunity spectrum classes in management areas 6b and 6c; alternative C has 375,993 acres of semiprimitive motorized and roaded natural recreation opportunity spectrum classes in management areas 6b and 6c; and alternative D has 589,967 acres of semiprimitive motorized and roaded natural recreation opportunity spectrum classes in management areas 6b and 6c.

Consequences to infrastructure from forest plan components associated with other resource programs or management activities

Effects of management allocation

Road maintenance (both recurrent and deferred) will continue to occur, as funding allows. Physical conditions will continue to be addressed through maintenance activities and will be based on public health and safety, resource protection, and mission priorities. Annual operating budgets and supplemental funding will likely fluctuate, resulting in varying maintenance levels achieved from year to year.

The condition (e.g., drivability) of roads may vary between alternatives. This is mainly a result of the different levels of road maintenance work that might be accomplished under the four alternatives. Since alternative C has the fewest acres allocated to general forest (management areas 6a to 6c), fewer road maintenance activities may be accomplished because commercial use and associated maintenance is expected to be less. Under alternative D, which has the most acres allocated to general forest, more commercial use might be expected, which might result in the most road maintenance.

Routine road maintenance work (brushing, blading, ditch and culvert cleaning, etc.) is periodically performed on approximately 1,451 miles of maintenance level 2, 3, 4, and 5 roads as funding allows, and in most cases they are kept in a drivable condition for their designed use. The approximately 2,106 miles in maintenance level 1 (which includes roads treated for intermittent stored service), however, do not receive routine maintenance work. The drivability of these maintenance level 1 roads can be expected to continue to diminish as roads revegetate.

Effects from vegetation management

Commercial timber harvest activities will generally result in road maintenance and reconstruction and the continued application of best management practices on existing NFS roads. New road construction is likely to be limited; temporary road construction will be used more to meet short-term access needs.

Administrative use of gated roads that normally prohibit motor vehicle use yearlong is likely when management activities such as precommercial thinning, invasive weed treatments, or other noncommercial silvicultural treatments are planned.

Because general forest (management areas 6a, 6b, and 6c) allocations are lowest under alternative C (25 percent), this alternative would generally be expected to result in the least amount of vegetation management activities and a lower amount of road use compared to alternatives A (33 percent), and D (30 percent), and B modified (29 percent). Consequently, reduced traffic (i.e., number of vehicles

on roads), both commercial and administrative, would be expected under alternative C. Associated with reduced commercial use would be less road reconstruction to standard and best management practices work. Road maintenance activities typically done in conjunction with commercial use would also occur less often because the need for road maintenance is closely tied to use.

Effects from fire and fuels management

Fuels management activities (e.g., prescribed burning) and fire suppression actions are likely to continue. Administrative use of gated roads that normally prohibit motor vehicle use yearlong is likely when these management activities occur.

Fire suppression actions are also likely to continue and could also result in the administrative use of gated roads. In some cases, roads in storage (maintenance level 1) that are impassible to motor vehicle use (due to revegetation or other restrictive conditions) may be opened in order to facilitate suppression actions. These roads would probably be used for the duration of the suppression efforts and post-fire work and then returned to their previous status.

Effects from wildlife management

All alternatives would support the continued recovery of the NCDE grizzly bear population. For example, all alternatives would retain levels of open or total road densities and secure core that have supported grizzly bear recovery on the Flathead National Forest. Alternatives differ in the range of future actions that could occur. Alternative A would close approximately 518 additional miles of motorized roads. Alternative B modified would maintain baseline motorized access levels (see “baseline” in glossary). Alternative C would greatly increase the amount of recommended wilderness, whereas alternative D would not recommend any areas for wilderness.

Alternatives B modified and D would allow the greatest temporary increases in motorized access for projects in the primary conservation area because these two alternatives have the greatest number of acres in management areas 6b and 6c. Alternative C would allow the least temporary increase in motorized access for projects in the primary conservation area as this alternative has the lowest number of acres in management areas 6b and 6c and the highest number of acres in recommended wilderness and nonmotorized backcountry management areas. Under alternative A, there would be few temporary changes in motorized access due to projects in security core (with the exception of emergency access) and few changes in areas with decommissioned roads. There would be temporary increases in motorized access for projects on gated roads.

Effects from minerals management

The Forest Service does not initiate exploration or development of mineral or energy resources. Proposals for exploration and development are driven by external parties and market forces and regulated by existing mining law. Access and road development (long-term or temporary) is often associated with mineral exploration and development, but a site-specific analysis is required prior to any approval of exploration or development activities.

If any mine reclamation activities occur, they would likely use existing roads. These may be roads that are not currently designated for motor vehicle use. They would probably be used for the duration of the reclamation work and then returned to their previous status.

Effects from aquatic management

Watershed improvement activities are likely to continue. The consequences on motor vehicle access of the implementation of watershed improvements are expected to be minimal. One activity that may occur on roads that are generally not designated for motor vehicle use is the treating of roads to

reduce sediment production and transport to surface waters or to provide for aquatic organism passage. Actions taken might be culvert removal, outsloping of road prisms, or the removal of unstable fills. Roads that receive these types of treatments are generally no longer drivable. On occasion, these treatments may be completed on roads that are currently designated for motor vehicle use and may result in traffic delays or temporary closures of open roads while construction occurs, but this is expected to occur infrequently.

Numerous plan components related to infrastructure (FW-STD-IFS-06 and 07; FW-GDL-IFS-03 through 10 and 13) are designed to minimize the transport of sediment from roads to waterbodies. Generally, these plan components would not affect the public use of roads except for the decommissioning of roads, which may restrict motorized travel depending on the site-specific decision. Road conditions on existing roads would have improved conditions through proper best management practices and maintenance, and decommissioned roads would have improved hydrologic conditions due to the disconnection of the road from the stream system.

Cumulative effects

Access across the Forest is likely to be influenced by a variety of factors. Given the mixed land ownership (State lands, corporate timberlands) in and around the Forest and the ongoing management actions taken on these lands, new access opportunities may arise through cooperative and cost-share agreements.

Commercial traffic (timber hauling) can be expected to fluctuate to some degree, depending on vegetation management activities. Market conditions and other external factors often influence activity levels. These traffic conditions are usually limited to relatively small geographic areas and short periods of time. Hauling occurs more often during the summer months but is not uncommon during the winter months.

Changes in ownership of private lands can result in continued requests for road access across NFS lands. Depending on the circumstances, these may be requests for Forest or private road special-use authorizations. Depending on the terms and conditions written into any new authorizations, new opportunities for access to NFS lands may be created.

State and local government agencies with road management authority can be expected to continue to maintain their existing road network across the Forest. Some changes, such as widening, resurfacing, and bridge replacements, are probable but are dependent on budgets and funding allocations. The likelihood of jurisdiction of NFS roads being passed to other public road agencies is low.

3.13 Lands and Special Uses

3.13.1 Introduction

This section addresses land ownership administration and adjustments and special uses of NFS lands on the Forest. The management of NFS land includes the surveying and marking of boundaries, acquisition and exchange of lands, handling of title claims and encroachments, acquisition of rights-of-way, and authorization and management of special uses to protect resource values and the interests of the Federal government.

Adjustments of land ownership can occur through congressionally mandated conveyances, exchanges, and acquisitions or through Forest Service administrative activities. The objectives of the Forest Service land ownership adjustment program (Forest Service Manual 5402) are to

- achieve the optimum land ownership pattern to provide for the protection and management of resource uses to meet the needs of the nation now and in the future;
- avoid land use conflicts with non-Federal landowners by settling land claims equitably and promptly; and
- provide resource administrators readily accessible and understandable title information affecting the status and use of the lands and resources they administer.

Land occupancy and use by private parties and other government entities is managed through the issuance of special-use authorizations. Authorized special uses on the Flathead include industrial or commercial uses, private uses, and a variety of recreational uses.

All occupancy, use, or improvements on NFS lands that are not directly related to timber harvest, grazing, mining activities, and recreation are referred to as “non-recreation special uses.” Typically, non-recreation special uses include roads, utilities, storage facilities, communications sites, research, and commercial filming. Recreation special uses include resorts, ski areas, outfitters and guides, and a variety of uses that provide access to NFS lands through commercial ventures. Use and occupancy of NFS lands may be authorized when such use is determined to be in the public interest.

Regulatory framework

The following is a select set of the statutory authorities that govern landownership adjustments and the issuance and administration of special-use authorizations on the Flathead National Forest. They are briefly identified and described below to provide context to the management and evaluation of these resources. There are multiple other laws, regulations, and policies not described below that also guide the management of these programs; see Forest Service Manuals 2700, 5400, and 5500 for a comprehensive listing.

Laws and executive orders

Organic Administration Act of June 4, 1897 (16 U.S.C. 477-482, 551): This act authorizes the Secretary of Agriculture to issue rules and regulations for the occupancy and use of the national forests. This is the basic authority for authorizing use of NFS lands for other than rights-of-way.

Preservation of American Antiquities Act of June 8, 1906 (16 U.S.C. § 431 et seq.): This act authorizes permits for archeological and paleontological exploration involving excavation, removal, and storage of objects of antiquity or permits necessary for investigative work requiring site disturbance or sampling that results in the collection of such objects.

Occupancy Permits Act of March 4, 1915 (16 U.S.C. § 497 et seq.), as amended: This act authorizes use and occupancy on NFS lands for recreational purposes, including resorts and recreation residences.

General Exchange Act of March 20, 1922 (16 U.S.C. 485, 486): This act authorized the Forest Service to consolidate its holdings in national forests where a large percentage of private lands are intermingled with national forest lands. It makes possible the exchange of inholdings within national forests for private lands of equal value and within the same State.

Section 7 of the Granger-Thye Act of April 24, 1950 (16 U.S.C. 490, 504, 504a, 555, 557, 571c, 572, 579a, 580c-5801, 581i-1): This act authorizes special-use permits not to exceed 30 years in duration for the use of structures or improvements under the administrative control of the Forest Service and for the use of land in connection therewith, without acreage limitation.

Highway Act of August 27, 1958 (23 U.S.C. 317), supplemented by the Act of October 15, 1966 (49 U.S.C. 1651): This act authorizes the Federal Highway Administration to grant easements to States for highways that are part of the federal-aid system or that are constructed under the provision of chapter 2 of the Highway Act. The Forest Service consents to the grant of these easements in a form agreed upon by the two agencies and upon the state highway agency's execution of stipulations. This is the only authority for granting rights-of-way for projects on the federal-aid system or projects constructed under the provisions of chapter 2 of the Highway Act (Forest Service Manual 2731).

Wilderness Act of September 3, 1964 (16 U.S.C. 1131-1136): This act establishes requirements for special use authorizations in designated wilderness areas for temporary structures, commercial public services and access to valid mining claims and non-federal lands. Under this act, Presidential approval is necessary for the establishment of new water facilities, power projects, and transmission lines. Except for the Alaska National Interest Lands Conservation Act of December 2, 1980, this act is the exclusive authority for rights-of-way occurring within designated wilderness areas.

Land and Water Conservation Fund Act of September 3, 1964, as amended (16 U.S.C. 4601-6a(c)): Section 4(c) of this act authorizes permits for recreation, such as group activities, organized events, motorized recreational vehicle use, and other specialized recreation activities of limited duration.

National Forest Roads and Trails Act of October 13, 1964 (16 U.S.C. 532-38): This act authorizes the Secretary of Agriculture to grant temporary or permanent easements to landowners who join the Forest Service in providing a permanent road system that serves lands administered by the Forest Service and lands or resources of the landowner. It also authorizes the grant of easements to public road agencies for public roads that are not a part of the federal-aid system (Forest Service Manual 2732).

Sisk Act of December 4, 1967, as amended (16 U.S.C. 484a): This act authorizes the exchange of lands with states and local governments.

National Environmental Policy Act of January 1, 1970 (42 U.S.C. 4321, 4331-4335, 4341-4347): This act directs all agencies of the Federal government to utilize a systematic interdisciplinary approach to ensure the integrated use of the natural and social sciences in planning and decisionmaking that may have an impact on the human environment.

The Act of November 16, 1973 (30 U.S.C. 185): This act, amending Section 28 of the 1920 Mineral Leasing Act, authorizes the Forest Service to issue authorizations for oil and gas pipelines and related facilities located wholly on NFS land. When the land is under the jurisdiction of two or more Federal agencies, authority for issuance is reserved to the U.S. Department of the Interior, Bureau of Land Management, subject to approval by the agencies involved.

Endangered Species Act of 1973 (16 U.S.C. 1531-1536, 1538-1540): This act provides for the conservation of endangered and threatened species and their habitats.

Federal Land Policy and Management Act of October 21, 1976 (43 U.S.C. 1761-1771): Title V of the Federal Land Policy and Management Act authorizes the Secretary of Agriculture to issue permits, leases, or easements to occupy, use, or traverse NFS lands. The Federal Land Policy and Management Act directs the United States to receive fair market value unless otherwise provided for by statute and provides for reimbursement of administrative costs in addition to the collection of land use fees (43 U.S.C. 1764(g)).

Alaska National Interest Lands Conservation Act of 1980 (16 U.S.C. 3210): The Alaska National Interest Lands Conservation Act (ANILCA) provides numerous authorities related to access that are specific to national forests in Alaska. The provisions of section 1323(a) (16 U.S.C. 3210) of this act, however, apply to all NFS lands. This section provides that, subject to terms and conditions established by the Secretary of Agriculture, the owners of non-Federal land within the NFS shall be provided adequate access to their land. Regulations implementing section 1323(a) are set forth in 36 CFR § 251, subpart D—Access to Non-federal Lands. See Forest Service Manual 2701.3, paragraph 3, for the summary of the provisions of 36 CFR § 251, subpart D.

Small Tracts Act of January 12, 1983 (16 U.S.C. 521c-521i): This act authorizes the sale, exchange, or interchange of certain parcels of minimal size.

National Forest Ski Area Permit Act of 1986 (16 U.S.C. 497b): This Act authorizes the Secretary of Agriculture to issue permits for ski areas and other snow sports and recreational uses on NFS lands.

Act of May 26, 2000 (16 U.S.C. 4061-6d): This act supplements the authority of the Secretary of Agriculture to regulate commercial filming and still photography on NFS lands. It also authorizes the Secretary to retain and spend land-use fees collected for commercial filming and still photography without further appropriation and provides for recovery of administrative and personnel costs in addition to the collection of the land use fee.

Federal Lands Recreation Enhancement Act of 2004 (16 U.S.C. 6801-6814): This act authorizes the Forest Service to charge standard and expanded amenity recreation fees and to require and charge fees for special recreation permits. Fee revenues may be retained and spent by the Forest Service in accordance with the act's requirements.

Cabin Fee Act of December 22, 2014 (16 U.S.C. 3193, 6901, 6201): This act directs the Forest Service to modify the Recreation Residence Program as the program applies to units of the NFS derived from the public domain by implementing a simple, equitable, and predictable procedure for determining cabin user fees.

Code of Federal Regulations (CFR): The following regulations provide direction for the management of special uses on NFS lands:

- **36 CFR § 251**— Land Uses, subparts A: Miscellaneous Land Uses; B: Special Uses; C: Appeal of Decisions Relating to Occupancy and Use of NFS Lands; D: Access to Non-Federal Lands; and E: Revenue-Producing Visitor Services in Alaska.
- **36 CFR § 254** — Landownership Adjustments, Subparts A: Land Exchanges; B: National Forest Townsites; C: Conveyance of Small Tracts.

Key indicators

- Potential change to acres of NFS land administered
- Potential change to number of special-use authorizations

Methodology and analysis process

The number of acres of NFS lands currently administered by the Flathead and the number of special-use authorizations currently in effect were compared to potential changes that might result from implementation of any of the alternatives considered.

The official acreage for NFS lands comes from the Forest Service's Land Status Record System. The data source for the number of special-use authorizations is the national special-uses database system.

Information sources

The Forest Service uses the Land Status Record System as the repository for all realty records and land title documents. The Land Status Record System includes accurate information on ownership acreages, condition of title, administrative jurisdiction, rights held by the United States, administrative and legal use restrictions, encumbrances, and access rights on land or interests in land in the NFS.

The Forest Service uses the special-uses data system to create and administer special-use authorizations. This data is supported by hard-copy files held at the ranger district and Forest Supervisor's offices.

3.13.2 Affected environment (existing condition)

Lands

There are 2,413,573 acres of NFS lands that are the administrative responsibility of the Flathead National Forest.¹ This is the result of the original congressionally designated lands and the conveyances (acquisitions, disposals, and exchanges) that have occurred to date.

The Flathead landownership pattern varies with location (see figure 2 in volume 1). The pattern can be characterized as

- large blocks of uninterrupted, contiguous NFS lands;
- isolated tracts of private lands surrounded by NFS lands;
- isolated tracts of NFS lands surrounded by private lands; and
- large blocks owned by corporate landowners.

¹ Note that the source of this acreage is the Land Areas of the National Forest System report (USDA, 2015b), which differs from the Flathead National Forest GIS acreage.

Within the proclaimed boundaries of the Flathead National Forest, other individuals or entities own 237,215 acres. Landowners include the State of Montana, Plum Creek Timber Company, The Nature Conservancy, the USFWS, and numerous private landowners.

About 1,050 miles of property boundary lines have been surveyed, marked, and posted out of a total of 1,430 miles (73 percent complete). An additional approximately 610 miles of non-property boundaries, such as wilderness boundaries, have been identified as needing to be surveyed and posted.

Ownership

In 1986, when the current forest plan went into effect, the Forest included 2,350,383 acres of NFS lands. Since then, the Forest has acquired 63,190 acres of lands through the Land and Water Conservation Fund, a Federal program set up for acquiring land and water, and easements on land and water for the benefit of all Americans. Most of these lands are in the Swan Valley and were acquired through the Montana Legacy Project and subsequent Land and Water Conservation Fund purchases by the United States. The Montana Legacy Project included a large donation from The Nature Conservancy of land they had purchased from Plum Creek Timber Company in partnership with the Trust for Public Land. This former Plum Creek land was intermingled with NFS lands in a checkerboard pattern in the Swan Valley. This change to a mostly NFS lands ownership pattern allows the Forest to manage its lands for multiple resources more effectively. If additional funding becomes available, the Forest can purchase the rest of the property (approximately 160 acres) that The Nature Conservancy has acquired from Plum Creek.

There have been other land acquisitions across the Forest obtained with Land and Water Conservation Fund funds. Additionally, the Forest periodically exchanges lands for the mutual benefit of each party. Although there are still some areas of the Flathead that have intermingled ownerships of land, there are no significant acquisitions or exchanges of lands in process, partly due to decreased available funding.

Special uses

Some uses of NFS lands are covered by special-use authorizations, including permits, leases, and easements that allow occupancy, use, rights, or privileges on the Flathead National Forest. Special-use authorizations are legal instruments whose terms and conditions are fully enforceable when consistent with laws, regulations, and policies. The mission of the Forest Service's Special Use Program is to manage the use and occupancy of NFS lands in a manner that protects natural resource values, promotes public health and safety, and is consistent with the forest plan.

The Forest currently administers 574 issued special-use permits, of which 145 are categorized as recreation permits and 429 as lands permits. Recreation permits range from outfitter/guide permits to developed ski areas and other resorts. There are two developed ski areas under permit on the Forest: Blacktail Mountain Ski Area west of the town of Lakeside, Montana in the Salish Mountains geographic area and Whitefish Mountain Resort north of the city of Whitefish, Montana, which borders the Salish Mountains and North Fork geographic areas.

Lands special uses range from permits for individuals to use NFS land for their driveways to more extensive uses such as power lines, fiber optic cable, telephone lines, and oil and gas pipelines that cover many miles of NFS lands. Other land uses under permits include communications towers, research studies, fences, signs, and service buildings.

Partial interests

Various parties hold partial land interests within and near the plan area, such as mineral rights or conservation easements. Over the life of the current forest plan (since 1986), the Forest has acquired 65 conservation easements on private lands in the plan area, under the authority of the Wild and Scenic Rivers Act. Of these, 58 were purchased or acquired as part of land exchanges, six were donated to the Forest, and one was acquired through condemnation. Sixty-two of the conservation easements are in the wild and scenic river corridors of the North Fork and Middle Fork of the Flathead River. The other three are in the Swan Valley. The purpose of these easements is to maintain the integrity of the wild and scenic rivers. There are additional benefits to these conservation easements, such as the maintenance of fish and wildlife habitat.

Rights-of-way and easements affect both private and public lands throughout the plan area. The Forest has reserved or acquired rights-of-way needed for public and administrative access and has granted private or other public entities rights-of-way for access across NFS lands.

Access

In this section, access refers to the legal rights-of-way acquired by the Forest Service across non-NFS land for the management and use of NFS lands. Of the 2,413,573 acres of NFS lands on the Forest, the Forest has legal access to all but approximately 850 acres of land in 11 parcels. Those 11 parcels are scattered across the Forest—two of them are on the North Fork of the Flathead River, two of them are on the Middle Fork of the Flathead River, and two of them are on the main stem of the Flathead River. Four other parcels are located in the Salish Mountains geographic area, and one parcel is located in the Swan Valley. Most of these parcels could be accessed legally from rivers, but they are considered inaccessible since they cannot be accessed by land. Other than the parcels noted above, all NFS lands on the Forest have legal access by road or trail.

3.13.3 Environmental consequences

Alternative A—No action

This alternative reflects the 1986 forest plan, as amended, and accounts for current laws and regulations that have been issued since the original forest plan and the amendments that were adopted. The 1986 forest plan recognized the desirability of adjusting landownership in order to improve manageability of NFS lands.

The number of special-use permits, rights-of-way, and easements might be impacted by a change in access. Under this alternative, based on amendment 19, it is estimated that 518 miles of roads would need to be closed or reclaimed in the primary conservation area. Additionally, roughly 57 miles of wheeled motorized trails would need to be closed to motorized use. Because of this, alternative A has the highest potential impact on special-use permits, rights-of-way, and easements due to reduced access to NFS lands.

Alternatives B modified, C, and D

None of the alternatives propose any site-specific changes to the existing land ownership on the Forest. No conveyances (acquisitions, disposals, or exchanges) are proposed. Any of these actions would only be considered at the project level. Until an external entity presents a proposal, there would be no changes to the existing landownership pattern.

Since no changes in land ownership are proposed, the acreage of NFS lands would remain the same for all alternatives. The number of special-use permits, rights-of-way, and easements might be

impacted by a change in access. For all action alternatives, bear management subunits in the primary conservation area would need to maintain or be below baseline levels for motorized road access. This would have no impact on access for special uses, rights-of way, or easements.

Under alternatives B modified and D, there would be no change in wheeled motor vehicle use (allowed on designated roads). Under alternative C, wheeled motorized use would not be suitable in recommended wilderness areas, which would reduce the amount of motorized trail opportunity for wheeled motor vehicle use by 75 miles on the Forest. Alternative C would therefore have a higher potential impact on special uses, rights-of-way, and easements than alternatives B modified and D, but it would have less potential impact than alternative A.

Consequences to lands and special uses from forest plan components associated with other resource programs or management activities

Effects from management area direction for alternatives B modified, C, and D

Some management area allocations, such as NFS lands that have not been statutorily designated for a specific use (e.g., management area 1b (recommended wilderness), management area 2b (eligible wild and scenic rivers), or lands that have been administratively designated for a specific use (e.g., management area 3, special areas, or management area 4a, research natural areas) are less likely to be considered for disposal or exchange. Based on management area allocations, primarily recommended wilderness allocations, alternative C would have the greatest number of acres that would be less likely to be considered for disposal or exchange, followed by alternative B modified, D, and A.

Similar to lands, some special-use authorizations (such as power lines, communications towers, fences, etc.) are less likely to be considered in management areas 1b, 2a, 2 b, 3, or 4. Based on management area allocations, alternative C would have the greatest number of acres that would be less likely to be considered for these types of special-use authorizations, followed by alternatives B modified, D, and A. Other special-use authorizations such as outfitter and guide permits may be more likely to be considered in management areas 1b, 2a, 2b, and 3.

Focused recreation areas typically feature certain types of recreation activities that take place near or on large lakes or reservoirs, developed ski areas or year-round resorts, large campgrounds, or trail systems for featured recreational activities. This allocation may result in increased demand for more recreational special-use authorizations and thus an increase in recreational special-use authorizations for all action alternatives. Alternatives B modified and D have the same number of focused recreation areas; alternative C has fewer than alternative B modified and more than alternative A.

Effects from vegetation management

Vegetation treatments tend to affect the appraised value of NFS lands. Depending on the type of treatment, the value may decrease or increase. Since alternative D has the most acreage in management areas 6a, 6b, and 6c and thus the greatest likelihood of vegetation treatments, it is most likely to result in fluctuations in land values, followed by alternatives A, B modified, and C.

Effects of wildlife management

National forest system lands that provide secure habitat or contribute to habitat connectivity or linkage areas are less likely to be considered for disposal or exchange. All alternatives have lynx standards ALLS1 and LINKS1 to maintain habitat connectivity and linkage areas. The action alternatives place more emphasis on habitat connectivity for multiple species. Some special uses

may be affected by motorized access. Under alternative A, continued implementation of amendment 19 of the 1986 forest plan would limit motorized access in the future more than under the action alternatives.

Cumulative effects

Cumulative effects evaluate the potential impacts to NFS lands and special uses from the proposed action when combined with past, present, and reasonably foreseeable actions. The lands within the Forest boundary form the geographic scope for cumulative effects since this is the scope for the analysis. The temporal bound would be the life of the forest plan, which is estimated to be 15 years.

In order to integrate the contributions of past actions to the cumulative effects of the proposed action and alternatives, existing conditions are used as a proxy for the impacts of past actions. This is because existing conditions reflect the collective impact of all prior actions that have affected landownership and special uses and might contribute to cumulative effects. Landownership and special uses can be expected to be influenced by a variety of factors.

As described in section 3.13.2 above, the Forest has administrative responsibilities for 2,413,573 acres of NFS lands. Adjustments in landownership on the Forest will continue, including a proposal for the purchase of three parcels utilizing the Land and Water Conservation Fund and the sale of an administrative site, both expected in 2017. External entities have made land acquisitions and have held them until they can be conveyed to the national forests, and it is likely that these types of actions may continue. Any change (increase or decrease in total NFS lands) is dependent on the actions that are initiated. Outright purchases and transfers would most likely result in an increase in the acreage of NFS lands. Land exchanges, on the other hand, may result in a decrease in the acreage of NFS lands.

The Forest can expect requests for special-use authorizations to increase. As more private land is subdivided, there is usually an associated increase in requests for special-use authorizations such as road and utilities. Requests for modification of existing authorized communications sites and designation of new communications sites can reasonably be expected as technological advances (e.g., cell phones) are made. On the Forest, these sites typically occupy small acreages (one to two acres).

Boundary surveying and marking will continue, and encroachments are likely to be discovered.

3.14 Designated Wilderness

3.14.1 Introduction

In 1964, Congress passed the Wilderness Act of 1964 (Pub. L. 88-577) and defined wilderness as a place,

in contrast with those areas where man and his own works dominate the landscape, . . . where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain . . . an area of undeveloped Federal lands retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other feature of scientific educational, scenic, or historical value. (p. 891)

The Wilderness Act of 1964 requires the preservation of wilderness character and recognizes the multiple values and public benefits found in these areas. Wilderness provides outstanding opportunities for solitude and for primitive and unconfined recreational experiences. Wilderness is also important for the maintenance of species diversity, protection of threatened and endangered species, protection of watersheds, scientific research, and various social values. Wilderness is part of the national forest mission of multiple-use management.

Regulatory framework

Laws and executive orders

Wilderness Act of September 3, 1964 (16 U.S.C. 1131-1136): This act provides the statutory definition of wilderness and management requirements for these congressionally designated areas. The act established a National Wilderness Preservation System to be administered in such a manner as to leave these areas unimpaired for future use and enjoyment as wilderness.

National Forest Management Act of 1976, as amended (16 U.S.C. 1600): Provides that management direction for wilderness be incorporated into forest plans and sets minimum standards for the content of the plans.

Code of Federal Regulations (CFR)

- **36 CFR § 293:** Wilderness - Primitive areas: These regulations define a wilderness - primitive area and provide direction on objectives; control of uses; maintenance of records; establishment, modification, or elimination of a wilderness area; commercial enterprises, roads, motor vehicles, etc.; grazing of livestock; permanent structures and commercial services; and other topics.
- **36 CFR § 261.18:** The following are prohibited in National Forest wilderness: (a) Possessing or using a motor vehicle, motorboat or motorized equipment except as authorized by Federal Law or regulation; (b) Possessing or using a hang glider or bicycle; (c) Landing of aircraft, or dropping or picking up of any material, supplies, or person by means of aircraft, including a helicopter.

Methodology and analysis process

Information sources

Information sources include the Forest's GIS data and the National Visitor Use Monitoring program. Note that acreages used in the analysis, which are generated by GIS, differ from USFS official acreages (USDA, 2015b).

Analysis area

The geographic scope of the analysis is all NFS lands administered by the Forest. All lands within the Forest boundary form the geographic scope for cumulative effects. The temporal scope of the analysis is the anticipated life of the plan (15 years).

3.14.2 Affected environment (existing condition)

Wilderness areas provide a wide variety of user opportunities for exploration, solitude, natural environment, risk, challenge, and primitive and unconfined recreation. Designated wilderness represents the highest concentration of quiet places on the Forest, places where the sights and sounds of human presence are relatively unnoticeable. Primary recreational activities within the wilderness include hiking, horseback riding, hunting, fishing, floating, and rafting. Many visitors use the services of an outfitter and guide operating under Forest Service special-use permits in wilderness areas.

The existing wilderness areas are managed in order to preserve the areas' wilderness character. Five qualities help describe wilderness character (Landres, Hennessy, Schlenker, Cole, & Boutcher, 2008):

- **Untrammeled.** Wilderness is essentially unhindered and free from modern human control or manipulation.
- **Naturalness.** Wilderness ecological systems are substantially free from the effects of modern civilization.
- **Undeveloped.** Wilderness is essentially without permanent improvements or modern human occupation.
- **Outstanding opportunities for solitude or a primitive and unconfined type of recreation.** Wilderness provides outstanding opportunities for people to experience solitude or primitive and unconfined recreation, including the values of inspiration and physical and mental challenge.
- **Other features of value.** Wilderness may contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

The National Visitor Use Monitoring program (USDA, 2017) monitors visitor use every five years on the Forest. The 2015 visitation to designated wilderness on the Flathead National Forest was 54,000 (the national visitor use monitoring does not separate out the visits to the Forest's three designated wilderness areas). This is about 5 percent of the total visitation in 2015 for the Flathead National Forest.

Designated wilderness comprises 45 percent of the Forest, for a total of 1,075,559 acres (official acres) (USDA, 2015b). There are three designated wilderness areas within the administrative boundary of the Forest. These are the Bob Marshall, Great Bear, and Mission Mountains Wilderness Areas. For a map of these areas, refer to figure 2 in volume 1 of the final EIS.

The Bob Marshall Wilderness Complex includes the Bob Marshall, Great Bear, and Scapegoat Wilderness areas and makes up an area of more than 1.5 million acres. The Bob Marshall Wilderness Complex is jointly managed by five ranger districts on three national forests.

Bob Marshall Wilderness

The Bob Marshall Wilderness was named for Bob Marshall, an early wilderness advocate, explorer, and conservationist who promoted the development of wilderness management. The Bob Marshall Wilderness was designated in 1964. At 1,063,703 acres (official acres), it is the largest wilderness in the Bob Marshall Wilderness Complex, with 712,351 acres on the Flathead National Forest. The South Fork of the Flathead River, a wild and scenic river, is included in this wilderness area.

Great Bear Wilderness

The Great Bear Wilderness is 286,990 acres (official acres) and was congressionally designated in 1978. The Great Bear Wilderness is located on the western side of the Continental Divide and is entirely within the Flathead National Forest (Hungry Horse and Spotted Bear Ranger Districts). About 50 miles of the Middle Fork of the Flathead River, a wild and scenic river, is within this wilderness. Schafer Meadows Airstrip is the only open airstrip within the Bob Marshall Wilderness Complex, and it provides a primary access point for the Schafer area as well as the Middle Fork of the Flathead River. This wilderness is also part of the Bob Marshall Wilderness Complex.

Mission Mountains Wilderness

The Mission Mountains Wilderness is 76,218 acres (official acres) and is made up of high peaks, small active glaciers, alpine lakes, meadows, vertical cliff faces, and talus slopes. The region was set aside as the Mission Mountains Primitive Area in 1931 and designated as wilderness in 1975. The Mission Mountains Wilderness shares its entire western and southern boundaries with the Flathead Indian Reservation; a portion of the Mission Mountains Wilderness is adjacent to the Mission Mountains Tribal Wilderness.

3.14.3 Environmental consequences

Human use of designated wilderness is largely governed by the terms of the Wilderness Act of 1964. Project-specific proposals within designated wilderness are also evaluated through forest plan direction and a minimum requirement analysis to evaluate how the proposal may affect wilderness values. Commercial uses of wilderness are controlled by special-use permits and the plans of operation that are required under the special-use permit.

Because direction for wilderness management is detailed in laws, regulations, agency policy, and specific management plans, management under the four alternatives would not differ.

Alternatives A, B modified, C, and D

There is no change in the amount of designated wilderness under any alternative. A primitive experience would be maintained for all three wilderness areas under all alternatives. Natural ecological processes and disturbances are the primary forces affecting the composition, structure, and patterns of vegetation. All alternatives would continue to be managed to protect and maintain their wilderness character.

All alternatives would carry forward the need for wilderness patrols, rehabilitation of any impacted sites, wilderness education, and wilderness-specific management plans. These activities are common to all alternatives.

Consequences to designated wilderness from forest plan components associated with other resource programs or management activities

Effects from fire and fuels management

Natural, unplanned ignitions would continue the long-term ecological processes in these areas. These could lead to a temporary loss of vegetation, reduction in water quality due to sedimentation, or air pollution; however, these effects are part of the natural ecological processes.

Effects from vegetative management

These lands are withdrawn from timber production and therefore are not suitable for timber production or timber harvest. There would be no effect to designated wilderness from timber harvest.

Effects from recreation and access

The Bob Marshall Wilderness, Great Bear Wilderness, and Mission Mountains Wilderness may be affected by recreational use. Visitors to the wilderness may affect solitude, and camping may negatively affect vegetation and water quality through site compaction and improper disposal of human waste. Stock and hiking use on trails may negatively affect natural vegetation by introducing noxious weeds and may also reduce water quality.

Effects from minerals management

The Bob Marshall, Great Bear, and Mission Mountains Wildernesses have been withdrawn from mineral entry and are not available for new leases or claims. Surface and mineral rights within the wilderness are entirely Federal.

Cumulative effects

Generally, wilderness areas are in a more natural vegetation condition (in terms of composition and structure) than non-wilderness areas. As large tracts of land relatively free of human-caused disturbance and where natural ecological processes and disturbances are the primary forces, they contribute to maintaining biological diversity while minimizing the effects of human development on habitat connectivity. These wilderness areas have played a role in maintaining strongholds of a number of threatened, endangered, and sensitive species such as grizzly bear, lynx, and bull trout. Designated wilderness areas on the Forest provide outstanding opportunities to experience solitude and/or primitive and unconfined recreation, including the values of inspiration and physical and mental challenge. They provide undeveloped areas without permanent improvements or modern human occupation and areas that are essentially free from modern human control or manipulation.

Population growth and development increases the need for public open space. Growth in Flathead, Lake, Missoula, and Lincoln counties is likely to increase recreational use of the Forest, which may include an increase in wilderness use. Increased recreational use may impact the wilderness character, particularly the opportunities for solitude and natural quality. Examples of potential impacts include increased opportunity for crowding in high use areas, soil compaction or erosion, and threats to native plant species from the spread of noxious weeds from sources outside the wilderness. The effects of urbanization and population growth on wilderness use and resource conditions are likely to be gradual and to extend well beyond the planning period. These areas may be affected by management of adjacent lands, such as sights or sounds from vegetation treatments, motorized use, or private development.

Currently, the Flathead National Forest manages approximately 30 percent of the designated wilderness within Montana and 10 percent within the National Wilderness Preservation System.

3.15 Recommended Wilderness

3.15.1 Introduction

The wilderness recommendation process occurs in four primary steps: inventory, evaluation, analysis, and recommendation. All plan revisions must complete this process before the responsible official determines whether to recommend lands within the plan area to Congress for wilderness designation.

The demand for wilderness goes beyond recreation opportunities. Other values include long-term environmental monitoring, scenic backdrops for tourism, watershed protection, and maintenance of biological diversity. Many people who do not regularly visit primitive, roadless, or designated wilderness areas still value protection of such areas to maintain the opportunity for visits in the future (option value). People also gain benefits simply from knowing that natural areas exist (existence value) and that their protection today sustains them for future generations (bequest value) (Rosenberger & Loomis, 2000).

Several studies have shown the importance and value people place on these passive-use benefits of wilderness (Cordell, Betz, Stephens, Mou, & Green, 2008). These values or needs are reflected in the National Survey on Recreation and the Environment, which found that roughly 70 percent of those surveyed responded favorably to the question, “How do you feel about designating more Federal lands in your state as wilderness?” Over 96 percent agreed or strongly agreed with the statement, “I enjoy knowing that future generations will be able to visit and experience wilderness areas.”

Wilderness provides outstanding opportunities for solitude and for primitive and unconfined recreational experiences. Wilderness is also important for the maintenance of species diversity, protection of threatened and endangered species, protection of watersheds, scientific research, and various social values. Wilderness is part of the national forests’ multiple-use management mission.

Regulatory framework

36 CFR § 219 sec. 219.7: This regulation requires the following during revision of a forest plan: identify and evaluate lands that may be suitable for inclusion in the National Wilderness Preservation System and determine whether to recommend any such lands for wilderness designation.

Forest Service Handbook 1909.12 chap. 70: This direction contains the framework for the wilderness recommendation process.

Key indicators

These indicators were developed in response to comments and to show how elements are affected by recommended wilderness management area allocation:

- Acres of recommended wilderness
- Acres of inventoried roadless area within recommended wilderness
- Acres of motorized over-snow vehicle use areas in recommended wilderness
- Miles of motorized over-snow vehicle use in recommended wilderness
- Miles of wheeled motorized use in recommended wilderness

- Miles of trails that allow mechanized transport in recommended wilderness
- Acres of underrepresented ecological groups of the National Wilderness Preservation System in recommended wilderness

Methodology and analysis process

The directives contain the framework for the wilderness recommendation process. The Flathead National Forest developed the wilderness inventory areas based on the process in Forest Service Handbook 1909.12 chapter 70 section 71. The inventory process is documented in appendix 4 of the final EIS. The primary function of the identification and inventory step is to identify all lands within the plan area that may have wilderness characteristics as defined in the Wilderness Act of 1964, using a transparent process. Lands included in the inventory are documented and identified on a map and carried forward for further evaluation. The draft methodology paper for the identification and inventory of lands that may be suitable for inclusion in the National Wilderness Preservation System went through a 45-day public comment period. In addition, an interactive map was made available on the Flathead National Forest website displaying an initial identification and inventory of lands that may be suitable for inclusion in the National Wilderness Preservation System. Based on comments received, the draft methodology paper was revised in August 2014. The wilderness inventory area (643,000 acres) was separated into 25 named areas. The methodology did not specifically look at inventoried roadless areas; to be included in the wilderness inventory, lands had to meet the criteria set forth in the inventory methodology paper. Approximately 8,445 acres of inventoried roadless area were not included in the wilderness inventory areas; the primary reason they were not included was due to past timber harvests that met the criteria of being substantially noticeable.

All 25 wilderness inventory areas went through a wilderness evaluation, which is documented by a wilderness evaluation worksheet for each area (see appendix 4).

For each alternative, the following indicators were used to evaluate the effects of the wilderness recommendations:

- acres of inventoried roadless areas within recommended wilderness
- changes in wheeled motorized opportunities compared with the existing condition
- changes in motorized over-snow vehicle opportunities compared with the existing condition
- changes in trail miles² that allow mechanized transport compared with the existing condition
- the amount of underrepresented ecological groups that the recommended wilderness areas would add to the National Wilderness Preservation System if these areas were designated and made part of the National Wilderness Preservation System

To determine whether any recommended wilderness areas contain ecological systems that are not currently represented or are minimally represented within the wilderness system or system of research natural areas, the Forest analyzed the U.S. Geological Survey Gap Analysis Program national land cover dataset version 2 (USGS, 2011). This dataset provides detailed (30-meter resolution) information on vegetation and land-use patterns of the United States using consistent satellite base data and classification systems. The data at the ecological system level are compared to the six highest levels of the National Vegetation Classification Standard (USGS, 2008). The

² Because mechanized transports such as mountain bikes or game carts generally stay on trails, the indicator looks at miles of trails that allow this use and not acres open to mechanized transport.

Forest analyzed the ecosystem representation at the sixth level (the finest scale at which consistent land-cover data are available) of the National Vegetation Classification Standard, which is considered the group or ecological system.

The U.S. Geological Survey Gap Analysis Program land-cover dataset within the Flathead National Forest boundary was determined using GIS and acreages were calculated for the ecological systems within the different recommended wilderness areas. These values were then analyzed against the acreages of the ecological systems on the Forest. Finally, the output was amended with the national information provided by the Aldo Leopold Wilderness Research Institute, including the total acreage of each ecological system within the National Wilderness Preservation System along with the proportional percentage of each ecological system found on Federal lands that is represented in wilderness. This was a part of a national assessment (Dietz, Belote, Aplet, & Aycrigg, 2015).

From the calculations above, a listing of 47 ecological groups within the Forest was reviewed, and those ecological groups having greater or equal to 20 percent of that ecological type represented in the National Wilderness Preservation System compared to all NFS land acres in the lower 48 states were dropped (15 groups). Out of the remaining 32 ecological groups, some groups such as cultivated hay/pasture, harvested, or water type were dropped. The remaining 22 ecological groups were dropped if they were less than four acres or were a group that does not occur on the Forest. The end result was that 14 ecological groups were determined to be underrepresented within the recommended wilderness areas on the Forest (based on what was determined to be underrepresented within the designated wilderness areas on the Forest; see table 132).

Table 132. Underrepresented ecological groups in recommended wilderness areas on the Forest

Underrepresented Ecological Groups
Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland
Inter-Mountain Basins Big Sagebrush Steppe
Middle Rocky Mountain Montane Douglas-Fir Forest and Woodland
North American Arid West Emergent Marsh
Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest
Northern Rocky Mountain Lower Montane Riparian Woodland and Shrubland
Northern Rocky Mountain Lower Montane Foothill and Valley Grassland
Northern Rocky Mountain Mesic Montane Mixed Conifer Forest
Northern Rocky Mountain Montane-Foothill Deciduous Shrubland
Northern Rocky Mountain Ponderosa Pine Woodland and Savanna
Northern Rocky Mountain Western Larch Savanna
Rocky Mountain Aspen Forest and Woodland
Rocky Mountain Lodgepole Pine Forest
Rocky Mountain Subalpine-Montane Fen

Appendix 4 displays each recommended wilderness area and how it responds to required criteria set forth in Forest Service Handbook 1909.12 chapter 70 section 73. In addition, appendix 4 displays a summary of each wilderness inventory area and which management area it was allocated to by alternative, as well as the rationale for the allocation.

The following terms are used in the analysis: ecological and social characteristics and wilderness characteristics. The ecological and social characteristics of recommended wilderness areas that

provide the basis for suitability for inclusion in the National Wilderness Preservation System are identified for each recommended wilderness area and can be found in appendix 4.

Wilderness characteristics are *natural quality, undeveloped, unconfined or primitive recreation or solitude and unique or other features*. Oftentimes, the ecological characteristics are discussed in terms of *natural quality* and *undeveloped* and can be represented by landscapes where evidence of human disturbance is not readily apparent or where the intactness of an ecosystem is evident. Social characteristics can be discussed in terms of *solitude* or *unconfined or primitive recreation* and are often represented by remote, quiet landscapes where recreation activities such as hiking, climbing, fishing, and hunting are predominant.

Information sources

Geospatial analysis was used for the indicators. See above for the datasets associated with the underrepresented ecological groups.

Analysis area

The geographic scope of the analysis is NFS lands administered by the Flathead National Forest. All lands within the Forest boundary form the geographic scope for cumulative effects. The temporal scope of the analysis is the anticipated life of the plan (15 years).

3.15.2 Affected environment (existing condition)

The 1986 forest plan recommended about 98,400 acres for wilderness. The five areas are Alcove, Jewel Basin, Limestone, Slippery Bill, and the Swan Front (see figure 1-64).

These areas overlay management areas that range from unroaded lands to lands that are roaded and suitable for timber management. The 1986 forest plan standard for recommended wilderness states that the management standards for these areas will be consistent with the standards of the non-wilderness management area designation, except that no action can occur that would reduce the areas' wilderness attributes until Congress has made a decision on wilderness classification or otherwise specified how these areas will be managed.

The Swan Front, Alcove, and Limestone recommended wilderness areas are currently closed to mechanized transport and motorized use (wheeled and motorized over-snow vehicles) because of a 1986 forest plan standard that requires recommended wilderness areas adjacent to designated wilderness be managed like designated wilderness.

3.15.3 Environmental consequences

Alternative A—No action

As the no-action alternative, this alternative does not propose any changes to what was recommended as wilderness in the 1986 forest plan (98,446 acres). Table 133 lists the five areas recommended as wilderness in the 1986 forest plan, and table 134 lists the indicators that were used. National direction requires that areas recommended for wilderness are not available for any use or activity that might reduce the wilderness potential of an area. Recommended wilderness areas such as Alcove, Limestone, and the Swan Front have closure orders that prohibit mechanized transport (e.g., mountain bicycles or game carts) and motorized use (wheeled and motorized over-snow vehicles). The Slippery Bill recommended wilderness area is open to mechanized transport, which could affect its undeveloped and primitive recreation wilderness characteristic. This

alternative represents approximately 20 percent (95,278 acres) of the inventoried roadless areas on the Forest.

Table 133. Recommended wilderness areas and acres in alternative A

Recommended Wilderness Area	Acres
Alcove	9,998
Jewel Basin	32,972
Limestone Cave	5,076
Slippery Bill	5,585
Swan Front	44,815

Table 134. Indicators for recommended wilderness in alternative A

Indicators	Unit of measure
Acres of recommended wilderness	98,388 acres
Acres of inventoried roadless areas within recommended wilderness	95,278 acres
Acres of suitable motorized over-snow vehicle areas	12,600 acres
Miles of motorized over-snow vehicle routes	none
Miles of wheeled motorized use	2 miles
Mechanized transport on system trails	26 miles
Acres of underrepresented ecological groups of the National Wilderness Preservation System	23,685 acres

The total amount of recommended wilderness when combined with existing designated wilderness (1,072,040³ acres) would bring the total acreage to about 1,170,428 acres or about 49 percent of the Flathead National Forest that is in designated or recommended wilderness. These acres would provide a recreation opportunity spectrum primitive setting across the Forest. These acres would provide a primitive setting on 48 percent of the Forest, where wheeled motorized use, motorized over-snow vehicle use, and mechanized transport (e.g., mountain bicycles) would decrease and recreational opportunities such as hiking, horseback riding, and skiing would increase. The primitive setting is characterized by large, remote, wild, and predominantly unmodified landscapes with no motorized activity and little probability of seeing other people. Primitive settings are managed for quiet solitude away from roads, people, and development. There are few, if any, facilities or developments. This alternative provides opportunity for a primitive recreation opportunity spectrum setting through recommending 98,446 acres for wilderness designation. Alternative A has more primitive setting than alternative D and less than alternatives B modified and C, and it therefore it would provide the third highest amount of primitive setting on the Forest.

Alternative A includes 23,161 acres of underrepresented ecological groups, which is higher than alternative D and lower than alternatives B modified and C. This is the amount this alternative would add of underrepresented ecological groups to the National Wilderness Preservation System if these areas were designated as wilderness.

Under this alternative, the Jewel Basin hiking area (about 15,315 acres) would continue to be within the Jewel Basin recommended wilderness area (32,972 acres). The Jewel Basin hiking area would still retain prohibitions on stock and pack animals as well as mechanized transport and motorized

³ These acres are from GIS data and differ from the official wilderness acres, which total 1,075,559 acres.

uses. Outside of the Jewel Basin hiking area but still within the Jewel Basin recommended wilderness area (17,689 area), there is an area that allows mechanized transport on 26 miles of trail and wheeled motorized use on 2 miles of trail, and these uses would continue.

Alternative B modified

The names of the eight areas recommended for wilderness under alternative B modified are listed in table 135 and total approximately 190,403 acres. Table 136 lists the indicators that were used to describe the effects analysis. This represents approximately 37 percent (179,176 acres) of the inventoried roadless areas on the Forest (which totals 479,710 acres). This alternative does not allow for mechanized transport (e.g., mountain bikes) or motorized uses in recommended wilderness areas (see plan component MA1b-SUIT-06).

Table 135. Recommended wilderness areas and acres under alternative B modified

Recommended Wilderness Area	Acres
Alcove	18,901
Elk Creek	1,442
Java-Bear Creek	1,824
Jewel Basin	18,462
Limestone-Dean Ridge	15,026
Slippery Bill-Puzzle	12,393
Swan Front	42,534
Tuchuck-Whale	79,821

Table 136. Indicators for recommended wilderness under alternative B modified

Indicators	Unit of measure
Acres of recommended wilderness	190,403 acres
Acres of inventoried roadless area within recommended wilderness	179,060 acres
Acres of suitable motorized over-snow vehicle areas	344 acres
Miles of motorized over-snow vehicle routes	< 1 mile
Miles of wheeled motorized use	none
Mechanized transport on system trails	96 miles
Acres of underrepresented ecological groups of the National Wilderness Preservation System	27,396 acres

This alternative includes a plan component (MA1b-SUIT-06) stating that mechanized transport and motorized travel and uses are not suitable in recommended wilderness areas. Therefore, the following changes could occur:

- Mechanized transport on system trails within recommended wilderness areas could decrease from 96 miles to 0 miles after site-specific analysis is completed.
- Acres suitable for motorized over-snow vehicle use areas could decrease from 344 acres to 0 acres on the Forest in the Slippery Bill- Puzzle recommended wilderness area after site-specific analysis is completed.

There would be no change to the following uses because recommended wilderness areas do not include these uses:

- wheeled motorized use on designated routes
- motorized over-snow vehicle use on designated routes

Mechanized transport and motorized use would continue until a site-specific analysis prohibits these uses; the time frame of when this would occur is unknown. The effect on the ecological and social characteristics that provide the basis for wilderness recommendation and the wilderness characteristics by continuing these uses is discussed here.

- Java-Bear Creek recommended wilderness area currently allows 1.3 miles of mechanized trail. Motorized transport is currently prohibited in this area.
- The Limestone-Dean recommended wilderness area currently allows 8 miles of mechanized transport. Motorized transport is currently prohibited.
- The Slippery Bill-Puzzle recommended wilderness area currently allows 4 miles of mechanized transport and 344 acres of motorized over-snow vehicle use.
- The Tuchuck-Whale recommended wilderness area has about 82 miles of mechanized trails. Motorized transport is currently prohibited in this area.

Mechanized transport (e.g., bicycles, carts) and motorized uses might affect the undeveloped nature (ecological characteristic) and primitive recreation (social characteristic) of the recommended wilderness, which characterize the areas as essentially without permanent improvements or modern human occupation. In addition, motorized uses such as motorized over-snow vehicle use or the use of chainsaws could impact the area's solitude and primitive recreation (social characteristic).

Not every person traveling through these recommended wilderness areas would meet a mountain biker or snowmobiler. The four recommended wilderness areas that currently allow mechanized transport or motorized over-snow vehicle use have relatively low amounts of use for these activities. Any type of trail, whether for hikers or horseback riders, could affect the undeveloped wilderness characteristics (ecological characteristic) because a trail is considered a development. Solitude could be affected by noise but also could be affected by encounters with other people who are hiking or horseback riding.

There are 4.5 miles of existing system roads under this alternative in the Tuchuck-Whale recommended wilderness area. These roads would be decommissioned after site-specific analysis is completed. These roads are currently closed to motorized use, so there would be no change in existing access. Over time, these roads would revegetate and become more natural in appearance.

The total amount of recommended wilderness when combined with existing designated wilderness (1,072,040⁴ acres) would bring the total acreage of the Forest that is in designated or recommended wilderness to about 1,265,443 acres, or approximately 53 percent. These acres would provide a primitive recreation setting on the majority of the Forest; wheeled motorized use, motorized over-snow vehicle use, and mechanized transport (e.g., mountain bicycles) would not be allowed, and nonmotorized recreational opportunities such as hiking, horseback riding, and cross-country skiing would increase across the Forest within the primitive setting.

⁴ These acres are from GIS data and differ from the official wilderness acres, which total 1,075,559 acres.

The primitive setting is characterized by large, remote, wild, and predominantly unmodified landscapes with no motorized activity and little probability of seeing other people. Primitive settings are managed for opportunities for solitude away from roads, people, and development. There are few facilities or developments. This alternative provides increased opportunity for a primitive recreation opportunity spectrum setting through recommending 190,403 acres for wilderness designation. This alternative would provide more primitive setting on the Forest than all the other alternatives. It would provide more primitive setting than alternatives A and D but less than alternative C, and therefore it would provide the second highest amount of primitive setting on the Forest.

This alternative includes 27,396 acres of underrepresented ecological groups, which is higher than alternatives A and D and lower than alternative C. This acreage is the amount this alternative would add of underrepresented ecological groups to the National Wilderness Preservation System if these areas were designated as wilderness. The Jewel Basin hiking area (about 15,315 acres) is part of the Jewel Basin recommended wilderness area (18,462 acres). The Jewel Basin hiking area within the recommended wilderness area would still retain prohibitions on stock and pack animals, mechanized transport, and motorized uses. The Jewel Basin recommended wilderness area under alternative B modified is smaller than what was recommended for wilderness in the 1986 forest plan by about 14,510 acres. There are 3,147 acres of the Jewel Basin recommended wilderness area that are not within the Jewel Basin hiking area.

Alternative C

Table 137 lists the 17 areas recommended for wilderness in this alternative for a total of 506,919 acres, and table 138 lists the indicators that were used (see figure 1-66 for a map of these areas). This area represents approximately 98 percent (467,461 acres) of the inventoried roadless areas on the Forest.

Table 137. Recommended wilderness areas and acres under alternative C

Recommended Wilderness Area Name	Acres
Alcove-Bunker	63,962
Canyon	7,939
Coal	45,257
Cold Jim	317
Elk Creek	2,964
Essex	13,788
Fatty-Woodard Creek	2,133
Hungry Horse East	33,503
Java-Bear Creek	3,725
Jewel Basin-Swan Crest	135,759
Le Beau	5,950
Limestone-Dean Ridge	26,294
Piper Creek	642
Sky West	5,193
Slippery Bill-Puzzle	20,703
Swan Front	48,151
Tuchuck-Whale	90,638

Table 138. Indicators for recommended wilderness for alternative C

Indicators	Unit of measure
Acres of recommended wilderness	506,919 acres
Acres of inventoried roadless areas within recommended wilderness	467,465 acres
Acres of suitable motorized over-snow vehicle areas	169,248 acres
Miles of motorized over-snow vehicle routes	4 miles
Miles of wheeled motorized use	75 miles
Mechanized transport on system trails	417 miles
Acres of underrepresented ecological groups of the National Wilderness Preservation System	130,007 acres

This alternative includes the plan component (MA1b-SUIT-06): Mechanized transport and motorized use are not suitable in recommended wilderness areas. Therefore, the following changes could occur:

- Mechanized transport on system trails within recommended wilderness areas could decrease from 417 miles to 0 miles after site-specific analysis is completed.
- Wheeled motorized use on designated routes could decrease from 75 miles to 0 miles within recommended wilderness areas after site-specific analysis is completed.
- Motorized over-snow vehicle use on designated routes within recommended wilderness areas could decrease from 4 miles to 0 miles after site-specific analysis is completed.
- Acres suitable for motorized over-snow vehicle use areas could decrease from 169,248 acres to 0 acres on the Forest after site-specific analysis is completed.

This alternative would result in the most changes to wheeled motorized use, mechanical transport, and motorized over-snow vehicle use opportunities on the Forest. Forestwide, wheeled motorized use would decrease from 226 miles to 151 miles of designated trails; mechanized transport on system trails would decrease from 836 miles to 419 miles; motorized over-snow vehicle use on designated routes would decrease from 1,964 to 1,960 miles; and motorized over-snow vehicle use on designated areas would decrease from 457,133 to 287,855 acres. Displacement of motorized (wheeled and motorized over-snow vehicles) and mechanized transport on the Forest could occur when and if a site-specific decision is completed to prohibit these uses in recommended wilderness. Should these closures occur, use might become concentrated in areas that remain suitable for motorized wheeled and motorized over-snow vehicle, causing some users to have negative experiences and/or go elsewhere to an off-Forest location or to other lands open to motorized use and mechanized transport.

Under alternative C, there are 48 miles of existing system roads within the recommended wilderness areas; these roads would be decommissioned after site-specific analysis is completed. These roads are currently closed to motorized use, so there would be no change in existing access. Over time, these roads would revegetate and become more natural in appearance.

The total amount of recommended wilderness when combined with existing designated wilderness (1,072,040 acres⁵) would bring the total acreage of the Forest that is in designated or recommended wilderness to about 1,578,963 acres, or approximately 66 percent. These acres would provide a

⁵ These acres are from GIS data and differ from the official wilderness acres, which total 1,075,559 acres.

primitive setting on the majority of the Forest, where wheeled motorized use, motorized over-snow vehicle use, and mechanized transport (e.g., mountain bicycles) would decrease and recreational opportunities such as hiking, horseback riding, and skiing would increase.

The primitive setting is characterized by large, remote, wild, and predominantly unmodified landscapes with no motorized activity and little probability of seeing other people. Primitive settings are managed for quiet solitude away from roads, people, and development. There are few, if any, facilities or developments. This alternative would provide opportunity for a primitive setting through recommending 506,919 acres for wilderness designation. This alternative would provide more primitive setting on the Forest than any of the other alternatives.

This alternative would include 130,007 acres of underrepresented ecological groups that would be added to the National Wilderness Preservation System if these areas were designated as wilderness. This is the most of all the alternatives.

The Jewel Basin hiking area (15,315 acres) would become part of the Jewel Basin recommended wilderness area (135,759 acres). The Jewel Basin hiking area within the recommended wilderness area would still retain prohibitions on stock and pack animals, mechanized transport, and motorized uses. The recommended wilderness area is larger than the area recommended for wilderness in the 1986 plan by 102,787 acres.

Alternative D

There are no areas recommended for wilderness in this alternative; recommended wilderness areas allocated in the 1986 forest plan are not included under this alternative. The following is management area allocations for this alternative for the five areas that were recommended wilderness in the 1986 plan.

- Alcove recommended wilderness area is 100 percent management area 5a (backcountry nonmotorized year-round primitive).
- Jewel Basin recommended wilderness area is 40 percent management area 3b (special management area for the Jewel Basin hiking area), 30 percent management area 5c (backcountry winter motorized), 17 percent management area 5a (backcountry nonmotorized year-round primitive), 6 percent management area 2b (eligible wild and scenic river), and 5 percent management area 5b (backcountry motorized year-round).
- Limestone Cave recommended wilderness area is 74 percent management area 5a (backcountry nonmotorized year-round primitive) and 26 percent management area 2b (eligible wild and scenic river).
- Slippery Bill recommended wilderness area is 95 percent management area 5a (backcountry nonmotorized year-round primitive), 4 percent management area 6a (general forest low-intensity vegetation management) and 1 percent management area 5c (backcountry winter motorized).
- Swan Front recommended wilderness area is 93 percent management area 5a (backcountry nonmotorized year-round primitive) and 6 percent management area 2b (eligible wild and scenic river).

Under this alternative, some wilderness characteristics within inventoried roadless areas would be generally maintained by the requirements of the Roadless Area Conservation Rule, which prohibits building roads and limits timber harvest, although motorized use is allowable under the Roadless Area Conservation Rule, which can affect solitude and primitive recreation. Refer to section 3.16

for additional information. The Forest would continue to provide primitive experience on the existing designated wilderness of 1.1 million acres (45 percent of the Forest).

There would be no changes to miles of mechanized trails, miles of wheeled motorized trails, miles or acres of motorized over-snow vehicle use, or miles of hiking and stock trails.

Table 139. Indicators for recommended wilderness for alternative D

Indicators	Unit of measure
Acres of recommended wilderness	0 acres
Acres of inventoried roadless areas	0 acres
Acres of suitable motorized over-snow vehicle areas	0 acres
Miles of motorized over-snow vehicle routes	0 miles
Mechanized transport on system trails	0 miles
Acres of underrepresented ecological groups of the National Wilderness Preservation System	0 acres

Approximately 45 percent (1,072,040⁶ acres) of the Forest is in designated wilderness. These acres would provide a primitive recreation setting on the Forest where wheeled motorized use, motorized over-snow vehicle use, and mechanical transport (e.g., mountain bicycles) would not be suitable. However, because this alternative recommends no additional areas for wilderness, opportunities for solitude and remoteness in a primitive setting that offers remote and predominantly unmodified landscapes would decrease across the Forest. Therefore, this alternative provides the least amount of primitive setting of all the alternatives.

This alternative includes 0 acres of underrepresented ecological groups; therefore, this alternative would provide the least amount of additions of underrepresented ecological groups to wilderness of all the alternatives.

The Jewel Basin hiking area (about 15,315 acres) would continue to retain prohibitions on stock and pack animals, mechanized transport, and motorized uses.

Consequences to recommended wilderness areas from forest plan components associated with other resource programs or management activities

Effects from management area allocations

Management area allocations vary between alternatives. Wilderness characteristics and the ecological and social characteristics that provide the suitability for inclusion in the National Wilderness Preservation System would be protected and maintained under alternatives A, B modified, and C.

Effects from fire and fuels management

Effective fire suppression, insect and disease infestations, and native vegetation and fuel types on the Forest create fuel conditions that could support moderate- to high-severity wildfires in some areas. Lightning-caused fires may be managed to meet resource benefits to trend vegetation towards the desired conditions. Likewise, prescribed fire for restoration purposes may be used to trend vegetation towards the desired conditions.

⁶ These acres are from GIS data and differ from the official wilderness acres, which total 1,075,559 acres.

The use of natural, unplanned ignitions would be more likely in alternatives B modified and C, which emphasize the use of natural disturbances and have the highest and the second highest acres of recommended wilderness. The use of natural, unplanned ignitions would continue the long-term ecological processes in these areas. There could be a substantial changes in existing forest cover, reduction in water quality due to sedimentation, and increased air pollution; however, these effects are part of the natural ecological processes. The opportunity to use natural, unplanned ignitions within some of the recommended wilderness would be limited due to their shape, size, and location relative to values at risk, should a wildfire occur. Refer to section 3.5.1 for a detailed discussion of this effect related to restoration activities for whitebark pine. Recommended wilderness is suitable for restoration activities where the outcomes will protect the wilderness characteristics of the areas, as long as the ecological and social characteristics that provide the basis for each area's suitability for wilderness recommendation are maintained and protected. Prescribed fire for restoration purposes could affect the natural quality and solitude wilderness characteristics, especially where crews are burning or are monitoring burns.

Effects from vegetative management

These lands are not suitable for timber production; timber harvest is not allowed. Most lands within recommended wilderness are within inventoried roadless areas that have high to outstanding wilderness characteristics, primarily due to restrictions on road building and to timber harvesting not occurring in much of these areas. Inventoried roadless areas are identified as not suitable for timber production, and therefore there are very few acres within recommended wilderness where timber production would have been considered suitable. Refer to section 3.21 for more information.

Recommended wilderness areas are characterized by a natural environment where ecological processes such as natural succession, wildfire, avalanches, insects, and disease function with a limited amount of human influence. However, recommended wilderness is suitable for restoration activities where the outcomes will protect the wilderness characteristics of the areas as long as the ecological and social characteristics that provide the basis for each area's suitability for wilderness recommendation are maintained and protected. Restoration activities could include restoration of whitebark pine (currently a candidate species under the Endangered Species Act), which could consist of prescribed burning, seeding, planting of rust-resistant whitebark pine seedlings, thinning with an emphasis on hand thinning over mechanical, and protecting phenotypically superior seed-producing whitebark pine trees from loss due to fire, bark beetles, or other stressors. Control of invasive plant species by hand pulling and/or herbicide spraying and the planting or seeding of native plant species could also occur. Vegetation management options would likely change in the future if recommended wilderness areas are designated as wilderness. Refer to the vegetation section 3.3.10, the plant species section 3.5.1, and the fire and fuels management section 3.8.3 for additional information on these effects to vegetation management.

Effects from recreation and access

As discussed in the environmental consequence section, the greatest change from existing conditions in the amount of suitable motorized use, mechanized transport, and nonmotorized/nonmechanized transport use would be under alternative C, which has the most area not suitable for wheeled motorized use, motorized over-snow vehicle use, or mechanized transport and has the most acres suitable for nonmotorized/nonmechanized transport such as hiking and stock use. Alternative B modified would have less of a change than alternative C in the amount of suitable motorized use, mechanized transport, and nonmotorized/nonmechanized transport. Alternative D has the least amount of change because it has no recommended wilderness, followed by alternative A.

New road construction or reconstruction is not suitable in recommended wilderness areas, which limits the amount of new access on the Forest. Alternative C would have the largest area not suitable for new roads or road reconstruction, followed by alternatives B modified, A, and D.

Recommended wilderness is not suitable for developed recreation facilities that provide for user comforts such as picnic tables, fire grills, and vault toilets. These areas are generally in the primitive recreation opportunity spectrum setting providing challenges and predominantly unmodified landscapes and are managed for quiet solitude away from roads, people, and development. Alternative C would have the most area not suitable to recreation facilities that provide for user comforts, followed by alternatives B modified, A, and D.

Effects from wildlife and fish management

Recommended wilderness areas are characterized by a natural environment where ecological processes such as natural succession, wildfire, avalanches, insects, and disease function with a limited amount of human influence. Impacts from visitation do not detract from the natural setting. However, recommended wilderness is suitable for restoration activities where the outcomes will protect the wilderness characteristics of the areas, as long as the ecological and social characteristics that provide the basis for each area's suitability for wilderness recommendation are maintained and protected. Restoration activities or management activities for wildlife and fish could include monitoring, relocation of animals, habitat improvements such as use of prescribed fire, removal of non-native fish species, and stream improvements.

Refer to the wildlife habitat connectivity section 3.7.6 and the aquatics species section 3.2.9 for additional information.

Effects from minerals management

Recommended wilderness areas are not withdrawn from mineral entry and are available for new leases or claims as long as the social and ecological characteristics that provide a basis for wilderness designation are maintained and protected. Therefore, the effects of minerals management would be the same with all alternatives, and the social and ecological characteristics that form the basis of wilderness designation would be protected and maintained.

Cumulative effects

In general, cumulative effects are the past, present, and reasonably foreseeable future effects from management activities on the Forest and adjacent lands.

Reasonable and foreseeable future actions on NFS lands include vegetation management, mining, expansion of ski areas, and reduction of fuels in the wildland-urban interface. These actions could impact the wilderness characteristics of solitude, depending on how close and pervasive these actions were, although typically just the sights and sounds *within* the recommended wilderness area are used to determine effects on wilderness characteristics. For example, vegetation management activities such as harvesting adjacent to a recommended wilderness area might increase the sights and sounds of logging equipment such as chainsaws and skidders within the recommended wilderness area, but because the harvesting is being done outside of the recommended wilderness area, it would not be considered as degrading the wilderness characteristic of solitude. However, an expansion of a ski area adjacent to recommended wilderness could increase use levels within the recommended wilderness, which might affect solitude as the number of encounters with others could increase within the recommended wilderness area.

Growth in Flathead, Lake, Lincoln, and Missoula Counties, as well as the surrounding areas in Idaho and Washington, is likely to increase recreational use of the Forest, including use within recommended wilderness areas. The effects of urbanization and population growth on recommended wilderness use and resource conditions are likely to be gradual and to extend well beyond the planning period. Increased recreational use may negatively affect wilderness characteristics, particularly the opportunity for solitude and natural quality. Examples of potential impacts include increased opportunity for crowding in certain locations, soil compaction or erosion, and threats to native plant species from the spread of noxious weeds from sources outside the area.

Currently, the Flathead National Forest manages approximately 30 percent of the designated wilderness within Montana and 10 percent of the National Wilderness Preservation System. Alternative C could potentially add the most acres to the National Wilderness Preservation System, followed by alternatives B modified and A. Alternatives D, A, B modified, and C, in that order, contain the least to the most area retaining wilderness characteristics over the next 15 years. In terms of wilderness recommendation, alternatives C, B modified, A, and D, in that order, contain the most to the least area recommended for wilderness.

Three recommended wilderness areas on the Forest (Swan Front, Tuchuck-Whale, and Le Beau) are adjacent to other Forests. The Swan Front recommended wilderness area shares about 2 miles of boundary with the Lolo National Forest, which does not have a recommended wilderness adjacent to the Swan Front recommended wilderness area. About 1 mile of the shared boundary is adjacent to a roadless area management allocation for the Lolo National Forest. This specific area (near Ptarmigan Mountain) does not have any system trails within the vicinity, and motorized over-snow vehicle use is prohibited in this area. This shared boundary and roadless area allocation is also part of proposed wilderness under the Forest Jobs and Recreation Act for the West Clearwater Wilderness Addition. This roadless area on the Lolo National Forest is adjacent to the Bob Marshall Wilderness.

The Tuchuck-Whale recommended wilderness area shares its western boundary with the Kootenai National Forest for about 20 miles along the Whitefish Divide. The Kootenai National Forest does not have any recommended wilderness area adjacent to the shared boundary with this recommended wilderness area; about 5 miles of the boundary is management area 5b, which allows motorized use yearlong on designated trails and areas, and about 15 miles of the boundary is management area 5a, which does not allow motorized use. The Ten Lakes Wilderness Study Area on the Kootenai National Forest is about 3 miles from the Tuchuck-Whale recommended wilderness area.

The Le Beau recommended wilderness area shares the western and portions of its northern boundary for about 6 miles with the Kootenai National Forest, which does not have any recommended wilderness areas adjacent to the Le Beau recommended wilderness area. About 1 mile of its northern boundary is adjacent to a research natural area, and 1 mile is adjacent to management area 5b, which allows motorized use yearlong on designated trails and areas. The western boundary is adjacent to management area 6, which is general forest area and allows motorized use on designated trails and areas.

3.16 Inventoried Roadless Areas

3.16.1 Introduction

Inventoried roadless areas are designated areas under the Roadless Area Conservation Rule (36 CFR § 294) (USDA, 2001). These areas were first inventoried by the Forest Service in 1972 as part of the Roadless Area Review and Evaluation, phase I. In 1972, the Forest Service initiated a review of roadless areas on NFS lands that were generally larger than 5,000 acres to determine their suitability for inclusion in the National Wilderness Preservation System. A second review process completed in 1979, known as the Roadless Area Review and Evaluation II, resulted in another nationwide inventory of roadless areas.

Regulatory framework

Regulations

2001 Roadless Area Conservation Rule (36 CFR § 294 Subpart B): The 2001 Roadless Rule establishes prohibitions on road construction and road reconstruction and limitations on timber cutting, sale, or removal within inventoried roadless areas on NFS lands. The intent of the 2001 Roadless Rule is to provide lasting protection for inventoried roadless areas within the NFS in the context of multiple-use management. Refer to figures B-25 and B-26 for the inventoried roadless areas on the Flathead National Forest. These areas were identified in the Forest Service Roadless Area Conservation Final Environmental Impact Statement, volume 2 (USDA, 2000).

Key indicators

- Percentage and acres of management area 1b (recommended wilderness)
- Percentage in management areas 2a and 2b (designated and eligible wild and scenic rivers)
- Percentage in management area 3b (special areas)
- Percentage in management area 4a (research natural areas)
- Percentage in management area 5a to 5d (backcountry)
- Percentage in management area 6a (general forest low-intensity vegetation management)
- Summer and winter recreation opportunity spectrum classes in inventoried roadless areas by alternatives

Methodology and analysis process

Indicators are presented under each alternative under the “Affected environment” section.

Information sources

The geographic information system (GIS) is the primary information source. A small percentage (0.20 percent or 952 acres) of inventoried roadless area is not on NFS lands, primarily due to mapping issues. The inventoried roadless area GIS layer is raster based (lines are blocky and have a stair-step appearance), and currently the Forest Service uses a vector-based GIS that results in smooth lines. When the raster-based inventoried roadless area layer is overlaid with the vector-based lines, slivers are created along the edges of the lines, which affects the acreage results. The Forest is not allowed to change the location of the original inventoried roadless area lines; it is thus not possible to align the inventoried roadless area to the intended NFS boundaries.

Analysis area

The geographic scope of the analysis is NFS lands administered by the Forest. All lands within the Flathead National Forest boundary form the geographic scope for cumulative effects. The temporal scope of the analysis is the anticipated life of the plan (15 years).

3.16.2 Affected environment (existing condition)

The Forest has 478,758 acres of inventoried roadless areas (see figures B-25 and B-26). The acreage designated as inventoried roadless areas constitutes 20 percent of the lands administered by the Forest. Twenty percent of the recommended wilderness areas from the 1986 forest plan are within inventoried roadless area lands on the Forest. Inventoried roadless areas have also been allocated to management areas other than recommended wilderness. Inventoried roadless areas, although allocated to various management areas, are also managed under the 2001 Roadless Area Conservation Rule. Table 140 shows the percentage of management area groups within the inventoried roadless area on the Forest, based on the 1986 forest plan, as amended, and includes what is currently suitable or unsuitable for timber production. The forest plan allocates about 75 percent of inventoried roadless areas as unsuitable for timber. About 4,000 acres have been harvested in inventoried roadless areas since 1985, which is less than 1 percent of the inventoried roadless area acreage on the Forest.

Table 140. Percentage of the largest management area groupings within inventoried roadless areas on the Forest, based on the 1986 forest plan, as amended

Management area group and description	Percentage within inventoried roadless areas (%)
<i>Management areas 2, 2a, 2b, 2c</i> Unroaded lands, unsuitable for timber management	41
<i>Management areas 11, 11a</i> Grizzly bear habitat, unsuitable for timber management	28
<i>Management areas 15, 15a, 15b, 15e</i> Roaded timber lands, suitable for timber management	9
<i>Management areas 3, 3a</i> Unsuitable for timber management	5
<i>Management areas 13, 13a, 13d</i> Roaded/unroaded lands, winter range <i>Management area 13</i> Suitable for timber management <i>Management areas 13a, 13d</i> Unsuitable for timber management	4
<i>Management areas 16a, 16b, 16c</i> Unroaded timberlands, suitable for timber	3

There was little road construction in the inventoried roadless area prior to the 2001 Roadless Area Conservation Rule; a total of 3 miles in the inventoried roadless areas on the Forest and less than 1 mile of road suitable for passenger cars have been constructed under the 1986 forest plan (see table 141).

Table 141. Summary of wheeled motorized trails, motorized over-snow vehicle motorized areas, and motorized over-snow vehicle in acres and roads within the inventoried roadless areas on the Forest

Total acres	Wheeled motorized trails	Motorized over-snow vehicle routes	Motorized over-snow vehicle areas	Roads suitable for high-clearance vehicles	Roads suitable for passenger cars
478,758	72 miles	4 miles	160,570 acres	3 miles	< 1 mile

Roadless area characteristics:

- high-quality or undisturbed soil, water, and air
- source of public drinking water
- diversity of plant and animal communities
- habitat for threatened, endangered, candidate, proposed, and sensitive species on large areas
- natural-appearing landscapes with high or very high scenic integrity
- primitive, semiprimitive nonmotorized, and semiprimitive motorized recreation opportunity classes of dispersed recreation
- referenced landscapes
- other locally identified unique characteristics
- traditional cultural properties and scared sites

3.16.3 Environmental consequences

Alternative A—No action

Twenty percent of the inventoried roadless areas on the Forest are also allocated as recommended wilderness under this alternative (see table 142). This alternative has the third highest amount of inventoried roadless area allocated to recommended wilderness. Because the 1986 forest plan was completed before the 2001 Roadless Area Conservation Rule, this alternative has some management areas that are suitable for timber production (according to the 1986 plan) that are within inventoried roadless areas.

Table 142. Inventoried roadless area indicators for alternative A

Indicator	Percentage and acreage of management areas within inventoried roadless areas
Percentage and acres of inventoried roadless areas on the Forest in management area 1b (recommended wilderness)	20% (95,278 acres)
Percentage in management areas 2a and 2b (designated and eligible wild and scenic rivers)	< 1%
Percentage in management area 3b (special areas)	none
Percentage in management area 4a (research natural areas)	2%
Percentage in management area 5a to 5d (backcountry)	58%
Percentage in management area 6a (general forest low-intensity vegetation management)	6%

Indicator	Percentage and acreage of management areas within inventoried roadless areas
Percentage in summer recreation opportunity spectrum classes	primitive 18%; semiprimitive nonmotorized 72%; semiprimitive motorized 5%; roaded natural 6%
Percentage in winter recreation opportunity spectrum classes	primitive 17%; semiprimitive nonmotorized 44%; semiprimitive motorized 38%; roaded natural 1%; < 1% rural

Table 142 shows that the largest class of the summer recreation opportunity spectrum within the inventoried roadless areas of the Forest is semiprimitive nonmotorized (72 percent), followed by primitive (18 percent), roaded natural (6 percent), and then semiprimitive motorized (5 percent). Semiprimitive nonmotorized settings encompass remote, large, natural landscapes that offer opportunities for exploration, challenge, solitude, and self-reliance. This alternative provides a summer nonmotorized setting on 90 percent and a summer motorized setting on 10 percent of the inventoried roadless areas of the Forest. This alternative would provide a higher amount of summer nonmotorized setting than alternative D and a lower amount of summer nonmotorized setting than alternatives B modified and C within the inventoried roadless areas on the Forest. Conversely, this alternative provides a higher amount of summer motorized setting than alternatives B modified and C and a lower amount of summer motorized setting than alternative C within inventoried roadless areas on the Forest.

Table 142 also shows that the largest class of the winter recreation opportunity spectrum within the inventoried roadless areas of the Forest is semiprimitive nonmotorized (44 percent), followed by semiprimitive motorized (38 percent) and then primitive (17 percent). This alternative provides 61 percent winter nonmotorized setting and 39 percent winter motorized setting within the inventoried roadless areas on the Forest. This alternative would provide the lowest amount of winter nonmotorized setting within the inventoried roadless areas on the Forest of all the alternatives. Conversely, this alternative would provide the highest amount of winter motorized setting within inventoried roadless areas on the Forest of all the alternatives.

Alternative B modified

According to table 143, 37 percent of the area within inventoried roadless areas is in management area 1b (recommended wilderness), which is unsuitable for timber production and does not allow timber harvest. Some restoration activity (e.g., whitebark pine planting, prescribed burning, protecting superior whitebark pine trees, fish restoration projects) would be suitable, however, where the outcomes would protect the wilderness characteristics of the areas, as long as the ecological and social characteristics that provide the basis for each area's suitability for wilderness recommendation are maintained and protected.

Table 143. Inventoried roadless area indicators for alternative B modified

Indicator	Percentage and acreage of management areas within inventoried roadless areas
Percentage and acres of inventoried roadless areas on the Forest in management area 1b (recommended wilderness)	37% (179,160 acres)
Percentage in management areas 2a and 2b (designated and eligible wild and scenic rivers)	3%
Percentage in management area 3b (special areas)	0%

Indicator	Percentage and acreage of management areas within inventoried roadless areas
Percentage in management area 4a (research natural areas)	2%
Percentage in management area 5a to 5d (backcountry)	54%
Percentage in management area 6a (general forest low-intensity vegetation management)	4%
Percentage in summer recreation opportunity spectrum classes	semiprimitive nonmotorized 54%; primitive 38%; semiprimitive motorized 5%; roaded natural 3%;
Percentage in winter recreation opportunity spectrum classes	primitive 38%; semiprimitive motorized 32%; semiprimitive nonmotorized 29%; roaded natural 1%

Management areas 2a, 2b, 3b, 4a, 5a, 5b, 5c, 5d, and 6a would be unsuitable for timber production under alternative B modified, although low levels of timber harvest for multiple-use purposes, for salvage logging, and to achieve desired vegetation conditions could occur. About 37 percent of inventoried roadless areas would be allocated to recommended wilderness and a large percentage (54 percent) to backcountry management areas (5a-5d), with 4 percent to management area 6a. About 3 percent would be allocated to designated or eligible rivers. This alternative would allocate 37 percent of the inventoried roadless areas on the Forest as recommended wilderness, in contrast to alternative A, which allocated 20 percent of the inventoried roadless areas as recommended wilderness. This alternative has the second highest amount of inventoried roadless areas allocated to recommended wilderness.

Table 143 shows that the largest class of the summer desired recreation opportunity spectrum is semiprimitive nonmotorized (54 percent), followed by primitive (38 percent) and semiprimitive motorized (5 percent). This alternative provides a summer nonmotorized setting on 92 percent and summer motorized setting on 8 percent of the inventoried roadless areas on the Forest. This alternative would provide a higher amount of summer nonmotorized setting within the inventoried roadless areas on the Forest compared to alternatives A and D and a lower amount than alternative C. Conversely, this alternative would provide a higher summer motorized setting within inventoried roadless areas than alternative C and a lower motorized setting within inventoried roadless areas than alternatives A and D.

Table 143 also shows that the largest class of the winter recreation opportunity spectrum is primitive (38 percent), followed by semiprimitive motorized (32 percent) and then semiprimitive nonmotorized (29 percent). This alternative provides 67 percent winter nonmotorized setting and 33 percent of winter motorized setting within inventoried roadless areas on the Forest. This alternative would provide more winter nonmotorized setting of the inventoried roadless areas on the Forest compared to alternatives A and D and a lower amount than alternative C. Conversely, this alternative provides a higher amount of motorized setting within inventoried roadless areas on the Forest compared to alternative C and a lower amount than alternatives A and D.

Roadless area characteristics would be maintained with this alternative, and some timber harvesting might occur following the 2001 Roadless Area Conservation Rule specific exceptions for road construction and timber cutting, sale, and removal in inventoried roadless areas.

Alternative C

According to table 144, this alternative has 97 percent of management area 1b (recommended wilderness) in inventoried roadless areas, which is unsuitable for timber production and does not allow timber harvest. Some restoration activity (e.g., whitebark pine planting, prescribed burning, protecting superior whitebark pine trees) is suitable, however, where the outcomes will protect the wilderness characteristics of the areas, as long as the ecological and social characteristics that provide the basis for each area's suitability for wilderness recommendation are maintained and protected. Management areas 2a, 2b, 3b, 4a, 5a, 5b, 5c, 5d, and 6a are unsuitable for timber production, although low levels of timber harvest for multiple-use purposes, for salvage logging, and to achieve desired vegetation conditions could occur. About 97 percent of inventoried roadless areas on the Forest are allocated to recommended wilderness, plus a small percentage (1 percent) to backcountry management areas and an additional 1 percent to management area 6a. Under this alternative, the highest amount of inventoried roadless areas is allocated to recommended wilderness.

Table 144. Inventoried roadless area indicators for alternative C

Indicator	Percentage and acreage of management areas within inventoried roadless areas
Percentage and acreage of inventoried roadless area on the Forest in management area 1b (recommended wilderness)	97% (466,315 acres)
Percentage in management areas 2a and 2b (designated and eligible wild and scenic rivers)	3%
Percentage in management area 3b (special areas)	0%
Percentage in management area 4a (research natural areas)	1%
Percentage in management areas 5a to 5d (backcountry)	1%
Percentage in management area 6a (general forest low-intensity vegetation management)	1%
Percentage in summer recreation opportunity spectrum classes	primitive 98%, semiprimitive nonmotorized 1%, roaded natural 1%, semiprimitive motorized < 1%
Percentage in winter recreation opportunity spectrum classes	primitive 98%, semiprimitive nonmotorized 1%, semiprimitive motorized 1%, roaded natural < 1%

Table 144 shows that the largest class of the recreation opportunity spectrum for both summer and winter is primitive, at 98 percent. Combining primitive with semiprimitive nonmotorized provides a nonmotorized setting on 99 percent of the inventoried roadless areas, whereas alternative A would provide a summer nonmotorized setting on 90 percent of the inventoried roadless areas of the Forest. Alternative C would provide the highest amount of nonmotorized settings within inventoried roadless areas on the Forest of all the alternatives and give the highest protection to roadless characteristics of the inventoried roadless areas because 97 percent of inventoried roadless areas on the Forest would be allocated to recommended wilderness. Conversely, alternative C would provide the least amount of motorized settings within inventoried roadless areas on the Forest.

Roadless area characteristics would be maintained under this alternative, and some timber harvesting might occur following the 2001 Roadless Area Conservation Rule exceptions for road construction and tree cutting, sale, or removal in inventoried roadless areas.

Alternative D

As shown in table 145, management areas 2a, 2b, 3b, 4a, 5a, 5b, 5c, 5d, and 6a would be unsuitable for timber production under alternative D, although low levels of timber harvest for multiple-use purposes, for salvage logging, and to achieve desired vegetation conditions could occur. None of the inventoried roadless areas would be allocated to recommended wilderness under this alternative; a large percentage (89 percent) is allocated to backcountry management areas, which vary from no motorized to wheeled motorized and motorized over-snow vehicle use in a backcountry setting. This alternative allocates 4 percent to management area 6a. It has the least amount of area allocated to recommended wilderness.

Table 145. Inventoried roadless area indicators for alternative D

Indicator	Percentage and acreage of management areas within inventoried roadless areas
Percentage and acres in management area 1b (recommended wilderness)	0 % (0 acres)
Percentage in management areas 2a and 2b (designated and eligible wild and scenic rivers)	3%
Percentage in management area 3b (special areas)	3%
Percentage in management area 4a (research natural areas)	2%
Percentage in management area 5a to 5d (backcountry)	89%
Percentage in management area 6a (general forest low-intensity vegetation management)	4%
Percentage in summer recreation opportunity spectrum classes	semiprimitive nonmotorized 57%; semiprimitive motorized 35%; roaded natural 5%, primitive 3%
Percentage in winter recreation opportunity spectrum classes	semiprimitive nonmotorized 59%; semiprimitive motorized 36%; primitive 3%; roaded natural 1%

Table 145 shows that the largest classes of summer recreation opportunity spectrum are semiprimitive nonmotorized (57 percent), semiprimitive motorized (35 percent), and primitive (3 percent). The primitive setting, when combined with the semiprimitive nonmotorized setting, provides a nonmotorized setting on 60 percent of the inventoried roadless areas on the Forest. Conversely, this alternative provides a motorized setting on 40 percent of the inventoried roadless areas on the Forest.

Table 145 also shows that the two largest classes of winter recreation opportunity spectrum are semiprimitive nonmotorized (59 percent), semiprimitive motorized (36 percent), and primitive (3 percent). The primitive setting, when combined with the semiprimitive nonmotorized setting, provides a nonmotorized setting on 62 percent of the inventoried roadless areas on the Forest. Conversely, this alternative provides a motorized setting on 37 percent of the inventoried roadless area on the Forest. This alternative provides the least amount of summer and winter nonmotorized settings of all the alternatives.

Roadless area characteristics would be maintained under this alternative, and some timber harvesting might occur following the 2001 Roadless Area Conservation Rule exceptions for road construction and tree cutting, sale, or removal in inventoried roadless areas.

Consequences to inventoried roadless areas from forest plan components associated with other resource programs or management activities

Effects of management area prescription

Alternative D has the most inventoried roadless areas allocated in backcountry management areas, with alternative B modified the second highest and alternative C the third highest. The backcountry management area ranges from no motorized use suitable to wheeled motorized and motorized over-snow vehicle use suitable. Alternative D has the highest amount of inventoried roadless area allocated to general forest low-intensity vegetation management (management area 6a) compared to alternatives B modified and C. Management area 6a is generally located in areas with a higher level of other resource considerations or site limitations that would restrict active vegetation management (such as inventoried roadless areas), but it is suitable for timber production. Alternative C has the most inventoried roadless area allocated to recommended wilderness, followed by alternatives B modified, A, and D.

Effects from fire and fuels management

Effective fire suppression, insect and disease infestations, and vegetation and fuel types on the Flathead National Forest have led to excessive fuel buildup in some areas. Lightning-caused fires may be managed to trend vegetation towards desired conditions. Likewise, prescribed fire may be used to trend vegetation towards the desired conditions while serving other important ecosystem functions.

Inventoried roadless areas allocated to management areas 5a to 5d would use prescribed fire and natural, unplanned ignitions to meet resource objectives as the primary mechanism for managing vegetation. The use of natural, unplanned ignitions would be more likely in alternative C, which emphasizes the use of natural disturbances and allocates 97 percent of the inventoried roadless areas allocated to recommended wilderness.

Prescribed fire and the use of natural, unplanned ignitions would continue the long-term ecological processes in these areas. There could be a temporary loss of vegetation, reduction in water quality due to sedimentation, and increase in air pollution. These activities generally would not affect the roadless area character.

Prescribed fire and the use of natural, unplanned ignitions could affect primitive recreation, although recreational use of burned-over areas might drop for a period of years after the fire. Lethal fire in heavy timber stands would also increase trail maintenance needs from continued downfall of snags across trails.

Effects from vegetative management

No timber harvesting would occur in management area 1b, although restoration activities could occur where the outcomes would protect the wilderness characteristics of the areas, as long as the ecological and social characteristics that provide the basis for each area's suitability for wilderness recommendation were maintained and protected. In the management areas 2a, 2b, 3b, 4a, 5a, 5b, 5c, 5d and 6a timber harvest is expected to be limited and generally would be done for purposes that would result in retaining natural integrity of the ecosystem. Timber harvesting that is done to reduce hazardous fuels may be more intensive and change the undeveloped characteristics, to some degree, until vegetation regrows. This is most likely to happen on the edges of an inventoried roadless area nearer communities. Any timber harvesting within these areas would meet the requirements of the 2001 Roadless Area Conservation Rule. Timber production is not suitable in alternatives B modified, C, and D.

Effects from recreation and access

Opportunities for primitive and nonmotorized recreation would be found in inventoried roadless areas. Inventoried roadless areas that are assigned to other management areas would be managed for the mapped desired recreation opportunities classes. The existing settings generally fall into primitive, semiprimitive nonmotorized or semiprimitive motorized classes.

Trail maintenance and new trail construction would usually be compatible with maintaining the undeveloped character of inventoried roadless areas

In inventoried roadless areas allocated to recommended wilderness, foot and horse travel would be permitted except in the Jewel Basin hiking area, where stock use is prohibited. Under alternative C, inventoried roadless areas allocated to recommended wilderness management areas and to motorized and mechanized transport would be prohibited. Under alternative B modified, existing motorized uses and mechanized transport would be allowed to continue in inventoried roadless areas allocated to recommended wilderness as long as the ecological and social characteristics that provide the basis for each area's suitability for wilderness recommendation are maintained and protected.

Inventoried roadless areas not recommended for wilderness might have a variety of motorized or mechanized transport opportunities depending on the management area assigned and the desired recreation opportunity spectrum, as mapped. Alternative C would provide the highest amount of primitive and semiprimitive nonmotorized class compared to alternatives B modified, A, and D.

Effects of mineral development

These areas would not be withdrawn from mineral entry. Mining activities could result in both short-term and long-term effects from associated structures, vegetation clearing, and general ground-disturbing activities.

Cumulative effects

Cumulative effects are the past, present, and reasonably foreseeable future activities that were considered with regard to cumulative effects to the roadless resource. Cumulative effects were considered for the life of the plan, and the area of consideration is the Forest. Reasonable and foreseeable actions on NFS lands include future vegetation management, mining/reclamation, population growth in adjacent areas, expansion of ski areas, and reduction of fuels in the wildland-urban interface.

Population growth and development increases the need for public open space. Growth in Flathead, Lake, and Lincoln Counties is expected to increase recreational use of the Forest, including within inventoried roadless areas. The effects of urbanization and population growth on inventoried roadless areas and resource conditions are likely to be gradual and to extend beyond the planning period.

Inventoried roadless area characteristics are changed by development such as roads, timber management, recreation facilities, reservoirs, etc. The development of roads and the management of vegetation has affected roadless areas in the past. Since the mapping of roadless areas in 1999 and the 2001 Roadless Area Conservation Rule, fewer developments have changed the roadless characteristics of inventoried roadless areas. Alternatives C, B modified, A, and D, in that order, retain the most roadless character over the next 15 years.

3.17 Wild and Scenic Rivers

3.17.1 Introduction

Congress passed the National Wild and Scenic Rivers System Act in 1968 (Pub. L. 90-542; 16 U.S.C. 1271 et seq.) for the purpose of preserving rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The act is recognized for safeguarding the special character of these rivers while also allowing for their appropriate use and development. The act promotes river management across political boundaries and public participation in developing goals for river protection.

The Flathead National Forest has one designated wild and scenic river, the Flathead River, which has three forks—the South Fork, Middle Fork, and North Fork—that were designated by Congress in 1976 for a total of 219 miles. The Flathead National Forest cooperatively manages the North Fork and portions of the Middle Fork of the Flathead with Glacier National Park; Flathead National Forest is the lead management agency.

For wild and scenic rivers, the designated management boundaries generally average 0.25 mile on either bank in the lower 48 states. The purpose of this 0.25-mile management corridor is to protect river-related values. For management purposes, river segments are classified as *wild*, *scenic*, or *recreational*.

- **Wild River Areas**—Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
- **Scenic River Areas**—Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
- **Recreational River Areas**—Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Regulatory framework

Laws and executive orders

Wild and Scenic Rivers Act of October 2, 1968 (Pub. L. 90-542, 82 Stat. 906, as amended): This act establishes the National Wild and Scenic Rivers System with three classes of river systems: wild, scenic, and recreational. The purpose of the act is to protect the river “for the benefit and enjoyment of present and future generations.”

Key indicator

- Miles of designated and eligible wild and scenic rivers

Methodology and analysis process

Information sources and analysis

The information source is the Flathead National Forest GIS. See appendix 5 for detailed information on the sources used.

Analysis area

The geographic scope of the analysis is the lands administered by the Forest. All lands within the Flathead National Forest boundary form the geographic scope for cumulative effects, and the temporal scope is the anticipated life of the plan (15 years)

Notable changes between draft and final EIS

In response to comments requesting that additional rivers be included as eligible, in 2017 the Forest's planning team reviewed the rivers identified in comments. The results of the review are documented in appendix 5. An additional eligible wild and scenic river was added between draft and final. Twin Creek, also known as upper Twin Creek, was determined to have outstandingly remarkable values for scenery and geology. The preliminary classifications are *wild* from Nanny Creek to the confluence with North Creek and *recreational* from North Creek to the confluence with the South Fork of the Flathead River, for a total of 6 miles.

The plan direction for management area 2b (eligible wild and scenic rivers) was clarified to state that the direction is only for NFS lands. About 6 miles of this segment is on the Swan River State Forest, which is non-NFS land; the plan direction does not apply to these 6 miles.

3.17.2 Affected environment (existing condition)

Designated Rivers

North Fork of the Flathead River

The North Fork of the Flathead River is cooperatively managed with Glacier National Park. Glacier National Park manages the east side of the river as recommended wilderness and has specific permitted uses and regulations. The headwaters of the North Fork of the Flathead originate in Canada.

The upper North Fork segment is mostly classified as a *scenic river* and is about 37 miles long. The outstandingly remarkable values for this segment are fish, geology, water quality, wildlife, botanical resources, recreation, scenery, history, and ethnography. A large portion of river users on this stretch of the river are non-outfitted. Commercial outfitting use is capped at 670 service days.

The lower North Fork segment is classified as *recreational river* and is about 21 miles long. The outstandingly remarkable values for this segment are fish, geology, water quality, wildlife, recreation, history, and ethnography. Motorized use is allowed from Big Creek River Access to Blankenship (confluence of Middle Fork). This section of the North Fork provides more whitewater opportunities with 3 class III rapids below Great Northern Flats. Commercial outfitting use is 387 priority service days and unlimited temporary use.

Middle Fork of the Flathead River

The upper Middle Fork segment of the Middle Fork is classified as a *wild river* with about 33 miles within the Great Bear Wilderness and 14 miles in the Bob Marshall Wilderness. The outstandingly remarkable values for this segment are fish, geology, water quality, wildlife, botanical resources, recreation, scenery, and history. Commercial outfitting use is capped at 456 priority service days.

The lower Middle Fork segment is classified as a recreational river and is about 49 miles long, and it is cooperatively managed with Glacier National Park. The outstandingly remarkable values for this segment are fish, geology, water quality, wildlife, recreation, scenery, and history. The Glacier

National Park side is mostly recommended wilderness and is managed as designated wilderness. This section of the river has the highest recreational use and has a high volume of outfitter use, with 36,125 priority service days and unlimited temporary service days.

South Fork of the Flathead River

The upper South Fork segment has a 41-mile segment within the Bob Marshall Wilderness that is classified as *wild river*. The segment from Meadow Creek Gorge to the footbridge at the Spotted Bear Ranger Station is an 11-mile section classified as *wild river* and is the only wild section outside of wilderness in the Forest's wild and scenic river system. The wild section is managed similar to wilderness.

The lower South Fork segment extends downstream 9 miles from the footbridge at Spotted Bear Ranger Station; this section of river is classified as a *recreational river*. Motorboats are allowed but are limited to 10 horse power or less. This river segment offers a slower-paced float, with just a few class I and II rapids.

Eligible rivers

Refer to appendix 5 for detailed information on the process of determining eligible wild and scenic rivers. There are 24 eligible wild and scenic rivers on the Forest, totaling 284 miles. These eligible rivers stay constant for all alternatives.

Table 146. Eligible wild and scenic rivers

River or Creek	Segment	Preliminary Classification	Outstandingly Remarkable Values	Length (miles)	Acres ^a
Aeneas	Headwaters to Hungry Horse Reservoir	Scenic	History, prehistory, recreation, scenery	5	1,770
Big Salmon	Lena Lake to South Fork of Flathead River, includes Big Salmon Lake.	Wild	Recreation, geology, fish, prehistory	19	4,727
Clack	Headwaters to Middle Fork of Flathead River	Wild	Geology, scenery	8	2,021
Danaher	Headwaters to Youngs Creek.	Wild	Scenery, recreation, fish, wildlife, history, prehistory, botany, natural area	23	6,042
Elk	Headwaters to Forest boundary	Scenic	Fish	10	2,636
Gateway	Headwaters to Strawberry Creek	Wild	Scenery, geology, history	5	1,745
Glacier	Headwaters to outlet of Glacier Slough	Wild segment: within Mission Mountains Wilderness; Scenic segment: wilderness boundary to outlet of Glacier Slough	Geology, wildlife, scenery	6	1,774

River or Creek	Segment	Preliminary Classification	Outstandingly Remarkable Values	Length (miles)	Acres ^a
Graves	Headwaters to Hungry Horse Reservoir	Wild segment: within Jewel Basin hiking area; Scenic segment: from boundary of Jewel Basin to Hungry Horse Reservoir	Prehistory	10	2,467
Le Beau	Headwaters to Le Beau Research Natural Area boundary	Wild	Scenery, geology, natural area	4	1,325
Lion	Headwaters to Lion Creek Trailhead	Scenic	Wildlife	11	3,315
Little Salmon	Headwaters to South Fork of Flathead River	Wild	Scenery, fish, prehistory	19	5,513
Logan	From NFS Road 539 to Tally Lake	Recreational	Scenery, recreation	4	1,274
Schafer	Headwaters to Middle Fork of Flathead River	Wild	Prehistory, history	11	2,947
Spotted Bear	Headwaters to South Fork of Flathead River	Wild segment: headwaters to end of Blue Lake; Recreational segment: Blue Lake to SF of Flathead	Recreation, wildlife, geology	35	10,261
Strawberry	Headwaters to Middle Fork of Flathead River	Wild	Fish	14	3,869
Swan, lower	Swan River State Forest to Swan Lake ^b	Recreational	Wildlife	11	1,432
Swan, upper	Crystal Lake to Confluence with Lindbergh Lake	Wild	Recreation	2	837
Twin (also known as Upper Twin)	Nanny Creek to the Confluence with the South Fork of the Flathead	Wild segment: From Nanny Creek to confluence with North Creek; Recreational segment: North Creek to confluence with South Fork of Flathead	Geology, scenery	6	1,766
Whale	Headwaters to USFS boundary	Scenic segment: Headwaters to confluence to Shorty Creek; Recreational segment: Shorty Creek to USFS boundary	Wildlife, fish	21	6,263
White	Entire segment	Wild	Geology, fish, history, prehistory, scenery	24	6,964

River or Creek	Segment	Preliminary Classification	Outstandingly Remarkable Values	Length (miles)	Acres ^a
Nokio	Nokio Creek along NFS Road #114 to confluence with Yakinikak Creek.	Scenic	Prehistory	3	672
Yakinikak	Yakinikak Creek to confluence with Thoma Creek (stream becomes Trail Creek).	Scenic	Prehistory	8	2,319
Trail (North Fork)	Trail Creek to USFS boundary	Scenic	Fish, prehistory, geology, wildlife	2	1,475
Youngs	Headwaters to South Fork of the Flathead	Wild	Fish, recreation, prehistory, history, scenery	23	6,462
Total	--	--	--	284	--

a. There are 47,680 acres of management area 2b within management area 1a, 10,395 acres in management area 1b, and 1,325 acres in management area 4a.

b. Plan direction for management area 2b is only for NFS lands. About 6 miles of this segment is on the Swan River State Forest, which is non-NFS land; the plan direction does not apply to these 6 miles.

3.17.3 Environmental consequences

Effects common to alternatives A, B modified, C, and D

Under all alternatives, eligible rivers would be managed according to Forest Service policy and management area 2b direction and would be managed to protect their free-flowing condition, and outstandingly remarkable values. Therefore, the management of eligible segments under Forest Service policy would be the same for alternatives A, B modified, C, and D.

Consequences to designated or eligible wild and scenic rivers from forest plan components associated with other resource programs or management activities

Effects of management area prescription

The management area direction for eligible wild and scenic rivers protects the free-flowing conditions and outstandingly remarkable values for which the river was determined as eligible. All alternatives have the same miles of eligible rivers.

Effects from fire and fuels management

Both natural and unplanned ignitions and prescribed fires are allowed to be used as tools to maintain ecological conditions within river corridors as long as the outstandingly remarkable values for which the scenic or recreational river was identified are protected and maintained.

Effects from vegetative management

Rivers with a preliminary classification as wild are not suitable for timber production, and timber harvest is not allowed. There would be no effects from timber harvest on those segments. On rivers with a preliminary classification as recreational or scenic, timber production is not suitable but timber harvest is allowed for multiple-use purposes, for salvage logging, and to achieve desired vegetation conditions. Any timber harvest would protect the identified outstandingly remarkable values.

Effects from recreation and access

Impacts from recreational use and management within eligible river segments are anticipated to be low. Although river corridors may be used for camping, canoeing, hiking, and other activities, the impacts are expected to remain at existing levels. In order to provide an essentially primitive character, eligible segments classified as wild generally would not have developed recreation sites. Dispersed camping and day-use sites may occur in these river corridors. In segments classified as scenic or recreational, developed recreation sites would be allowed when such sites would protect and maintain the outstandingly remarkable values for which the river was deemed eligible. Trail maintenance work could be expected to have little if any impact in the river corridors.

Effects of mineral development

Anticipated effects from minerals management would be low under all alternatives. Eligible rivers with potentially classified as scenic or recreational are not withdrawn from mineral entry and are suitable for mineral exploration and development as long as the outstandingly remarkable values for which the river was deemed eligible are maintained and protected. Designated and eligible segments classified as wild would not be available for minerals development.

The potential for leasable minerals is low across most of the Forest, and currently there are no permits or operating plans for exploration within the corridors. Although the potential for locatable minerals does exist, there are no current permits or operating plans for mineral exploration within the corridors. Mineral materials are present and could potentially be used for construction purposes, but generally proposals for development of mineral materials do not occur, and allowing such development would be at the discretion of the Forest Service.

Cumulative effects

Cumulative effects are the potential impacts to wild and scenic rivers from the alternatives when combined with past, present, and reasonably foreseeable actions. The lands within the Flathead National Forest boundary, and the named rivers and streams contained therein, form the geographic scope for evaluating cumulative effects. The temporal bound is the life of the forest plan, which is estimated to be 15 years.

In order to integrate the contribution of past actions to the cumulative effects of the proposed action and alternatives, existing conditions are used as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior actions that have affected wild and scenic rivers and might contribute to cumulative effects. Water-related activities such as fishing, rafting, kayaking, and similar uses are expanding as the population in the nearby urban areas increases and access points are developed.

Water-related activities such as fishing, rafting, canoeing, and kayaking, have been steadily increasing and occur mostly at dispersed sites and some developed recreation sites such as the Moccasin boat launch site.

Management activities generally take place outside of eligible wild and scenic rivers unless an action is needed to help protect or preserve the identified outstandingly remarkable value. For example, if invasive weeds were discovered in an eligible river corridor, there might be a need to take some action (hand pulling, herbicide application) to eradicate or prevent further spread.

3.18 National Scenic Trails

3.18.1 Introduction

Regulatory framework

Laws and executive orders

Wilderness Act of September 3, 1964 (16 U.S.C. 1131-1136): This act provides the statutory definition of wilderness and management requirements for these congressionally designated areas. This act established a National Wilderness Preservation System to be administered in such a manner as to leave these areas unimpaired for future use and enjoyment as wilderness.

National Trails System Act of 1968: Established a national trails system.

National Forest Management Act (NFMA) of 1976, as amended (16 U.S.C. 1600): Provides that management direction for wilderness be incorporated into forest plans and sets minimum standards for the content of the plans.

Executive Order 13195 of January 18, 2001: Trails for America in the 21st Century

Omnibus Public Land Management Act of 2009 (Pub. L. 111–11): Authorized the Pacific Northwest Scenic Trail as an addition to the National Scenic Trail system.

Code of Federal Regulations

- **36 CFR § 293:** Wilderness–Primitive Areas
- **36 CFR § 261.18:** Prohibitions in National Forest Wilderness

Other policy

- The Continental Divide National Scenic Trail Comprehensive Plan

Indicators, methodology, and analysis process

Effects to national scenic trails are indicated by an evaluation of the difference in management activity by looking at the assigned management areas by alternative as well as the recreation opportunity spectrum class allocation by alternative.

- Management areas the national scenic trails goes through
- Recreation opportunity spectrum settings the national scenic trails goes through

Information sources

The Forest Service's GIS and the Continental Divide National Scenic Trail Comprehensive Plan were used in the analysis.

Analysis area

The geographic scope of the analysis is the lands administered by the Forest. All NFS lands within the Flathead National Forest boundary form the geographic scope for cumulative effects. The temporal scope of the analysis is the anticipated life of the plan (15 years).

Notable changes between draft and final EIS

A new desired condition, FW-DC-NST-02, states that “the Pacific Northwest National Scenic Trail segment on the Forest provides a nonmotorized long-distance trail.” The analysis was updated to incorporate this desired condition.

3.18.2 Affected environment (existing condition)

Continental Divide National Scenic Trail

The Continental Divide National Scenic Trail, also known as the Continental Divide Trail, is a national scenic trail that runs 3,100 miles between Mexico and Canada. It follows the Continental Divide of the Americas along the Rocky Mountains and traverses five U.S. states: Montana, Idaho, Wyoming, Colorado, and New Mexico. The trail is a combination of dedicated trails and roads.

About 19 miles of the Continental Divide National Scenic Trail are on the Flathead National Forest, and these include Badger Creek Trail # 147, Strawberry Creek Trail # 161, Bowl Creek Trail # 324, and Sun River Pass Trail # 116. This section of the Continental Divide Trail on the Flathead National Forest is within designated wilderness (Bob Marshall Wilderness); there is about 1 mile of the trail which leaves the Flathead National Forest, goes into the Helena-Lewis and Clark National Forest, and crosses back into the Flathead National Forest and then back into the Helena-Lewis and Clark National Forest. The trail has a mapped 1-mile-wide corridor that is affected by all plan direction related to this trail. Refer to figure B-17.

Pacific Northwest National Scenic Trail

The Pacific Northwest National Scenic Trail begins near the Continental Divide in Glacier National Park and continues more than 1,200 miles through Montana, Idaho, and Washington before reaching its western terminus at the Pacific Ocean near Cape Alava. There are about 28 miles of the Pacific Northwest National Scenic Trail on the Flathead National Forest. The trail has a mile-wide corridor that is affected by all plan direction related to this trail. Going east to west, starting in Glacier National Park on Polebridge Ranger Station Road (see figure B-16), the trail sections include:

- Polebridge Ranger Station Road 107F
- Glacier Road 6055 (county road)
- Polebridge Loop Road 60054 (county road)
- North Fork Road 486 (county road)
- Hay Creek Road 376 (NFS road)
- Hay Creek Trail #3
- Ralph Thayer Memorial Trail (part of the Whitefish Divide Trail) #26 (connects to Blue Sky Trail #72 on the Kootenai National Forest)

Currently, an advisory board and interdisciplinary team for the Pacific Northwest Scenic Trail is developing a comprehensive plan for its entire length. An environmental analysis and decision for the trail (signed by the chief of the Forest Service) will be completed outside of this plan revision effort. The comprehensive plan is expected to provide additional programmatic direction for the trail. Depending on the outcome of the comprehensive plan and subsequent decision(s), the forest plan may be amended to include additional plan components for the trail.

On the Flathead National Forest portion of the trail, wheeled motorized use is allowed on 11.5 miles of the trail where the trail currently overlays segments of three roads: NFS road 376 (Hay Creek Road), NFS road 115 (Red Meadow Road), and NFS road 589 (Shorty Creek Road). Mechanized transport, hiking, and stock use are allowed on the entire 28 miles of the trail that are within the Forest. Motorized over-snow vehicle use is suitable on 12 miles and 2,710 acres within the trail corridor.

3.18.3 Environmental consequences

Continental Divide Scenic Trail

Effects common to all alternatives

None of the alternatives would affect the section of the Continental Divide Trail on the Flathead National Forest that is located within the Bob Marshall Wilderness. This wilderness provides a primitive recreation opportunity setting for all alternatives. There would be no change in current direction with any alternative. Although inside of the Bob Marshall Wilderness (management area 1a), the trail is also partially within an eligible wild and scenic river management area (Strawberry Creek) that has a potential classification of wild, which is managed as wilderness. There would be no change in current direction with any alternative.

Pacific Northwest National Scenic Trail

Alternative A

The majority of this trail is within backcountry (management areas 5a, 5b, 5c, and 5d) at 12 miles; general forest medium- and high-intensity vegetation management (management area 6b and 6c) at 8 miles; and general forest low-intensity vegetation management (management area 6a) at 7 miles. About 1 mile of the trail goes through designated and eligible wild and scenic rivers (management areas 2a and 2b). When comparing the management areas in the 1986 forest plan and the new management areas, the backcountry management areas 5a, 5b, 5c, and 5d are considered as a group (refer to table 3 in volume 1 of this final EIS).

The primary summer recreation opportunity spectrum setting is semiprimitive nonmotorized at 66 percent of the trail followed by roaded natural at 34 percent. This alternative provides a nonmotorized setting on 66 percent and a motorized setting on 34 percent.

The primary winter desired recreation opportunity spectrum setting of the trail corridor is semiprimitive motorized at 73 percent, which provides a motorized setting, followed by semiprimitive nonmotorized at 26 percent, which provides a nonmotorized setting.

Alternative B modified

The majority of this trail is within general forest medium-intensity vegetation management (management area 6b) at 11 miles; general forest low-intensity vegetation management (management area 6a) at 7 miles; backcountry motorized over-snow vehicle use (management area 5c) at 5 miles, and backcountry nonmotorized year-round primitive (management area 5a) at 4 miles. About 1 mile of the trail goes through designated and eligible wild and scenic river management areas (2a and 2b).

The primary summer desired recreation opportunity spectrum setting of the trail corridor is roaded natural at 58 percent, followed by semiprimitive nonmotorized at 25 percent and primitive at 17 percent. Alternative B modified provides a motorized setting on 58 percent of the area and a

nonmotorized setting on 42 percent. Compared to alternative A, this alternative provides less summer nonmotorized setting and a higher summer motorized setting. This alternative provides less nonmotorized setting than alternative C but more than alternative D. Conversely, it provides a higher motorized setting than alternatives A and C but less than alternative D.

The primary winter desired recreation opportunity spectrum setting of the trail is semiprimitive motorized at 53 percent, followed by semiprimitive nonmotorized at 27 percent, primitive at 18 percent, and roaded natural at 3 percent. This alternative provides a motorized setting on 56 percent and a nonmotorized setting on 45 percent. Compared to alternative A, alternative B modified provides a higher amount of nonmotorized setting than alternative A and a lower amount of motorized setting than alternative A. This alternative provides less nonmotorized setting than alternative C but more than alternatives A and D. Conversely, it provides a higher amount of motorized setting than alternative C but less than alternatives A and D.

FW-DC-NST-02 states that the Pacific Northwest National Scenic Trail segment on the Forest provides a nonmotorized long-distance trail. The most likely scenario to move towards this desired condition would be moving the location of the trail off the three NFS roads (Hay Creek Road 376, Red Meadow Road 115, and Shorty Creek Road 589) and constructing a new segment of trail. However, the Forest could restrict motorized use on these three roads to move towards this desired condition. The final comprehensive trail plan, the accompanying programmatic environmental analysis and decision, and forest plan direction are expected to provide overall management direction for the trail.

Alternative C

The majority of this trail is within backcountry motorized over-snow vehicle use (management 5c) at 9 miles; recommended wilderness (management area 1b) at 7 miles; general forest low-intensity vegetation management (management area 6a) at 6 miles; and general forest medium-intensity vegetation management (management area 6b) at 3 miles. About 1 mile of the trail goes through designated and eligible wild and scenic rivers (management areas 2a and 2b) for less than 1 mile.

The primary desired summer recreation opportunity spectrum setting in the corridor is semiprimitive nonmotorized at 41 percent, followed by primitive at 32 percent, roaded natural at 17 percent, and semiprimitive motorized at 10 percent. This alternative provides a nonmotorized setting on 73 percent of the area and a motorized setting on 35 percent of the area. Compared to alternative A, this alternative provides a higher amount of nonmotorized setting and a lower amount of motorized setting than A. This alternative provides a lower amount of motorized setting than alternatives A, B modified, and D. Conversely, it provides a higher amount of nonmotorized setting than alternatives A, B modified, and D.

The two primary winter recreation opportunity spectrum settings are semiprimitive motorized at 33 percent and semiprimitive nonmotorized at 33 percent, followed by primitive at 32 percent and roaded natural at 3 percent. This alternative provides a motorized setting on 36 percent of the trail and a nonmotorized setting on 65 percent. Compared to alternative A, this alternative provides a higher nonmotorized setting and a lower motorized setting. This alternative provides a higher amount of nonmotorized setting than alternatives A, B modified, and D. Conversely, it provides a lower motorized setting than alternatives A, B modified, and C.

FW-DC-NST-02 states that the Pacific Northwest National Scenic Trail segment on the Forest provides a nonmotorized long-distance trail. The most likely scenario to move towards this desired condition would be moving the location of the trail off the three NFS roads (Hay Creek Road 376,

Red Meadow Road 115, and Shorty Creek Road 589) and constructing a new segment of trail. However, the Forest could restrict motorized use on these three roads to move towards this desired condition. The final comprehensive trail plan, the accompanying programmatic environmental analysis and decision, and forest plan direction are expected to provide overall management direction for the trail.

Alternative D

The majority of this trail is within general forest medium-intensity vegetation management (management area 6b) at 8 miles; backcountry motorized over-snow vehicle use (management area 5c) at 8 miles; general forest low-intensity vegetation management (management area 6a) at 7 miles; general forest high-intensity vegetation management (management area 6c) at 3 miles; and backcountry nonmotorized year-round primitive (management area 5a) at 1 mile. About 1 mile goes through designated and eligible wild and scenic river (management areas 2a and 2b).

The primary summer desired recreation opportunity spectrum setting in the trail corridor is roaded natural at 59 percent followed by semiprimitive nonmotorized at 23 percent and semiprimitive motorized at 18 percent. This alternative provides a motorized setting on 77 percent of the area and a nonmotorized setting on 23 percent. Compared to alternative A, alternative D provides a higher amount of motorized setting than alternative A and a lower amount of nonmotorized setting than alternative A. This alternative provides a higher amount of motorized setting than alternatives A, B modified, and C. Conversely, it provides a lower amount of nonmotorized setting than alternatives A, B modified, and C. The primary winter recreation opportunity spectrum setting is semiprimitive motorized at 65 percent, followed by semiprimitive nonmotorized at 33 percent and roaded natural at 3 percent. This alternative provides a motorized setting on 68 percent of the trail corridor and a nonmotorized setting on 33 percent. Compared to alternative A, this alternative provides a higher amount of nonmotorized setting than alternative A and a lower amount of motorized setting. This alternative provides a higher amount of motorized setting than alternatives B modified and C and less than alternative A. Conversely, this alternative provides a higher amount of nonmotorized setting than alternative A and less than alternatives B modified and C.

FW-DC-NST-02 states that the Pacific Northwest National Scenic Trail segment on the Forest provides a nonmotorized long-distance trail. The most likely scenario to move towards this desired condition would be moving the location of the trail off the three NFS roads (Hay Creek Road 376, Red Meadow Road 115, and Shorty Creek Road 589) and constructing a new segment of trail. However, the Forest could restrict motorized use on these three roads to move towards this desired condition. The final comprehensive trail plan, the accompanying programmatic environmental analysis and decision as well, and forest plan direction are expected to provide overall management direction for the trail.

Cumulative effects

Cumulative effects are the potential impacts to the two national scenic trails from the alternatives when combined with past, present, and reasonably foreseeable actions. The lands within the Flathead National Forest boundary, as well as the Continental Divide Trail System and the Pacific Northwest Scenic Trail System, form the cumulative effects area. The temporal bound is the life of the forest plan, which is estimated to be 15 years.

In order to integrate the contribution of past actions with the cumulative effects of the alternatives, existing conditions are used as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior actions that have affected the Continental Divide Trail System and the Pacific Northwest Scenic Trail System and might contribute to cumulative

effects. Recreational activities such as hiking, camping, mountain biking, and similar uses are expanding as the population in the nearby urban areas increases.

Management activities that would affect the Continental Divide Trail on the Flathead National Forest (which is within designated wilderness) are generally those that allow natural processes such as fire, insect, and disease to occur. Recreational use might increase on the trail, with long-distance users having more contact with other visitors.

Management activities that would affect the Pacific Northwest National Scenic Trail could be vegetation management, road reconstruction, fire suppression, and increased recreational use.

3.19 Special Areas

3.19.1 Introduction

Special areas are a category of administratively designated areas, defined as an area or feature managed to maintain its unique special character or purpose (36 CFR § 219.19), including those that are botanical, geological, or recreational in nature. The Forest has one existing designated special area and an additional thirteen special areas recommended for designation in the forest plan.

Regulatory framework

2012 planning rule (36 CFR § 219.7): States that in developing a proposed plan revision, the responsible official shall identify existing designated areas and determine whether to recommend any additional areas for designation. Forest plans must include components for appropriate management of existing or proposed designated areas.

Forest Service Manual 2372, Administratively designated areas: Contains purpose, policy, and guidance for administrative designation of special areas.

Methodology and analysis process

Flathead National Forest resource specialists have identified the areas on the Forest that possess the characteristics that make them suitable for establishment as special areas. The areas acknowledge and highlight the special natural features of the Forest as well as provide the opportunity for public appreciation, education, and enjoyment. Input from members of the public was also considered in the selection of the special areas recommended for designation.

Documentation of conditions within the special areas comes from reports and records for individual areas (where available) and from local and regional Forest Service resource specialist knowledge.

Incomplete and unavailable information

Recent surveys and other sources of information on vegetation conditions within some of the special areas are limited.

Analysis area

The geographic scope of the analysis is the lands administered by the Forest. All lands within the Flathead National Forest boundary form the geographic scope for cumulative effects, and the temporal scope is the anticipated life of the plan (15 years).

3.19.2 Affected environment (existing condition)

Table 147 below lists the special areas on the Forest, both the existing designated special area (listed first) followed by the areas recommended for designation (the ten fens are listed in alphabetical order, followed by the other three recommended special areas). All are identified on the basis of their special botanical features, as described in the table and in the descriptions that follow the table. The acres within the fen special areas include a 300-foot riparian management zone adjacent to the fen. Refer to figures B-27 to B-28 for maps displaying the locations of the special areas (management area 3b).

Table 147. Designated special area and recommendations for special area designation on the Forest

Name	Geographic Area	Special character and features	Acres
Condon Creek Botanical Area (designated special area)	Swan Valley	Concentration of pond habitats occupied by water howellia, a federally threatened plant species. Associated upland mixed conifer forest featuring several groves of mature ponderosa pine as well as western larch and Douglas-fir.	226
Bent Flat Fen	South Fork	A unique, extremely rich fen with well-developed patterning, extensive marl deposits, and a large number of rare plants that are restricted to calcareous habitats. The Trail Creek Fire in August of 2015 burned the forests surrounding and immediately adjacent to the fen.	44
Gregg Creek Fen	Salish Mountains	Features peatland and wet forest and shrub communities within an undisturbed portion of the Gregg Creek watershed. Rare plants are present.	33
Lost Creek Fens	Swan Valley	Lost Creek Fens are two distinctly different types of fens separated by a patch of moist coniferous forest. The northern fen is at the toe of a slope. An upwelling spring supplies water to a thick accumulation of peat that gently slopes to the south. The southern fen has two shallow potholes filled with peat and alluvium. The water table fluctuates seasonally; drawdown in the fall hastens peat decomposition and minimizes peat accumulation. A number of rare plant species are present at both sites.	36
Meadow Lake Fen	Swan Valley	One of the few places on the Forest that has a floating organic mat. Rare plants are present. Loons and bog lemmings have also been observed at this lake.	62
Porcupine Fens	Swan Valley	Features two fens that are part of a larger complex of fens. Porcupine Fen is at the toe of a slope from which several springs emerge. This constant supply of mineral-rich water has favored the accumulation of organic matter. The site supports a diverse flora. The site is largely ringed by wet to moist spruce forests, except on a portion of the west margin where a harvested area upslope of the fen extends down nearly to the fen. The site is an excellent example of a flow-through fen. A number of rare plants occur.	145
Sanko Creek Fen North	Salish Mountains	Features two wetland areas. One is a small pond, up to 3 to 4 meters deep, that is surrounded by a floating to anchored organic mat and a wet meadow. The other wetland is a north-south-oriented fen. The fen is surrounded by moist spruce forest. The fen has a series of broad, gently sloping terraces with interspersed water tracks and upwelling pools of water. Western larch is common on adjacent uplands. Rare plant species have been observed at the site.	49
Sanko Creek Fen South	Salish Mountains	Oriented east-west along the base of a slope. A number of seeps and springs emerge from the toe of this slope and maintain wet conditions in the peatland. One rare plant species has been observed here, as well as a possible bog lemming.	23

Name	Geographic Area	Special character and features	Acres
Trail Creek Fen	Hungry Horse	A relatively large, highly calcareous peatland. The site contains three abandoned beaver dams and ponds and a well-developed peatland on the upper easternmost portion of the wetland. Several rare plants occupy this relatively large, well-developed peatland.	98
Trout Lake Fen	Hungry Horse	Trout Lake is an excellent example of an organic mat (floating and anchored) surrounding a deep pond. A sedge meadow lies southwest of the pond. Several species of sphagnum moss form a nearly continuous carpet adjacent to the pond. Rare plant species are known to be in the peat mat. The site is easily accessible by motor vehicle and supports a handicapped-accessible fishing dock. Most of the organic mat, however, is undisturbed by human use.	34
Windfall Creek Fen	Swan Valley	Occupies a basin formed by glacial scouring. Rare plant species have been observed here.	31
Glacier Slough	Swan Valley	One of the largest wetlands in the Swan Valley, with a diversity of wetland- and riparian-associated plant and animal species and adjacent forests of mixed conifer species.	1,690
Johnson Terrace	Salish Mountains	Includes a mossy forb meadow on shallow residual soils over a Precambrian argillite bedrock dip slope that is inundated with water in the spring and dries out during summer. Many diminutive plants are restricted to this type of ephemeral spring habitat. In addition to botanical features, this area contains geologic/topographic features that harbor a diversity of rare plant communities unique to the Forest.	331
Fatty Creek Cedars	Swan Valley	Moist, riparian-associated western redcedar forest type supporting stands dominated by very large, old cedar trees and associated unique assemblages of understory plants. This area provides aesthetic values associated with "ancient" cedar groves. Groves such as this are relatively rare on the Forest due to the limited area with suitable site conditions for their development, past fire disturbance, and removal through previous logging or development activities.	261
Total Acres			3,063

Condon Creek Botanical Area

The existing designated special area, Condon Creek Botanical Area, is located on the Swan Lake Ranger District, lying in the central portion of the Swan Valley. Retreating glaciers left large blocks of ice embedded in till, resulting in numerous ponds and wetlands throughout the Swan Valley. The site's topography is rolling with alternating swales and small ridges, and the site contains fifteen ponds. Condon Creek, forming the northern boundary of the botanical area, flows west into the Swan River.

The primary purpose of the Condon Creek Botanical Area is to protect a concentration of pond habitats occupied by water howellia, a federally listed threatened plant species (see section 3.5.1). Nine ponds support populations of water howellia within the botanical area. Adjacent uplands support forests of lodgepole pine, western larch, Douglas-fir, and ponderosa pine. Research and

education on water howellia and its habitat, and the associated upland forested areas, is another purpose for this botanical area.

Special areas recommended for designation

Thirteen special areas are recommended for designation in the forest plan. Ten of these areas contain fens, and these were selected because they are considered to be important representatives of this type of wetland on the Forest. The remaining three contain other botanical or geological features considered of special interest in the Forest ecosystem.

Fens are peat-forming wetlands and receive nutrients and water from underground sources. They are characterized by their water chemistry that, in contrast to bogs, is usually less acidic and has higher nutrient and mineral levels. They therefore support a much more diverse plant and animal community than bogs. They are often covered by grasses, sedges, rushes, and wildflowers, with unique assemblages of species connected to the water regime and nutrient conditions of each fen.

Fens, like bogs and other wetlands, provide important benefits in a watershed, including preventing or reducing the risk of floods, improving water quality, and providing habitat for often rare plant and animal communities unique to the Forest. Up to 10,000 years are required to form a fen naturally. Extensive losses in wetland acres have occurred across the United States since the mid-1700s, primarily through draining and converting them to other uses (Dahl, 1990). Beginning in the 1970s, the rate of wetland losses slowed substantially as a result of changes in national and state wetland policies and heightened awareness of the important benefits that aquatic systems, including wetlands, bring to society.

Glacier Slough Special Area contains one of the larger wetland complexes in the Swan Valley. It is located in the Glacier Creek drainage which flows into the upper reaches of the Swan River. It contains a complex diversity of plants associated with riparian and wetland habitats, which in turn supports a diverse array of wildlife species. The portion of Glacier Creek that lies within this special area is a proposed wild and scenic river (see section 3.17).

Johnson Terrace Special Area is a geologic feature on the side of Johnson Mountain in the Salish Mountains. Like many rock terraces, its shallow soils support many springtime ephemeral plants that are rarely seen in such a large assembly anywhere else on the Forest. One rare plant species, *Idahoia scapigera*, occurs on the terraces. Later in the season when spring runoff has ended, the terraces become grassy meadows. Elk sign is common in the area, indicating it is an important area for wildlife. Johnson Terrace is one of the largest terrace complexes on the Forest and has been the subject of botanical interest for many years.

Fatty Creek Cedars Special Area is comprised of a western redcedar (*Thuja plicata*) grove. Western redcedar is a widespread and common species in the forests of the Pacific Northwest. The Flathead National Forest is at the far eastern edge of the species range. As such, the presence of western redcedar is relatively restricted on the Forest; it occupies only the warmest sites, with relatively deep soils that maintain consistent, moist conditions, or sites that are seasonally wet areas. These tend to be located in the lower-elevation riparian zones and poorly drained depressions. Due to topographic, weather, and soil conditions, the Swan Valley contains some of the most extensive areas of western redcedar-dominated sites on the Flathead National Forest.

Western redcedar is most commonly associated with a wide array of tree species, including Douglas-fir, western larch, western white pine, grand fir, and ponderosa pine. Western redcedar is very tolerant of shade and can survive in the understory forest canopy layers for many decades. It is capable of living for several centuries, with some individuals achieving ages of 1,000 years or more.

It is relatively intolerant of fire, though larger diameter trees may withstand low- or even moderate-severity fires. The location of western redcedar in most moist or wet areas that are less likely to burn increases their probability of survival over time.

Western redcedar typically grows in relatively pure stands only where fire has been excluded for a long time (Barrett, 1988). On this eastern edge of the species' range, western redcedar sites on the Flathead National Forest tend to be drier and less productive than sites farther west. Fires also tend to be more frequent in the Flathead landscape, with shorter fire-free intervals and fires that are strongly driven by weather and topography. Even the wettest zones of the Forest will eventually experience a stand-replacement, high-severity fire, though perhaps at intervals of several hundred years. In addition, the high economic value of large, old cedar trees and their relative accessibility led to past harvesting of many cedar stands on both NFS and private lands. As a result of all these factors, groves of very large, old cedar trees, and their associated assemblage of understory shrub and herb species, are relatively rare on the Forest. Fatty Creek Cedars Special Area encompasses an old cedar grove and is proposed for special area designation to recognize and increase awareness of its unique ecological characteristics, to provide greater protection, and to foster educational opportunities.

3.19.3 Environmental consequences

General effects and management direction

Alternative A—No action

This alternative contains only one special area, which is the currently established Condon Creek Botanical Area. It is designated as management area 3a in the 1986 plan. Plan direction specifies that it should be managed in accordance with direction set in the conservation strategy for *Howellia aquatilis* (water howellia) (USDA, 1997). There are no additional special areas under this alternative.

Although there are no proposed additional special areas in the existing plan, standards and guidelines associated with riparian habitats and wetlands in the existing plan would continue to provide protection of the plant communities and ecological values associated with the fens, Glacier Slough, and most of the Fatty Creek Cedars area, which are proposed for designation as special areas in alternatives B modified, C, and D.

Alternatives B modified, C, and D

Alternatives B modified, C, and D include the proposed designation of 13 new special areas, in addition to the existing Condon Creek Special Area, as displayed in table 147. Existing and proposed special areas are designated management area 3b in all action alternatives. As under the existing plan, the Condon Creek Special Area would be managed in accordance with direction set in the conservation strategy for water howellia (USDA, 1997) because the water howellia is the primary feature for which it was designated.

Forest plan components under these three alternatives specify that all special areas would be managed in a substantially natural condition so that the ecosystems would primarily reflect the influence of natural processes. Plant and wildlife habitat values for which the special area was identified would be maintained. Invasive plant species would be controlled. Educational and research opportunities would be provided featuring the ecological and plant communities associated with the special areas.

Specific direction for special areas would provide protection from human disturbances that would adversely affect their qualities. Vegetation management or other activities near special areas would be evaluated for potential impacts to the plant species, plant communities, and other associated qualities. The fens and the Glacier Slough and Johnson Terrace Special Areas would be unsuitable for new trail construction and associated structures, although existing trails that access these areas might be maintained.

Desired conditions in the forest plan related to providing for a healthy, functioning ecosystem within riparian management zones would apply to the fens and the Glacier Slough and Fatty Creek Cedars Special Areas because these areas contain riparian management zones. The fen and wetland special area boundaries all include a 300-foot buffer adjacent to the wetland. Guidelines and standards related to riparian management zones restrict management activities and disturbance in these areas (see the Riparian Management Zone section in chapter 2 of the forest plan and section 3.2.10 of the final EIS).

Values and qualities associated with the existing and proposed special areas are protected equally by the forest plan components under all action alternatives, preserving the values associated with these areas. Potential for adverse effects to special areas is low, with no notable difference among the action alternatives.

Consequences to special areas from forest plan components associated with other resource programs or management activities

Effects from access and recreation

Access and recreational uses would be restricted within special areas, protecting the qualities associated with the areas. Summer wheeled motorized travel is only allowed on designated routes. Motorized over-snow vehicle use could occur in some special areas, as identified on the over-snow vehicle use map. The special areas are designated as not suitable for construction of new wheeled motorized trails and areas or associated structures. Impacts from recreational activities are expected to be low in the special areas.

Effects from fire and fuels management

Desired conditions within special areas are to maintain an ecosystem that primarily reflects the influence of natural processes. These natural processes may include fire within some areas. Most wildfires would require suppression measures for the purposes of protect values both within and outside the special areas. Prescribed fire is allowed within special areas for the purposes of maintaining natural processes and desired vegetation conditions. Impacts from fire and fuels management are expected to be low.

Effects from vegetation management

Special areas are unsuitable for timber production and for the commercial removal of special forest products. Vegetation management, including harvest, may occur only to maintain the values and qualities associated with the special area. Impacts from vegetation management activities are expected to be very low.

Effects from invasive species management

Invasive species control may occur in some special areas, dependent on ground conditions and control methods. For example, fens would not be treated chemically due to their hydrology, but areas like Fatty Creek Cedars or Johnson Terrace could be chemically treated when spring runoff is over

and the site is suitable for treatment with herbicide chemicals in accordance with state regulations. Manual treatments would be a priority method in these special areas. Biological controls would also be considered if appropriate. Control of invasive species is expected to have a positive impact on the native plant species and plant communities associated with these special areas.

Cumulative effects

Management activities generally have taken place and will continue to take place mostly outside of the existing and proposed special areas. It is unlikely they would have an effect on the special areas due to the distance of management activities from the areas and various plan components that protect soils, water, and other resource values forestwide.

Control of invasive weeds is an action that may have occurred in the past within special areas and is the most likely management activity to occur within special areas in the future. This would likely have a positive effect on the special areas by controlling invasive weeds or preventing their spread. There may be other vegetation treatments, such as removal of woody fuels, occurring in the future within and adjacent to some special areas, particularly the fen special areas that lie in the wildland-urban interface. These fuel reduction actions may be desirable to reduce the severity of potential future fires, protecting the values associated both with and adjacent to the special areas. These activities are not expected to result in detrimental effects to the values associated with the special areas.

3.20 Research Natural Areas, Coram Experimental Forest, and Miller Creek Demonstration Forest

3.20.1 Introduction

The Forest contains six established research natural areas plus the Coram Experimental Forest and the Miller Creek Demonstration Forest. All are administratively designated areas, which are defined as an area identified and managed to maintain its unique special character or purpose (36 CFR § 219.19). The existing conditions and effects by alternative for all three of these designated area categories are discussed in this section.

Regulatory framework

Regulation, policy, and guidance

2012 planning rule (36 CFR § 219.7): States that in developing a proposed plan revision, the responsible official shall identify existing designated areas and determine whether to recommend any additional areas for designation. Forest plans must include components for appropriate management of existing or proposed designated areas.

Forest Service Manual 4063: Directs management of research natural areas as part of a national network of ecological areas allocated in perpetuity for research and education and/or to maintain biological diversity on NFS lands. Research natural areas are co-managed by the appropriate national forest and USFS research station

Forest Service Manual 4063.03: Forest plans shall include analysis of, and recommendations for, the establishment of any proposed research natural areas.

Region 1 Natural Areas Assessment 1996 (Chadde, Kimball, & Evenden, 1996): Provides an assessment of plant community types needed to fulfill the national spectrum of types to be placed in research natural area status in the USDA Forest Service Northern Region.

Establishment records for each research natural area: These records provide information on the natural features, plant communities, and species present in each research natural area, as well as management guidance.

Key indicator

The differences between alternatives will be evaluated by considering effects of forest plan direction and how well it supports and protects the values associated with these areas.

Methodology and analysis process

Flathead National Forest resource specialists and research scientists from the Rocky Mountain Research Station have identified the lands on the Forest that possess characteristics that make them suitable for research natural area establishment. Information and management guidance for each research natural area is provided within the establishment records. A guidebook on research natural areas also provides a synopsis of the natural features protected in each research natural area and information about use of the areas for research (Evenden, Moeur, Shelly, Kimball, & Wellner, 2001).

The Coram Experimental Forest was established and is managed by the Rocky Mountain Research Station. The Miller Creek Demonstration Forest was jointly identified by Forest resource specialists

and research scientists as suitable for special designation as a demonstration forest. Field surveys, research information, or other available documentation of conditions within the Coram Experimental Forest and the Miller Creek Demonstration Forest, as well as local resource specialist knowledge, were used to evaluate existing conditions and potential effects by alternative.

Incomplete and unavailable information

Recent surveys and other sources of information on vegetation conditions within some of the research natural areas are limited.

Analysis area

The geographic scope of the analysis is the lands administered by the Forest. All lands within the Flathead National Forest boundary form the geographic scope for cumulative effects, and the temporal scope is the anticipated life of the plan (15 years).

3.20.2 Affected environment (existing condition)

Research natural areas

The National Forest Management Act of 1976 directs the Forest Service to establish research natural areas typifying important forest, shrubland, grassland, alpine, and aquatic ecosystems. In addition to their value as reference areas for research and monitoring, research natural areas help maintain biological diversity by conserving assemblages of common and rare species, plant communities relatively undisturbed by human actions, and unique landscape features. The 1983 Northern Region Guide (USDA, 1983) included a matrix of habitat types, community types, and aquatic features targeted for inclusion in the Northern Region's research natural area system. Major revision of this 1983 regional guide for research natural areas was completed in 1996 (Chadde et al., 1996), giving new targeted plant communities and other features for inclusion in research natural areas. Many research natural areas have been formally established over the past 30 years, including six on the Forest. No new research natural areas are proposed in the forest plan. Target assignments from the 1996 assessment not yet filled on the Flathead are listed in appendix C of the forest plan, along with information on future opportunities to fill these assignments.

The six established research natural areas on the Forest are permanently designated for the purpose of conserving biodiversity, conducting nonmanipulative research and monitoring, and fostering education. They serve as high-quality representative areas of the major forms of vegetative variability found in the Forest, and they present reference areas for the study of natural ecological processes, including disturbances and climate change. Table 148 lists the six existing research natural areas on the Forest, with a brief description of each following the table. Refer to figures B-27 to B-28 for maps displaying the locations of the research natural areas.

Table 148. Established research natural areas on the Forest, with their establishment dates and acres

Research natural area name	Establishment Date	Acres ^a	Acres ^b
Coram	1988	876	839
East Shore	1991	654	646
Le Beau	1997	5,397	5,709
Little Bitterroot	1991	202	200
Swan River	1997	692	682
Tuchuck	1991	2,050	2,062

Research natural area name	Establishment Date	Acres ^a	Acres ^b
	Total Acres =	9,871	10,138

a. Acres are from Flathead National Forest GIS data sets.

b. These are the official acres from the research natural areas' establishment records.

Coram Research Natural Area

Coram Research Natural Area, located in the southeast corner of the Coram Experimental Forest, is situated about 3 miles east of the town of Hungry Horse on the Hungry Horse-Glacier View Ranger District. It is part of and is located within the boundaries of the Coram Experimental Forest. The research natural area was recognized in 1937 as a natural area, but official establishment as a research natural area did not occur until 1988. Since 1937, it has been used extensively for research and educational purposes. Late-successional western larch and interior Douglas-fir stands characterize the area, and it is used as a reference site for comparison to managed areas. Baseline monitoring plots were established in the research natural area in 1985, with additional plots added in 1993. Remeasurement of plots has occurred in 1990 and 2000.

East Shore Research Natural Area

East Shore Research Natural Area is located in the Crane Mountain area on the Swan Lake Ranger District. It lies approximately 3 miles south of the town of Bigfork, on the slopes above the east shore of Flathead Lake, and it borders private land to the southwest. The research natural area primarily features transition vegetation types ranging from aquatic and moist sites to dry sites within the Douglas-fir, grand fir, and western redcedar habitat type series. It was established primarily to preserve in an undisturbed (by humans) condition the terrestrial and aquatic features of the research natural area.

Le Beau Research Natural Area

Le Beau Research Natural Area lies within Le Beau Creek in the Stillwater River drainage, approximately 18 miles northwest of Whitefish. Most of the research natural area (5,397 acres) occurs on the Tally Lake Ranger District of the Flathead National Forest, with about 400 acres occurring on the adjacent Fortine Ranger District of the Kootenai National Forest. The area possesses a high diversity of montane and subalpine vegetation features (both terrestrial and wetland) and geologic landforms created by continental glaciation. Western redcedar, western hemlock, grand fir, western larch, and herbaceous plant communities occur on glacier-formed rocklands, lakes, ponds, and wetlands. The portion of Le Beau Creek that lies within the Le Beau Research Natural Area is proposed in the forest plan as an eligible wild and scenic river (see section 3.17).

Little Bitterroot Research Natural Area

Little Bitterroot Research Natural Area is located on the far southwestern edge of the Flathead National Forest administrative boundary, in the Swan Lake Ranger District. It lies southwest of Marion, about 2 miles south of U.S. Highway 2 along the Little Bitterroot River, which flows north into Little Bitterroot Lake. The Little Bitterroot Research Natural Area lands were administered by the Bureau of Land Management until 1966, when they came under the administration of the Forest. The area is completely surrounded by non-NFS lands. This research natural area is characterized by a narrow, steep-walled canyon, with two narrow lakes at the base of the cliffs. Below the lakes are shrub-dominated riparian areas. Nearly all of the forested area of the research natural area is within the dry Douglas-fir/pine grass habitat type and includes examples of all four habitat type phases defined by Pfister et al. (1977).

Swan River Research Natural Area

Swan River Research Natural Area is located along the Swan River south of Swan Lake in the Porcupine Creek area of the Swan Lake Ranger District. The research natural area features upland forests dominated by old western larch. Mature western redcedar, grand fir, western white pine, and Douglas-fir are also present. Wetland communities dominated by western redcedar, spruce, black cottonwood, and various shrub and herbaceous species occupy riparian sites such as wet meadows, fens, river edges, and beaver ponds. This research natural area is also within the Swan River Island inventoried roadless area.

Tuchuck Research Natural Area

Tuchuck Research Natural Area lies in Tuchuck Creek, a tributary of Trail Creek that flows into the North Fork of the Flathead River. The research natural area lies approximately 4 miles south of the U.S./Canadian border on the Hungry Horse-Glacier View Ranger District. Upper elevation and alpine plant communities dominate. Extensive stands of whitebark pine occur, as well as alpine larch and subalpine fir. The entire area burned in 1929 and, as a result, upper slopes are open and dominated by shrubs and herbaceous species and are only slowly advancing into a forest type. Several wet meadows and talus slopes are also present. The area has some of the healthiest whitebark pine stands on the Forest, with lower levels of mortality than observed in most other whitebark pine stands across the Forest. The Tuchuck Research Natural Area lies within a recommended wilderness area (management area 1b) in alternatives B modified and C.

Coram Experimental Forest

The Forest contains the Coram Experimental Forest, an approximately 7,500 acre area located on the Hungry Horse Ranger District, established in 1933. The Coram Research Natural Area is included within the boundaries of the Coram Experimental Forest. Research activities, facilities and management of the Coram Experimental Forest is the responsibility of the Rocky Mountain Research Station. The Flathead National Forest is responsible for all non-research based general management activities that occur on the Coram Experimental Forest. Clarification of responsibilities, the operating plan and fire management plan are outlined in a letter of agreement between the Rocky Mountain Research Station and the Flathead National Forest (USDA, 2016).

The original purpose of the Coram Experimental Forest was to study the ecology and silviculture of western larch as it occurs in a mix with other commonly associated species. Western larch research was centered at Coram Experimental Forest to provide a scientific basis to regenerate and grow this ecologically important and economically valuable species. Long-term studies of soils, forest productivity, stand structure and growth, wildlife habitat, and other ecological components following timber harvest activities have been conducted. Climate and hydrological stations record variability in long-term weather and stream flow. Coram Experimental Forest also offers extensive educational opportunities, including the award-winning Walk with Larch trails that illustrate the long-term effects of silvicultural choices. At the Hungry Horse Ranger District compound, the International Larix Arboretum, also established and managed by the Rocky Mountain Research Station, contains specimens of larch species from around the world. In addition, part of the Coram Experimental Forest is designated as a research natural area (see table 148 and discussion under research natural areas above).

Miller Creek Demonstration Forest

The approximately 4,900-acre Miller Creek Demonstration Forest is located on the Tally Lake Ranger District and was set aside in 1989 by the forest supervisor. Research in this area began in 1966 to study the effect of prescribed fire and silvicultural treatments on regeneration and other

conditions within the mixed conifer forests typical of the area. The Miller Creek Demonstration Forest was established to encourage continuing research and to recognize the value of the area for long-term educational and demonstration purposes. A memorandum of understanding between the Rocky Mountain Research Station (formerly the Intermountain Research Station) and the Flathead National Forest clarifies the roles of the two agencies regarding activities within the Miller Creek Demonstration Forest (USDA, 1989). The Forest is responsible for implementing current forest plan direction in the area. The research station director is responsible for any new or continuing research activities.

3.20.3 Environmental consequences

Alternative A—No action

The existing forest plan contains management direction for the six established research natural areas and the Coram Experimental Forest. Five of the six research natural areas are designated management area 3a in the 1986 forest plan, as amended (amendment 22). Coram Research Natural Area is not a separate management area but is included within the Coram Experimental Forest, which is designated management area 14. All research natural areas are directed to be managed to perpetuate natural ecosystems and encourage scientific research with minimum human interference. Each research natural area is managed in accordance with its establishment record and management plan, if available.

The Coram Experimental Forest is designated management area 14 in the existing 1986 forest plan and is managed by the Rocky Mountain Research Station, coordinating with the Forest through the 2016 letter of agreement mentioned above. Management emphasizes studies and research to provide ecological and silvicultural information needed to manage western larch-mixed conifer forests.

Miller Creek Demonstration Forest is not specifically identified as a management area within the 1986 forest plan, and there is no specific forest plan direction in the current plan related to the Miller Creek Demonstration Forest. The majority (88 percent) of the area is designated as management area 15, forestlands where timber management with roads is economical and feasible. The remaining area is designated management area 12 (8 percent) and management area 17 (4 percent), which are riparian buffer areas along the perennial streams. The main difference between management area 12 and management area 17 is that timber production is considered unsuitable in management area 12 and suitable in management area 17. The Forest is responsible for management of the area, as guided by the existing forest plan management areas, with the Rocky Mountain Research Station having responsibilities for new or continuing research. The memorandum of understanding prepared for the Miller Creek Demonstration Forest when it was administratively designated in 1989 clarifies the roles of the Forest and the Research Station.

Alternatives B modified, C, and D

Under alternatives B modified, C, and D, all six established research natural areas, the Coram Experimental Forest, and the Miller Creek Demonstration Forest would be retained as currently mapped. Research natural areas are designated as management area 4a, and the Coram Experimental Forest and Miller Creek Demonstration Forest are designated as management area 4b under these alternatives. Management direction for the research natural areas and the Coram Experimental Forest is the same as in the existing plan, as described under alternative A, and there is no notable difference in potential effects, which is the protection of the values associated with the research natural areas and Coram Experimental Forest and the continuation of the ecological and educational/research purposes of these areas.

In contrast to the existing plan, the Miller Creek Demonstration Forest is designated as a management area (management area 4b) under alternatives B modified, C, and D, with forest plan components in the revised plan providing guidance and direction for its management. This direction includes recognition of the area as a demonstration and study area for researchers, educators, forest managers, and the public. It is expected that vegetation management activities would have a dominant role in affecting the condition of the forest, and the Miller Creek Demonstration Forest is considered suitable for timber production. Wheeled motorized travel on designated roads and trails is allowable, as is motorized over-snow vehicle use throughout the area. Riparian habitat conservation areas are identified as occurring along the streams within the Miller Creek Demonstration Forest and would be managed and protected in accordance with the direction in the forest plan. These three alternatives have a beneficial effect on the Miller Creek Demonstration Forest by bringing greater recognition of the role this area plays in education and research and retaining opportunities for management of the forests in this area.

Consequences to research natural areas, Coram Experimental Forest, and Miller Creek Demonstration Forest from forest plan components associated with other resource programs or management activities

Effects from access and recreation

Nonmotorized travel and recreational use is allowed within research natural areas and Coram Experimental Forest, with limited motorized travel to meet administrative, research, and educational objectives. This use is expected to cause minimal to no impact to the values associated with the research natural areas and the Coram Experimental Forest.

Summer motorized travel is allowed on designated routes within the research natural areas, Coram Experimental Forest, and Miller Creek Demonstration Forest. Motorized over-snow vehicle use is suitable on specific routes and areas as identified on the motorized over-snow vehicle use maps for the Forest. These uses are not expected to impact the values associated with these areas under any of the alternatives.

Effects from vegetation management

Research natural areas and the Coram Experimental Forest are unsuitable for timber production in all alternatives. Vegetation management activities may occur as guided and restricted by regulation and policy. These measures are expected to protect all qualities associated with these areas and to achieve desired conditions.

Within research natural areas, the research station director, with the concurrence of the forest supervisor, may authorize management practices that are necessary for invasive weed control or to preserve the vegetation for which the research natural area was created (Forest Service Manual 4063.3). As stated in the manual, limited use of vegetation management may occur within research natural areas, in situations where the vegetative type would be lost or degraded without management. The criterion is that management practices must provide a closer approximation of the naturally occurring vegetation and the natural processes governing the vegetation than would be possible without management. These practices may include prescribed burning.

Vegetation management, including timber harvest, may occur within the Coram Experimental Forest if needed for study or research purposes. Timber harvesting for other purposes (i.e., fuel reduction, salvage) may also occur but must be coordinated and agreed upon with the Rocky Mountain Research Station.

The Miller Creek Demonstration Forest is suitable for timber production under all alternatives and is expected to have active and regularly scheduled timber harvest in the future under all alternatives. Forest plan components guiding vegetation management would be applied to achieve desired vegetation conditions.

Effects from fire and fire management

Desired conditions for research natural areas in the forest plan state that these lands are generally natural appearing, with natural processes (including fire) functioning naturally with limited human influences. One of the purposes of research natural areas is to serve as baseline areas for the study of these processes and their effects on ecosystems. Management of unplanned ignitions (wildfire) in or near research natural areas would be guided by these forest plan components as well as by the direction provided in each individual research natural area's establishment record, the Forest Service manual and other regulatory documents, and consultation with Rocky Mountain Research Station scientists. If the values associated with the research natural area are at risk of degradation or loss due to fire, fire management strategies would likely include measures aimed at protecting those values, if possible. On the other hand, fire as a natural process may be desired and allowed to occur within a research natural area to perpetuate the natural functioning of the ecosystem. In either case, the effects from fire and fire management strategies are expected to have a positive effect on the condition and perpetuation of the ecological and recreational values associated with the research natural areas.

Cumulative effects

The existing vegetation conditions within the designated areas reflect the contributions of past management actions and ecological processes. Management activities are very limited within research natural areas, restricted to management activities needed to maintain the features for which the research natural area was established. Management activities will generally continue to take place outside of the existing and proposed research natural areas, and it is unlikely that these activities would have an effect on the research natural areas. Control of invasive weeds is an action that may have occurred in the past within research natural areas, and it is the most likely management activity to occur within research natural areas in the future, in coordination with the Rocky Mountain Research Station. This would have a positive effect through the control of invasive weeds or prevention of their spread and would not result in any change to research natural area designations.

Vegetation treatments and other activities are likely to continue in the future within the Coram Experimental Forest, as guided by the Rocky Mountain Research Station and plan direction. They are not likely to result in any change to the Coram Experimental Forest designation.

Management activities are likely to occur within the Miller Creek Demonstration Forest in the future, as guided by plan direction. These activities are not likely to result in any change to the designation of the area as Miller Creek Demonstration Forest.

Production of Natural Resources

This section includes the following resources:

- forest products: timber
- other forest products, including huckleberries
- mineral resources
- livestock grazing

3.21 Forest Products—Timber

Introduction

The Forest contains valuable timber resources. They are important for products that are in demand by the American public, including lumber, house logs, pulpwood, posts and poles, and firewood. Because of the value of the timber resource, commercial timber harvest is used to move vegetation towards its desired conditions, improve watershed condition, improve wildlife habitat, and reduce wildfire risk through reduced fuel loads. Timber harvest also provides jobs and income in the logging and manufacturing of wood products.

Regulatory framework

Federal law

Organic Administration Act of 1897: Forests are established “to improve and protect the Forest within the boundaries, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States.”

Multiple-Use Sustained-Yield Act of 1960: “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. . . . The Secretary of Agriculture is authorized and directed to develop and administer the renewable surface resources of the national forests for multiple use and sustained yield of the several products and services obtained therefrom. . . . ‘Sustained yield of the several products and services’ means the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the national forests without impairment of the productivity of the land.”

Forest and Rangeland Renewable Resources Planning Act of 1974, as amended by the National Forest Management Act of 1976: These acts set forth the requirements for land and resource management plans for national forests.

Other regulation, policy, and guidance

2012 planning rule (36 CFR § 219): The procedures of the 2012 planning rule require the identification of areas suitable for timber production and of the amount of timber that can be removed annually on a sustained-yield basis. In addition, the procedures require an analysis of the supply and demand situation for resource commodities.

Forest Service Handbook 1909.12 chap. 60: This handbook describes the procedures for identification of lands as not suitable and suitable for timber production and methods for

determining the sustained-yield limit, the projected wood sale quantity, and the projected timber sale quantity.

Key indicators

Key indicators that will be used to measure effects of alternatives are

- acres suitable for timber production
- projected wood sale quantity
- projected timber sale quantity
- sustained-yield limit

Methodology and analysis process

Timber suitability was determined using various resource data and GIS to apply criteria and identify lands suitable for timber production. Timber production is defined as the growing, tending, harvesting, and regenerating of trees to produce logs or other products for industrial or consumer use. Lands determined to be suitable for timber production are areas identified as capable of producing a regular, periodic output of timber, maintained in perpetuity, without impairment of the productivity of the land or inconsistency with other land management direction. Criteria for suitability are defined in the 2012 planning rule procedures at 36 CFR § 219.11 and Forest Service Handbook 1909.12, chapter 60. Data was developed using the latest data sources and requirements to match the criteria defined by resource specialists.

Timber demand was based on a capacity and capability analysis completed by the University of Montana's Bureau of Business and Economic Research (Sorenson, McIver, Keegan, & Morgan, 2012).

Timber harvest was modeled using Spectrum, a software modeling system designed to assist decisionmakers in exploring and evaluating multiple resource management choices and objectives. Models constructed with Spectrum apply management actions to landscapes through a time horizon and display resulting outcomes. Management actions are selected to achieve desired goals while complying with all identified management objectives. One of the goals for all the action alternatives was the objective of moving vegetation towards the desired condition. Some alternatives were also run with a goal to maximize timber output. The Spectrum model was used to determine the sustained-yield limit and the projected timber sale quantity and acres treated by decade for each alternative. Historic data, along with the projected timber sale quantity, was used in determining the projected wood sale quantity for each alternative.

Information sources

Data used in determining timber suitability, projected wood sale quantity, and projected timber sale quantity is described in appendix 2.

Incomplete and unavailable information

There is no incomplete or unavailable information for this analysis. However, it should be noted that this analysis was completed at the strategic level, using Forest-level data sources. Site-specific data at the project scale is expected to result in some changes to timber suitability.

The Spectrum model is a simulation and a predictor of projected timber sale quantity and acres treated. It is used to display tradeoffs between alternatives and to predict sustainable timber harvest

levels over time. The actual timber harvest level is dependent on many variables, including budget, spatial limitations on the ground, and demand for products.

Analysis area

The analysis area for timber suitability is comprised of the NFS lands administered by the Flathead National Forest. The analysis area for timber demand consists of nine counties comprising the timber processing area. The analysis area for the projected timber sale quantity is the lands suitable for timber production and lands that are not suitable for timber production but where timber harvest is allowed. The analysis area for the projected wood sale quantity is the lands suitable for timber production and lands that are not suitable for timber production but where timber harvest or firewood collection may occur. The temporal scope of the analysis is the anticipated life of the plan (15 to 20 years).

Notable changes between draft and final EIS

The analysis of the natural range of variation for early successional forest openings was refined, resulting in some changes to the standard in the plan that establishes maximum opening sizes for harvest units (FW-STD-TIMB-07). Though the new analysis is similar to that for the draft plan, it was altered slightly to provide a more pertinent comparison to harvest openings as defined for this standard. Refer to Trechsel (2017) for a detailed discussion of this analysis.

Timber suitability was updated between the draft and final EIS to reflect changes needed to incorporate riparian management zones for alternatives B modified, C, and D and updates to the riparian habitat conservation areas for alternative A. Some minor changes were also made to timber suitability in alternatives B modified, C, and D for the allocation of an additional recommended wild and scenic river and mapping corrections. The changes resulted in a five percent or less reduction in lands suitable for timber production for all alternatives. These acres then became not suitable for timber production, but timber harvest would be allowed on these lands for other purposes. Because of the small size of this change in conjunction with the interaction of other constraints, the Spectrum model was not rerun for the alternatives. See Frament (2017) for more information about this change to timber suitability.

3.21.1 Affected environment (existing condition)

Timber suitability

Lands suitable for timber production were used in deriving the allowable sale quantity for the current plan. The 1986 forest plan determined 670,670 acres were suitable for timber production. Timber suitability was determined through the use of resource data and computer models and followed the handbook and planning regulations that were in place at the time.

There have been many changes to timber suitability as the forest plan has been amended and implemented over the past three decades. These changes include reductions in lands suitable for timber production in riparian areas and inventoried roadless areas. There have also been changes in data and land status, resulting in updated figures for timber suitability. As part of the forest plan revision, timber suitability was recalculated to reflect these changes in management and data. Table 149 displays timber suitability at the time the 1986 forest plan was adopted compared to timber suitability under the no-action alternative (1986 forest plan as amended and implemented).

Table 149 Timber suitability for the 1986 forest plan

Suitability category	1986 forest plan, as written	No-action alternative (1986 forest plan, as amended)
Total NFS lands	2,362,082	2,392,804
Non-forested lands ¹	-1,006,594	-117,200
Withdrawn lands ²	-519,741	-1,371,717
Irreversible resource damage is likely or adequate restocking not assured ³	0	-166,508
Lands tentatively suitable for timber production	835,747	737,379
Lands where management area prescriptions preclude timber production, where management requirements cannot be met, or where meeting timber production objectives would not be cost-efficient ⁴	-165,077	-202,761
Lands suitable for timber production	670,670	534,629

1. Handbook direction at the time the 1986 forest plan was developed classified lands that were not productive (producing < 20 cubic feet/acre/year) as "non-forested." The 2012 planning rule procedure does not consider low-productive lands as non-forested. Because of this change in definition and updated data, the total forested NFS lands have increased from the 1986 forest plan.

2. The change in the amount of withdrawn lands is mostly due to a change in the order of subtraction plus the addition of inventoried roadless area (460,791 acres) that is not suitable for timber production under the 2001 Roadless Area Conservation Rule.

3. The difference between irreversible damage and adequate restocking is mostly due to better data than was available for the 1986 forest plan.

4. The difference includes identification of riparian habitat conservation areas as not suitable for timber production

Under the no-action alternative (alternative A), 437,663 acres are suitable for timber harvest that are not suitable for timber production. A large portion of this acreage is comprised of inventoried roadless areas (approximately 320,773 acres) that are allocated to management areas where timber harvest is allowed to meet desired conditions. In these areas, timber harvest may be used as a tool under the following specific set of circumstances: the cutting, sale, or removal of generally small-diameter timber is needed to improve threatened and endangered, proposed, or sensitive species habitat or to maintain or restore the characteristics of ecosystem composition and structure that would be expected to occur under natural disturbance regimes. Refer to figure 1-09 (appendix 1) for a map showing lands suitable for timber production under alternative A.

Timber demand

Timber demand was analyzed as part of the 1986 forest plan. At that time, timber from the Flathead National Forest was historically processed primarily in Flathead County, with smaller percentages utilized by mills in Missoula and Lake Counties. In 1976, the production capacity of the sawmills within those three counties that produced at least 10 million board feet per year was determined to be 687 million board feet. This was updated in 1981 and estimated at 650 million board feet. The percent of this amount of timber supplied by the Flathead National Forest varies by county and by year. In 1976, about 65 percent of the timber received in Flathead County was from NFS lands. That same year, only 18 percent of sawtimber in Missoula and Lake Counties was of national forest origin (USDA, 1986a, p. III-31).

Timber demand was updated in 2012 using a capacity and capability analysis for the Forest. This analysis was conducted by the University of Montana's Bureau of Business and Economic Research and summarized in a report prepared for the Flathead National Forest (Sorenson et al., 2012). The term "capacity" refers to the volume of timber (excluding pulpwood) that existing mills could

utilize annually. The term “capability” refers to the volume of trees of a certain size class that existing mills could efficiently process annually. The following information on timber demand is excerpted from this report.

Flathead National Forest non-reserved timberland is located in three Montana counties: Flathead, Lake, and Missoula. Non-reserved timberland is land that has not been withdrawn from timber utilization by statute or administrative regulation. It is available for harvest and capable of growing at least 20 cubic feet of wood per acre per year. The total harvest from all lands in these three counties was 43.9 million cubic feet (or approximately 215 million board feet) in 2009. Fifteen percent (6.6 million cubic feet or approximately 32 million board feet) of the timber harvest in this three-county area originated from the Flathead National Forest. Most (80 percent) of the timber harvested from these counties consisted of green (live) trees. Sawmills and veneer/plywood plants received about 71 percent of the timber harvested from these counties. House logs, posts and small poles, and other mills received less than two percent of the timber harvest volume. Pulp and paper mills utilized 28 percent of the 2009 harvest from the three-county region.

The 2011 harvest in the three-county area was estimated to be approximately 51.4 million cubic feet (approximately 245 million board feet). Given the mill closures that have occurred in the region since 2009, the pulpwood component was close to the historical average of 5 percent of the total harvest in 2011. The Flathead National Forest harvest in the three-county area was estimated to be approximately 10 percent of the total harvest by all ownerships, or approximately 25 million board feet.

In addition to the three counties with Flathead National Forest non-reserved timberland, another six counties process the majority of the remaining timber coming off of the Forest. The Flathead National Forest timber processing area was determined by the Bureau of Business and Economic Research to be the nine-county area including Flathead, Jefferson, Lake, Lewis and Clark, Lincoln, Mineral, Missoula, Ravalli, and Sanders Counties in Montana.

The capacity to process timber in the Flathead National Forest timber processing area during 2011 was 495 million board feet, with mills utilizing approximately 254 million board feet or about 50 percent of capacity (see table 150). Nearly 89 percent (236 million board feet) of the volume processed in the timber-processing area was composed of trees with diameter at breast height (d.b.h.) \geq 10 inches. Just over 7 percent (15.8 million board feet) of the volume processed came from trees 7.0-9.9 inches d.b.h., and approximately 4 percent (2.2 million board feet) of processed volume came from trees $<$ 7 inches d.b.h.

Table 150. Annual volume of timber processed by tree size class (excluding pulpwood) for the Flathead National Forest timber-processing area, 2011.

Tree d.b.h.	Volume Used (mmcf timber)	Tree d.b.h.	Volume Used (mmbf Scribner)
< 7 in.	2,196	< 7 in.	2,196
7-9.9 in.	4,106	7-9.9 in.	15,768
10+ in.	49,946	10+ in.	236,154
Total	56,248	Total	254,118

About 59 percent (371 million board feet) of the 494 million board feet of existing capacity in the Flathead National Forest timber-processing area is not capable of efficiently utilizing trees $<$ 10

inches d.b.h., and nearly 60 percent of the capacity capable of utilizing trees < 10 inches d.b.h. is in the 7-9.9 inches d.b.h. class (see table 151).

Table 151. Annual total capacity and capability* to process trees by size class (excluding pulpwood) for the Forest timber processing area, 2011.

Tree d.b.h.	Capability (mmcf timber)	Tree d.b.h.	Capability (mmbf Scribner)
< 7 in.	18,251	< 7 in.	18,251
7-9.9 in.	27,175	7-9.9 in.	104,351
10+ in.	66,468	10+ in.	371,003
Total Capacity	111,893	Total Capacity	493,606

* Note: Capability in the < 7 and 7-9.9 inch classes is the maximum volume capable of being used efficiently; capability in the 10+ inch class is the portion of total capacity *not* capable of efficiently using trees with d.b.h. < 10 inches

A substantial amount of the capacity capable of utilizing smaller diameter trees is being used to process larger trees or is going unused. About 12 percent of capacity in the < 7 inches d.b.h. category is currently utilized to process trees < 7 inches d.b.h., and slightly more than 15 percent of capacity in the 7-9.9 inches d.b.h. category is being used to process trees 7-9.9 inches d.b.h. More than 7.6 mmcf of capacity capable of using trees 7-9.9 inches d.b.h. is used annually to process trees ≥ 10 inches d.b.h. Recent (2007-2011) poor market conditions for lumber have reduced mill demand for smaller-diameter logs used to make studs. When markets are poor, it becomes more difficult to profitably produce lumber from small and low-quality logs. The price of stud-grade lumber, which is predominantly made from small logs, fell by a much higher percentage during the recent recession than many other dimensions and board and shop lumber grades (RLY, 2010). This reduced the profitability of sawing lower grades of lumber from small and lower-quality logs. As lumber markets recover, increased capacity utilization can be expected across all the size classes.

Timber supply

Before the Flathead National Forest was established, timber was harvested on the Forest to meet the needs of the people living in the area. Like many other national forests, timber harvest on the Forest greatly increased in the 1960s to meet the demands of a rapidly growing economy.

Figure 70 displays the total volume of timber cut and sold on the Flathead National Forest during the life of the current plan, from 1986 to 2012. The amount cut is based on the amount sold by the Forest Service. The amount and timing of harvest from the volume under contract with the Forest Service is in response to market conditions and demand for timber products. The salvage of timber from insect and disease or fire events also affects the amount harvested, as salvage needs to occur within a few years of when the trees are killed. The largest volume harvested during this time was in 1988, when nearly 122 million board feet of timber was harvested on the Forest. The largest volume sold occurred two years earlier (1986), when more than 87 million board feet of timber was sold. However, the decade of the 1990s saw a sharp decline in the volume harvested and sold, with the lowest volumes occurring at the beginning of the century. In 2001, only 6 million board feet of timber was harvested on the Flathead National Forest, and the lowest sold volume (4.5 million board feet) occurred in 2000. In 2012, 28 million board feet of timber was harvested on the Flathead National Forest and 20.3 million board feet was sold.

The 1986 forest plan is an average annual allowable timber harvest of 54 million board feet. The allowable sale quantity is the maximum level of harvest consistent with the 1986 forest plan's standards and guidelines. The annual timber volume offered per year averaged 29.4 million board

feet, or 5.7 million cubic feet, over the five-year period of 2011 through 2015. This volume includes both sawtimber and non-sawtimber products such as firewood. The actual amount of timber offered is influenced by a variety of factors, including site-specific environmental analyses, public involvement on project proposals, choice of harvest methods, and effects of administrative appeals and litigation (Morgan & Baldrige, 2015).⁷ In addition, actual levels are limited by the budget the Forest receives for that purpose and the workforce capacity needed to prepare sales and the associated environmental analyses. Forest Service funding and workforce capacity to support the timber sale program is not expected to increase in the immediate future.

Actual timber volume offered is also influenced by factors outside the authority of the Forest Service. For example, forest conditions on adjacent non-national forest lands can limit harvesting opportunities on Forest Service lands in order to provide for wildlife habitat needs. Other regulatory agencies, such as the USFWS, may also provide direction that limits harvest levels to protect threatened and endangered species, meeting their responsibility under the Endangered Species Act. Trends in timber supply are also influenced by forest and ecosystem conditions, such as the presence of insect epidemics or fire events.

As described in the Flathead's assessment (USDA, 2014a), the Forest has salvage harvested some of the areas with fire-killed trees. Approximately 164,000 acres of national forest lands outside wilderness areas burned from 1990 through 2013. The Forest salvage harvested 16,963, or approximately 10 percent of these acres. Opportunities for salvage harvest have been minimal, with harvest needing to occur within a few years of the fire to remove trees before they deteriorate and lose economic value. These burned areas are often not salvage harvested because of other resource needs or concerns.

⁷ Litigation has a real impact on the amount of timber that can be sold. A recent study by Morgan and Baldrige (2015) concludes that "the relatively high frequency of litigation in Region One and the protracted duration (often one to two years) of litigated cases contributes to agency workload, cost, and uncertainty, as well as uncertainty and related economic impacts for loggers, mills, and communities near the forests. Even if agency personnel were not spending effort working on these cases each day cases were open, the duration of most litigated cases was over multiple planning and budget cycles, making resource management and financial decisions very difficult for the FS, mills, loggers, and forest-dependent communities in the Region." Sales that are litigated are delayed in coming to sale and often require additional analysis as circumstances change over time.

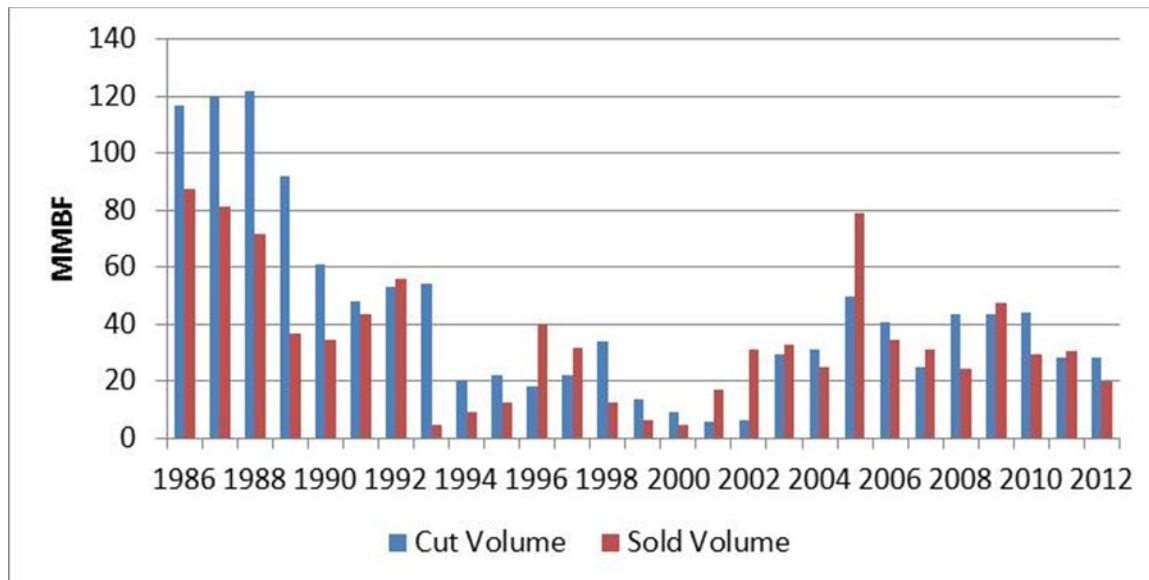


Figure 70. Cut and sold volumes for the Forest, 1986-2012

3.21.2 Environmental consequences

Alternative A—No action

Timber suitability

Under the no-action alternative, timber suitability was updated to reflect plan amendments, current data, and current regulation (see earlier discussion on timber suitability for the 1986 forest plan). Lands that may be suitable for timber production are consistent for all alternatives and total 737,000 acres (see table 152). These are lands that are physically capable and have not been administratively withdrawn (such as wilderness and inventoried roadless areas) from timber production.

From the lands that may be suitable for timber production, 202,800 acres were found to have other resource concerns that would preclude timber production as an objective. This includes habitat conservation areas and management areas where timber production would not be consistent with desired conditions.

On lands not suitable for timber production but where timber harvest is allowed, timber harvest contributes to achieving desired conditions while providing economic and social services and benefits to people (FW-DC-TIMB-06). Timber harvest on these lands occurs for purposes such as salvage, fuels management, insect and disease mitigation, protection or enhancement of wildlife habitat, research or administrative studies, or recreation and scenic-resource management. Timber harvest on these lands would have to be consistent with other management direction. Lands where timber harvest may be allowed is defined by management area and desired conditions. Any timber harvest from these lands is not scheduled and would not occur on a rotation basis. Alternative A has approximately 437,700 acres (18 percent of the Forest) where timber harvest is allowed on land not suitable for timber production.

Projected timber sale quantity and projected wood sale quantity

In order to compare outputs under alternative A to those of the action alternatives, the allowable sale quantity for the 1986 forest plan was updated to reflect a projected timber sale quantity and

projected wood sale quantity following current handbook requirements. These projected sale quantities were formulated by considering the lands suitable for timber production and lands suitable for timber harvest, vegetation desired condition, other multiple-use objectives, and the management requirements set forth in the National Forest Management Act. Based on 2012 planning rule direction (36 CFR § 219.1(g)) and Forest Service handbook requirements (Forest Service Handbook 1909.12, 64.32), the projected timber sale quantity and projected wood sale quantity reflect currently foreseeable budget levels. In order to understand sustainable volumes under potentially higher budgets, sale quantities were also estimated without a budget constraint for comparison purposes.

Timber harvest levels were calculated using the Spectrum model (see appendix 2). The model was run with a mix of objective functions based on the theme of each alternative. To reflect direction under the 1986 forest plan, alternative A was run with the objective of maximizing timber production.

The projected timber sale quantity for alternative A is 28.2 million board feet/year for the first decade. Without a budget constraint, the sale quantity is 52.4 million board feet/year for the first decade. Modeling indicates that, although a much higher timber harvest level might be possible without a budget constraint, the Forest would require an additional 3.5 million dollars annually in the first decade to achieve this.

Sustained-yield limit

Under alternative A, the long-term sustained-yield limit for the 1986 forest plan is replaced with a sustained-yield limit. The sustained-yield limit is based on the productivity of the land and does not vary by alternative. See discussion below for the action alternatives on the calculation of the sustained-yield limit.

Alternatives B modified, C, and D

Timber suitability

Lands suitable for timber production were determined following direction under the 2012 planning rule (36 CFR § 219.11(a)) and handbook direction (Forest Service Handbook 1909.12, 61). Lands that may be suitable for timber production are consistent for all alternatives and total 737,000 acres (see table 152). These are lands that are physically capable and have not been administratively withdrawn (such as wilderness and inventoried roadless areas) from timber production.

Based on management areas and desired conditions, timber suitability then varies by alternative. Lands in management areas 6b and 6c, a portion of management area 7, and the Miller Demonstration Forest (management area 4b) are suitable for timber production. All other management areas preclude timber production as an objective. Timber harvest may be allowed in other management areas (2a and 2b in scenic or recreation segments, 3a, 3b, 4a, 4b [Coram Experimental Forest], 5a, 5b, 5c, 5d, 6a, and part of 7), but only to meet other resource objectives. These acres are not suitable for timber production. Table 152 displays timber suitability for each alternative.

Table 152. Timber suitability by alternative

Land Classification Category	Alternative A	Alternative B modified	Alternative C	Alternative D
A. Total NFS lands in the plan area	2,392,800	2,392,800	2,392,800	2,392,800

Land Classification Category	Alternative A	Alternative B modified	Alternative C	Alternative D
B. Lands not suited for timber production due to legal or technical reasons	1,655,400	1,655,400	1,655,400	1,655,400
C. Lands that may be suited for timber production (A – B)	737,400	737,400	737,400	737,400
D. Total lands suited for timber production because timber production is compatible with the desired conditions and objectives established by the plan	534,600	465,200	308,200	482,600
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)	202,800	272,200	429,200	254,800
F. Total lands not suited for timber production (B + E)	1,858,200	1,927,600	2,084,600	1,910,200

Alternative A has the most acres suitable for timber production. Acres suitable for timber production are slightly higher in this alternative than the acres in the action alternatives. This is because the management area allocation for the 1986 forest plan has slightly lower acres of management areas where timber production is not consistent with desired condition. Also, alternative A has riparian habitat conservation areas consistent with INFISH, which encompass fewer acres than the riparian management zones that are applied to the action alternatives under the revised plan. See the subsections related to riparian areas in section 3.2 for a discussion of management of riparian areas.

Of the action alternatives, alternatives B modified and D have nearly the same (and the most) acres suitable for timber production, whereas alternative C has the least. This is primarily because alternatives B modified and D have the lowest number and alternative C the greatest number of acres allocated to management areas unsuitable for timber production (such as management area 5 backcountry designations). Refer to figures 1-09 through 1-12 for maps displaying lands suitable for timber production in each alternative. The intensity of management of lands suitable for timber production varies by management area (see description of timber management in the forest plan for each management area). Management areas 4b and 6c emphasize a higher intensity of management, whereas management area 6b is more moderate. The intensity of timber management in management area 7 varies, depending on the site. Alternative C has the highest proportion of lands suitable for medium-intensity timber production, with 63 percent of lands suitable for timber production allowing a moderate level of intensity of management and 37 percent allowing for more intense management. Alternatives B modified and D have similar proportions of intensity in management, with 54 and 50 percent, respectively, of lands suitable for timber production allowing for a moderate level of intensity of management and 46 and 50 percent, respectively, allowing for more intense management. Because the existing plan does not explicitly identify a “medium-” or “high-” intensity management approach for the management areas, percentages have not been determined for alternative A.

As the plan is implemented on the ground, timber suitability may change based on site-specific analysis. Broad-scale information is used in determining lands suitable for timber production in the forest plan. As a result, changes may occur at the project-scale level using site-specific data. For example, certain landtypes were excluded from lands suitable for timber production due to sensitivity to harvest operations (such as poorly drained, saturated soils and steep, rocky thin soils). The specific presence and location of landtypes can only be positively confirmed on the ground, which would occur at the project-level of analysis. Trechsel (2015) outlines the process used to

determine lands suitable for timber production and the specific features (such as landtypes) that factored into the determination. Changes to timber suitability will be monitored during implementation of the plan.

Timber harvest is allowed on lands not suitable for timber production (see FW-DC-TIMB-06 and suitability by management area) for such purposes as salvage, fuels management, insect and disease mitigation, protection or enhancement of wildlife habitat, research or administrative studies, or recreation and scenic-resource management. Timber harvest on these lands would have to be consistent with other management direction. Timber harvest on these lands is not scheduled or managed on a rotation basis, but it does contribute towards projected sale quantities described below.

Acres where timber harvest is allowed on land not suitable for timber production are estimated as follows: alternative A = 437,700 acres (18 percent of the Forest); alternative B modified = 447,200 acres (19 percent of the Forest); alternative C = 403,700 acres (17 percent of the Forest); and alternative D = 522,600 acres (22 percent of the Forest). Under alternatives B modified and D, approximately one half of these acres are comprised of inventoried roadless areas. For alternative C, the largest percentage of these acres are those allocated to management area 6a (general forest low-intensity vegetation management).

Projected sale quantities

The projected sale quantities for each alternative were formulated by considering lands suitable for timber production and lands where timber harvest is allowed, vegetation desired condition, other multiple-use objectives, and the management requirements set forth in the National Forest Management Act. Timber harvest levels for the alternatives were calculated using the Spectrum model (see appendix 2). The model was run with a mix of objective functions based on the theme of each alternative. Alternative A was run with an objective to maximize timber production, whereas alternatives B modified and C had objectives to move towards vegetation desired condition as quickly as possible while meeting other resource objectives. Alternative D had the objective function of maximizing timber and then moving towards vegetation desired condition.

The projected wood sale quantity is the estimated output of timber and all other wood products (such as fuelwood or biomass) expected to be sold during the plan period for any purpose (except salvage harvest or sanitation harvest) on all lands in the plan area. The projected timber sale quantity is the portion of the projected wood sale quantity that meets applicable utilization standards. Table 153 displays the projected sale quantities for each alternative. Outputs are shown by both million cubic feet and million board feet per year for the projected timber sale quantity. Outputs are shown only in million cubic feet for the projected wood sale quantity, as material not meeting utilization standards is not measured in board feet.

As shown in table 153, the projected wood sale quantities for the first two decades under alternatives A, B modified, and D are higher than the average wood products volume sold over the last five years (2011 through 2015) of 5.7 million cubic feet per year (see section 3.21.1 for the past and current supply of timber sold from the Flathead National Forest). Alternative C is the only alternative that would produce less than the current timber sale levels.

Table 153. Average annual projected timber sale quantities by alternative for decades 1 and 2 with a reasonably foreseeable budget

Category and Decade	Alternative A (mmcf)	Alternative A (mmbf)	Alternative B modified (mmcf)	Alternative B modified (mmbf)	Alternative C (mmcf)	Alternative C (mmbf)	Alternative D (mmcf)	Alternative D (mmbf)
Timber Products ^a A1. Lands suitable for timber production (decade 1)	5.3	25.6	5.3	26.3	3	13.8	5.8	28.6
Timber Products ^a A1. Lands suitable for timber production (decade 2)	5.9	28.4	4.9	24.2	3.7	17.6	5.7	27.6
Timber Products ^a A2. Lands not suitable for timber production (decade 1)	0.5	2.6	0.2	1.0	0.9	4.2	0.1	0.6
Timber Products ^a A2. Lands not suitable for timber production (decade 2)	0	0	0.6	3.2	0.9	4.4	0.2	1
Projected Timber Sale Quantity (A1 + A2) (decade 1)	5.8	28.2	5.5	27.3	3.9	18	5.9	29.2
Projected Timber Sale Quantity (A1 + A2) (decade 2)	5.9	28.4	5.5	27.4	4.6	22	5.9	28.6
Other Wood Products ^b B. All lands (decade 1)	0.8	n/ac	0.8	n/ac	0.6	n/ac	0.9	n/ac
Other Wood Products ^b B. All lands (decade 2)	0.8	n/ac	0.8	n/ac	0.6	n/ac	0.9	n/ac

Category and Decade	Alternative A (mmcf)	Alternative A (mmbf)	Alternative B modified (mmcf)	Alternative B modified (mmbf)	Alternative C (mmcf)	Alternative C (mmbf)	Alternative D (mmcf)	Alternative D (mmbf)
Projected Wood Sale Quantity— Timber Products ^a and Other Wood Products ^b (A1 + A2 + B) (decade 1)	6.6	n/ac	6.3	n/ac	4.5	n/ac	6.8	n/ac
Projected Wood Sale Quantity— Timber Products ^a and Other Wood Products ^b (A1 + A2 + B) (decade 2)	6.7	n/ac	6.3	n/ac	5.2	n/ac	6.8	n/ac

a. Timber products = volumes other than salvage or sanitation volumes that meet timber product utilization standards.

b. Other wood products = fuelwood, biomass, and other volumes that do not meet timber product utilization standards (small diameter, 3-7 inches d.b.h.).

c. n/a = not applicable

Source: Spectrum model analysis

To determine the highest sustainable harvest levels possible, the alternatives were also run without a budget limitation (see appendix 2). Table 154 displays projected sale quantities by alternative that may be possible if there is no requirement to be within reasonable budget limitations. These numbers are not the projected timber sale quantities found in the objectives of the forest plan because they do not meet the requirement to be within reasonably foreseeable budgets. They are shown here to display what might be feasible if budgets were increased above what is reasonably foreseeable.

Table 154. Average annual projected timber sale quantities by alternative, decades 1 and 2 with no budget limitation

Category and Decade	Alternative A (mmcf)	Alternative A (mmbf)	Alternative B modified (mmcf)	Alternative B modified (mmbf)	Alternative C (mmcf)	Alternative C (mmbf)	Alternative D (mmcf)	Alternative D (mmbf)
Timber Products^a A1. Lands suitable for timber production (decade 1)	10	48.5	6.5	32.4	3.5	16.3	10.7	52.4
Timber Products^a A1. Lands suitable for timber production (decade 2)	12.3	60	7.5	36.9	3.5	11.5	11.6	56.5
Timber Products^a A2. Lands not suitable for timber production (decade 1)	0.8	3.9	1.1	5.6	0.4	1.7	2.3	11.1
Timber Products^a A2. Lands not suitable for timber production (decade 2)	0.03	0.1	0.4	2.0	0.4	6.6	1.4	6.6
Projected Timber Sale Quantity (A1 + A2) (decade 1)	10.8	52.4	7.6	38.0	3.9	18	13	63.5

Category and Decade	Alternative A (mmcf)	Alternative A (mmbf)	Alternative B modified (mmcf)	Alternative B modified (mmbf)	Alternative C (mmcf)	Alternative C (mmbf)	Alternative D (mmcf)	Alternative D (mmbf)
Projected Timber Sale Quantity (A1 + A2) (decade 2)	12.33	60.1	7.9	38.9	3.9	18.1	13	63.1
Other Wood Products^b B. All lands (decade 1)	1.5	n/a ^c	1	n/a ^c	0.6	n/a ^c	1.6	n/a ^c
Other Wood Products^b B. All lands (decade 2)	1.5	n/a ^c	1	n/a ^c	0.6	n/a ^c	1.6	n/a ^c
Projected Wood Sale Quantity—Timber Products^a and Other Wood Products^b (A1 + A2 + B) (decade 1)	12.3	n/a^c	8.6	n/a^c	4.5	n/a^c	14.6	n/a^c
Projected Wood Sale Quantity—Timber Products^a and Other Wood Products^b (A1 + A2 + B) (decade 2)	13.83	n/a^c	8.9	n/a^c	4.5	n/a^c	14.6	n/a^c

a. Timber products = Volumes other than salvage or sanitation volumes that meet timber product utilization standards.

b. Other wood products = Fuelwood, biomass, and other volumes that do not meet timber product utilization standards (small diameter, 3-7 inches d.b.h.).

c. n/a = not applicable

Source: Spectrum model analysis

Budget levels would have to greatly increase to achieve the timber sale quantities shown in table 154. Annual budgets would need to increase by more than 3.5 million dollars per year under alternative A, by more than 1.5 million dollars under alternative B modified, and by more than 5 million dollars under alternative D to achieve these sale levels. Because of low timber harvest levels, alternative C does not require the entire current budget level; rather, it is 2.2 million dollars below current levels. With no budget limitation, under alternative C there is no increase in the budget (over the alternative C run with a constrained budget) for the first several decades. Budget levels and activities would eventually increase in response to trending towards desired conditions.

The effects on timber production are directly related to the amount of acres classified as suitable for timber production and lands where timber harvest is allowed. The amount of timber production is also directly related to the objective the model was run under based on the theme of the alternative. Because of this, alternative D has the highest and alternative C the lowest timber sale quantities.

Table 155 and table 156 display the acres harvested in decades 1 and 2 to achieve the corresponding volumes shown in table 153 and table 154. Acres harvested are a mix of silvicultural prescriptions, including even-aged regeneration (clearcut, seedtree, shelterwood) and non-regeneration harvest (group selection or commercial thin). Under reasonably foreseeable budget levels, alternative B modified has the most even-aged regeneration harvest acres in achieving the timber sale quantities and alternative C the least. At the reasonably foreseeable budget level, alternative C has the most non-regeneration harvest acres to move vegetation towards the desired condition. At the reasonably foreseeable budget level, alternatives A and D harvest fewer acres than alternative B modified but in a more efficient manner to maximize volume. At the unlimited budget level, alternative D harvests the most acres.

Table 155. Average annual acres treated, by treatment type and by alternative for decades 1 and 2 with a reasonably foreseeable budget

Type and Decade of Harvest	Alternative A	Alternative B modified	Alternative C	Alternative D
Even-aged Regeneration (decade 1)	1,199	2,138	77	1,833
Even-aged Regeneration (decade 2)	1,081	2,045	411	908
Nonregeneration (decade 1)	500	1,000	2,500	0
Nonregeneration (decade 2)	500	1,000	2,827	1,500
Total (decade 1)	1,699	3,138	2,577	1,833
Total (decade 2)	1,581	3,045	3,238	2,408

Table 156. Average annual acres treated by treatment type by alternative for decades 1 and 2 with an unlimited budget

Type and Decade of Harvest	Alternative A	Alternative B modified	Alternative C	Alternative D
Even-aged Regeneration (decade 1)	2,459	2,883	49	3,201
Even-aged Regeneration (decade 2)	2,694	2,397	2	2,771
Nonregeneration (decade 1)	1,500	1,002	2,500	1,500
Nonregeneration (decade 2)	1,500	1,000	2,500	1,500
Total (decade 1)	3,959	3,885	2,549	4,701
Total (decade 2)	4,194	3,397	2,502	4,271

Sustained-yield limit

A sustained-yield limit was calculated to determine the amount of timber “which can be removed from [a] forest annually in perpetuity on a sustained-yield basis” (National Forest Management Act, sec. 11, 16 U.S.C. 1611; 36 CFR § 219.11(d)(6)). Based on Forest Service handbook direction (Forest Service Handbook 1909.12, 64.3), the sustained-yield limit is the volume that could be produced in perpetuity on lands that may be suitable for timber production. The calculation of the sustained-yield limit is not limited by land management plan desired conditions, other plan components, or the Forest’s fiscal capability and organizational capacity. The sustained-yield limit is not a target; it is a limitation on harvest. Because it is based on lands that may be suitable for timber production, the sustained-yield limit does not vary by alternative. The sustained-yield limit was calculated using the Spectrum model and was determined to be 25.4 million cubic feet, or 116.9 million board feet.

Consequences to timber from forest plan components associated with other resource programs or management activities

Effects from fire and fuels

Fire and fuels management generally has a positive effect on timber management. The objectives for fuel reduction are consistent with commercial timber harvest. Timber harvest is often the tool for reducing fire risk through a reduction in fuel loading. Timber harvest also moves vegetation towards desired conditions that are more resilient and less fire-prone. Alternative B modified has the most management activities for fire and the most positive impact on timber harvest.

Effects from aquatic species and habitat, riparian area management, and watershed management

Measures to protect aquatic habitat, riparian areas, watersheds, and wildlife limit the amount of timber that may be harvested. Protection measures for watersheds, aquatic habitat, and wildlife limit the amount of openings and the type of harvest. All of these factors reduce the amount of timber harvest. The reduction in timber harvest is the same for all alternatives.

Protection measures for riparian areas affect lands suitable for timber production, which decreases the amount of timber that may be harvested. Based on plan component FW-SUIT-RMZ-01, riparian management zones are not suitable for timber production under all action alternatives. Timber harvest is allowed for other purposes. Under alternative A, riparian habitat conservation areas are not suitable for timber production. See the glossary for definitions of riparian habitat conservation areas and riparian management zones. Also see the subsections in section 3.2 related to riparian areas for additional information on the affected environment of riparian areas and environmental consequences associated with timber harvest.

Alternatives B modified and D have similar amounts of acres not suitable for timber production solely because they are within a riparian management zone, at 103,500 and 105,900 acres, respectively. Because it has more acres allocated to management areas not suitable for timber production, alternative C has fewer acres not suitable for timber production solely because of riparian management zones, at 66,900 acres. Alternative A has the fewest acres not suitable for timber production from riparian management, at 56,100 acres. For the action alternatives, the percent effect of riparian management zones on timber suitability is similar, with an 18 percent reduction in lands suitable for timber production because of riparian management. The percent

reduction for alternative A is lower, with approximately 10 percent reduction in lands suitable for timber production. These acres allow timber harvest, but they are not suitable for timber production. This decrease in lands suitable for timber production reduces the amount of timber that may be harvested under all alternatives. For more information on riparian management and timber suitability, see Frament (2017).

Effects from wildlife

Management direction for white-tailed deer winter habitat, grizzly bear habitat, and lynx habitat affects the amount of timber volume available under all alternatives. Timber volume is reduced because timber harvest scheduling would be affected by (1) limits to decreases in security habitat and limits to increases in open motorized route density and total motorized route density, (2) limits on openings in white-tailed deer winter habitat, and (3) limits on regeneration harvest per decade in lynx habitat (except in portions of the wildland-urban interface where exemptions to standards are allowed). The Spectrum model contained constraints on the percentage of area harvested per decade estimated to meet management requirements for each of these species at a programmatic level. The sensitivity analysis shows the effect on the model from these constraints. See appendix 2 for a description of the Spectrum model and the sensitivity analysis results. Also see section 3.3.10 for a more detailed description of effects on vegetation ecosystems from wildlife management.

As stated above, management direction for wildlife limits timber harvest under all alternatives. However, under alternatives B modified and D there would be more flexibility to conduct timber harvest within grizzly bear habitat in the NCDE than exists under alternative A (see FW-STD-IFS-03). Alternative C adds additional recommended wilderness (which overlaps with lynx habitat and grizzly bear habitat in the primary conservation area) but otherwise retains the flexibility found in alternatives B modified and D. Alternative A would continue management under amendment 19, with some additional future road reclamation and security core requirements that could reduce timber harvest outputs.

Effects from inventoried roadless areas

Inventoried roadless areas are not suitable for timber production. Based on the management area allocation and other timber suitability factors (administrative withdrawal and physically capability), timber harvest may be allowed in some inventoried roadless areas. The amount of inventoried roadless areas where timber harvest may be allowed varies by alternative. Table 157 and table 158 display acres where timber harvest may be allowed within inventoried roadless areas for each alternative, with a reasonably foreseeable budget and no budget limitations, respectively. The tables also show the acres of inventoried roadless areas that are allocated to harvest sometime over the modeling horizon (250 years) and the amount of timber harvest from these areas in the first decade.

Table 157. Acres where timber harvest may be allowed, percent scheduled for harvest, and first decade harvest within inventoried roadless areas, with a reasonably foreseeable budget

Alternative	Acres of Timber Harvest That May Be Allowed in Inventoried Roadless Areas	Percent Allocated to Harvest (over 250 years)	Timber Harvest from Inventoried Roadless Areas, Decade 1 (mmbf/year)
A	233,200	2%	0
B modified	186,500	4%	1.5
C	6,700	3%	0
D	271,100	3%	0

Table 158. Acres where timber harvest may be allowed, percent scheduled for harvest, and first decade harvest within inventoried roadless areas, with an unlimited budget

Alternative	Acres Timber Harvest May be Allowed in Inventoried Roadless Areas	Percent Allocated to Harvest (over 250 years)	Timber Harvest from Inventoried Roadless Areas, Decade 1 (mmbf/year)
A	233,200	21%	4.6
B modified	186,500	7%	0.9
C	6,700	2%	0
D	271,100	5%	3.1

Timber harvest within inventoried roadless areas is limited, requires additional analysis, and receives a great deal of public and agency scrutiny. Because of limited access and the additional analysis and public/agency involvement, unit costs for timber harvest are much higher within an inventoried roadless area. No alternative manages all inventoried roadless area acres for timber harvest, with fewer acres managed under constrained budgets. Alternative C has the fewest acres of inventoried roadless area where timber harvest may be allowed, with no timber volume generated from these lands in decade 1. Alternative D has the most acres of inventoried roadless area where timber harvest may be allowed, with a larger percentage of those lands managed for timber harvest under the unconstrained budget run. However, management opportunities are expected to continue to be limited within inventoried roadless areas, and harvest within these areas may not be feasible.

Effects from recommended wilderness management

Alternative C has the greatest acres of recommended wilderness and represents the maximum amount of area that could potentially be designated as recommended wilderness (management area 1b). Comparing the recommended wilderness areas in alternative C to the lands suitable for timber production in alternatives B modified and D indicates that recommended wilderness designation has little to no impact on potential timber outputs from the suitable land base. This is because there are no acres under alternative B modified and only 5,200 acres under alternative D within the suitable timber base that would occur within areas that qualify as recommended wilderness under alternative C which is representative of the greatest acreage of recommended wilderness. The 5,200 acres in alternative D represents about 1 percent of all the suitable acres within alternative D and consist of small patches and narrow strips of land widely scattered across the Forest.

Under alternative A, the current forest plan, an estimated 15,000 acres of lands suitable for timber production lie within the recommended wilderness areas of alternative C; however, these lands consist of relatively small patches widely scattered across the Forest. This represents approximately 3 percent of the 526,973 acres suitable for timber production under alternative A (see table 149). Most (approximately 10,000 acres) are in locations that are not realistically suitable for timber production under the current management environment. If these unrealistic acres are removed, alternative A is similar to alternative D as far as potential effect to timber outputs, with less than 1 percent of the suitable lands potentially affected by recommended wilderness designation.

Effects from natural disturbance

Insects, disease, and wildfire can affect the production of timber by killing and damaging trees. The Spectrum model included a predicted amount of wildfire on the Forest based on current fire suppression success and fire starts. See appendix 2 for more information on the Spectrum model.

Under all alternatives, there exists potential for salvage/sanitation cuts to harvest dead and damaged timber and to attempt to slow or impede infestations from spreading. The degree to which these harvests are undertaken will largely depend upon the risks associated with wildfire potential, infestation spread into healthy stands, public safety, the presence of high-value resources, and the resource emphasis of the infected or adjoining area. These would all be determined at the site-specific project level of analysis and decision.

Under alternative C, which has more acres in recommended wilderness compared to alternatives A, B modified, and D, natural ecosystem processes, including fire and insect activity, would dominate and harvest activities would be prohibited in recommended wilderness. However, as discussed earlier under effects from inventoried roadless areas and recommended wilderness, most of the recommended wilderness is within inventoried roadless areas, so access and harvest opportunities are already limited, whether these areas are designed as recommended wilderness or as backcountry management areas. Thus, there are relatively minor differences between alternatives regarding the amount of salvage harvest that would be technically achievable and would potentially influence the intensity or impacts of disturbances such as fire or insect outbreaks. There could be a somewhat greater potential for a limited amount of salvage harvest under alternatives A, B modified, and D, for example, in areas accessible to helicopter logging methods. This is because these alternatives have fewer acres of recommended wilderness (where salvage is not allowed); those acres are replaced by backcountry management areas (management area 5a, 5b, 5c, or 5d) that allow salvage harvesting.

As described in section 3.21.1, the Forest only salvage harvested approximately 10 percent of the acres of lands that burned outside of wilderness from 1990 to 2013. The amount of salvage harvest is not expected to increase under any of the alternatives.

Catastrophic events, such as large wildfires and epidemic insect outbreaks, were not included in the modeling because of uncertainty in the extent or timing of such an occurrence. If a catastrophic event does occur in the future, analysis would need to be conducted to determine whether the event would warrant a forest plan amendment due to the changed conditions.

Cumulative effects

Many factors influence and affect timber harvest. The demand for timber products, supply from sources other than the Forest, laws, and regulations all affect the amount of timber that may be harvested from the Flathead. Budgets and court decisions also impact timber supply potential. Following is a brief description of some items that are changing or may change in the future, adding to the effects on timber harvest from the alternatives.

Demand and future timber products

The demand for timber products is a driver in the amount of wood fiber supplied from the Flathead National Forest. Diversification of wood product manufacturing has historically allowed Montana mills to be more resilient in changing markets (MTDNRC, 2010). This diversification leads to new products and new processing techniques and affects the demand for wood fiber. If markets improve and the demand for wood products increases, there would be a desire for more wood fiber from the Forest. Alternatively, if demand decreases and mills close, there might be less desire for wood fiber from the Forest. A decrease in demand might reduce the amount of timber sold from the Forest under all alternatives.

Alternative sources of wood fiber

The supply of wood fiber from private and state lands and adjacent national forests impacts the demand on the Forest. If wood fiber supplies decrease from private and State lands and adjacent national forests, there will be an increasing demand for wood fiber from the Forest. If supplies increase from private and State lands and adjacent national forests, there might be a decrease in demand for wood fiber from the Forest. A decrease in demand might reduce the amount of timber sold from the Forest under all alternatives.

Subdividing corporate timberlands

Montana, like many states across the West, is experiencing a massive divestiture of commercial timberlands for development and subdivisions (MTDNRC, 2010). Corporate timberland has become more valuable for recreational or residential real estate than for timber production. This development results in increased fragmentation of forested landscapes and decreased timber harvest on private lands. The increased fragmentation limits the amount of harvest that may occur on adjacent national forest lands, whereas the decreased supply from private lands increases the demand for timber harvest from the Forest. The limit on timber harvest from fragmentation of adjacent lands would limit the amount of timber sold from the Forest under all alternatives.

3.22 Other Forest Products, Including Huckleberries

3.22.1 Introduction

Special forest products are mainly plant and fungi materials that are gathered from national forest lands for personal use, for commercial resale, or for sale as a craft product. They can generally be categorized under five general areas: residential comfort and use, food, herbs and medicinal, decorative, and specialty items. Huckleberries (*Vaccinium membranaceum*) have been identified as a key ecosystem component for the Forest and will receive special focus in this analysis of special forest products.

Regulatory framework

36 CFR § 223.1: Trees, portions of trees, and other forest products on NFS lands may be sold for the purpose of achieving the policies set forth in the Multiple-Use Sustained-Yield Act of 1960, as amended, and the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended.

36 CFR § 223.239-240, Sale and Disposal of NFS Timber, Special Forest Products, and Forest Botanical Products: Section 223.239 provides regulations of free use without a permit for members of tribes with treaty or other reserved rights related to special forest products. Section 223.240 provides regulations regarding harvest of special forest products by tribes with treaty or other reserved rights.

36 CFR § 261.6: Lists activities regarding timber and other products that are prohibited.

Forest Service Manual 2670, Threatened, Endangered, and Sensitive Plants and Animals: This chapter directs national forests to avoid or minimize impacts to species whose viability has been identified as a concern.

Methodology and analysis process

The analysis included a review of rules and regulations for special forest and botanical products and effects. Differences between alternatives were evaluated based on the variation in management area allocations among alternatives as they influence availability or other aspects of special forest products.

Information sources

Research and information on plant physiology and location across the Forest is limited for many of the plants and other material gathered as products. Best available information and research for huckleberries and other botanical products was used to inform the description of existing conditions and potential effects.

Analysis area

The analysis area is the national forest lands within the Forest. The analysis area for cumulative effects includes lands in other ownerships adjacent to or within the administrative boundary of the Flathead National Forest. The temporal scope of the analysis is the anticipated life of the plan (15 years).

3.22.2 Affected environment (existing condition)

General information

Special forest and botanical products include, but are not limited to, mosses, fungi (including mushrooms), roots, bulbs, berries, seeds, wildflowers, forbs, sedges, grasses, nuts, ferns, boughs, bark, cones, burls, transplants, Christmas trees, firewood, posts and poles, mine props, and rails. Some of the most popular special forest and botanical products on the Forest are huckleberries, firewood, post and poles, Christmas trees, mushrooms, and boughs.

Special forest products may be collected forestwide unless an area has been closed for a specific reason. Existing uses are often tied to historical knowledge and patterns of use. Special forest products are available through commercial harvest and sale, with some available through free use. Historically, the Forest has granted commercial and free use of special forest and botanical products to individuals and tribes with treaty and other reserved rights.

The supply of special forest products is dependent on ecological conditions and existing distributions of potential growing sites. Forest management or natural disturbances can influence the supply of certain products. For example, fire can increase the availability of firewood and mushrooms but may decrease the availability of huckleberries in the short term. Thinning of young sapling stands and conifer regeneration after fire or timber harvest can increase production of Christmas trees for a period of time.

Special forest and botanical products have importance to the tribes as traditional and cultural uses. Based on current handbook direction (Forest Service Handbook 2409.18 sec. 87.13), the Forest considers “treaty rights, customary and traditional uses (including subsistence and other historical uses of plant material by tribes), the federal trust responsibility to tribes, and competitive market demands in determining which products would be excluded from or allowed for sale to commercial harvesters. When there is a shortage of any particular special forest product for tribal use, commercial permits will be issued only to the extent that the tribal use can be accommodated.” The Forest consults and coordinates with tribal governments prior to issuing any permits, contracts, or other authorized instrument when there is a possible impact to tribal treaty and other rights and interests in the permitted or contracted area (Forest Service Handbook 2409.18 sec. 87.18). The Forest honors the unique legal relationship, including the trust relationship, between the Federal government and Indian tribal governments.

In addition, the Forest Service has the responsibility to honor Indian tribes’ reserved rights (Forest Service Handbook 2409.18 sec. 87.2). The gathering of forest products by the Confederated Salish and Kootenai Tribes is a reserved right on the Forest. The Salish and Kootenai may remove special forest and botanical products without charge or permit (36 CFR § 223.239(e)). The Flathead Indian Reservation, which is home to the Confederated Salish and Kootenai Tribes, shares a border with the Forest on its southwestern boundary.

Huckleberries

Huckleberries are a specific special forest product identified as a key ecosystem component for the Forest. This is because of their fruit, which is highly sought after by both humans and wildlife. Large quantities of the berries are collected in the wild and sold both locally and nationally, either fresh or in products such as jams, wines, sauces, and creams. Huckleberries are an important food for species such as black and grizzly bears (refer to section 3.7) as well as many bird species. Huckleberries were, and remain so in some areas, an important food source for Native Americans, who both ate them fresh and dried them for consumption through the winter months.

Huckleberries grow as a shrub, commonly reaching two to three feet in height, and produce berries that look similar to blueberries, although they are usually smaller, stronger flavored, and more tart. They grow slowly, requiring many years before fruiting is at full production, and berry production varies widely between individual plants, even plants on the same site. Huckleberries occur in open areas, such as early successional forests, as well as an understory shrub in forests from the mid- to late successional stages (Dahlgren, 1984; Habeck, 1968; Martin, 1979). Although they are shade tolerant, a decline in huckleberry production may occur with increasing closure of the forest canopy (Dahlgren, 1984; Don Minore, 1972).

Huckleberries grow within a wide range of coniferous forest types on the Forest, from river valley bottoms up to subalpine ridges, and on all aspects. However they are most abundant and have the best berry production on gently sloping or northerly aspects at mid elevations (i.e., 4,000 to 6,000 feet), where relatively cool, moist conditions prevail. Berry production also tends to be better in more semi-open or open forest conditions, as compared to dense, closed-canopy forests (D. Minore, 1984). However, on the drier south and westerly slopes, berry production may be better in more densely forested areas because of the moisture stress and exposure to sun scalding and wind desiccation that may occur in more open conditions (Arno, Simmerman, & Keane, 1985).

As with all other vegetation in the Northern Rocky Mountains, huckleberries have evolved with fire as a major disturbance process. They are well adapted to persist and regenerate in the mixed- and high-severity fire regimes of the Forest. Fire is advantageous to huckleberry production and plant vigor insofar as it reduces the density of overstory tree canopies and reduces competing vegetation (Miller, 1978; D. Minore, 1984). Huckleberries will generally survive low to moderately severe fires, attaining pre-fire coverage or greater within three to seven years (Bradley, Noste, & Fischer, 1992; Coates & Haeussler, 1986). Although the above-ground plant parts may be consumed by fire, rhizomes as deep as 6 inches underground will resprout after fire. Stand-replacing (high-severity) wildfires may result in moderate to high mortality or greatly reduced sprouting, with recovery to pre-fire levels taking 15 or more years (Arno et al., 1985; Coates & Haeussler, 1986; Laursen, 1984; Martin, 1979; Miller, 1978; Stark, 1989). Huckleberry showed good vegetative response in lightly burned areas of western larch/Douglas-fir forests in western Montana. The same result was seen in moderate-severity fires that top-kill the majority of shrubs and consumed up to half of the litter (Steele & Stark, 1977). In moist Douglas-fir habitat types, where ponderosa pine and lodgepole pine are seral components, low-severity burning in the early spring stimulates huckleberry, increasing shoot density (Davis, Clayton, & Fischer, 1980; Steiger, 1980). Because of these responses of huckleberries to fire, the pattern, intensity, and frequency of fire across the landscape will heavily influence the pattern of huckleberry abundance and berry production in both the short and long term.

Currently, the sole source of huckleberries is from wild plants. People gather the berries by hand by picking from the bushes; some gatherers use rakes. The commercial cultivation of huckleberries via cuttings has been unsuccessful, presumably due to a lack of key fungal associations (mycorrhizae) that occur in native forests between huckleberries and surrounding plant species. Propagation by seed has been successful but has not been widely used commercially.

Mushrooms

The most common edible mushroom harvested on the Flathead is the morel (a fungus of the genus *Morchella*). Fire prompts morels to fruit, and they are particularly abundant the first year after fire and where the ground has been totally blackened. Though this relationship with fire is well known, the density and distribution of morels within a fire's boundaries can vary widely, and the specific environmental factors that cause this fruiting are still largely unknown.

Personal or commercial picking of mushrooms on the Forest is limited in intensity and extent, largely because of the lack of access, the difficult terrain, and the limited amount (both temporally and spatially) of area where abundant morels occur (e.g., post-fire conditions).

3.22.3 Environmental consequences

General effects common to all alternatives

Commercial use of special forest products is not allowed in designated wilderness, recommended wilderness, portions of designated and eligible wild and scenic rivers, special areas, research natural areas, and the Coram Experimental Forest. Special forest and botanical products may be collected for personal (noncommercial) use forestwide except in research natural areas.

Effects by alternative

Table 159 and table 160 display the acres by alternative where commercial and personal use of special forest products is and is not allowed. The acres under the existing plan (alternative A) are the acres of existing management areas considered equivalent in management direction to the management areas in the action alternatives.

Table 159. Approximate acres of management areas where commercial use of special forest products is and is not allowed, by alternative

Management Area	Alternative A	Alternative B modified	Alternative C	Alternative D
Not allowed management areas (1a, 1b, 2a, ^a 2b, ^b 3b, 4a, 4b ^c)	1,198,100	1,316,500	1,622,900	1,151,800
Allowed management areas (3a, 4b, ^c 5a, 5b, 5c, 6a, 6b, 6c, 7)	1,194,700	1,076,300	769,900	1,241,000
Total acres	2,392,800	2,392,800	2,392,800	2,392,800

a. Designated rivers: Not allowed in wild or scenic sections; allowed in recreation sections.

b. Eligible rivers: Not allowed in wild section, allowed in scenic and recreation sections.

c. Not allowed in Coram Experimental Forest; allowed in Miller Demonstration Forest.

Table 160. Approximate acres of management areas where personal use of special forest products is and is not allowed, by alternative

Management Area	Alternatives A, B modified, C, D
Not allowed management areas (4a)	9,900
Allowed management areas (1a, 1b, 2a, 2b, 3a, 3b, 4b, 5a, 5b, 5c, 6a, 6b, 6c, 7)	2,382,900
Total Acres	2,392,800

As indicated in table 159, the amount of acres where commercial use of special forest products may be allowed differs between alternatives, with alternative D having the most acres and alternative C the least. Alternatives A and B modified are intermediate between C and D, although closer in acres to alternative D. As indicated in table 160, the amount of acres available for personal use of forest products is the same between all alternatives.

Although roads or trails are not necessary for the removal of special forest products, they generally make it easier to access forest lands and areas where special products may be gathered (such as for

berry picking). Therefore, areas that tend to have greater road or trail access, particularly wheeled motorized access, may be expected to provide greater opportunities to gather special forest products. Conversely, the potential for over-harvesting special forest products may increase with greater access.

In general, the areas on the Forest that are expected to have the most road access are those that are suitable for timber production because these areas are more likely to have roads for vegetation management purposes. Table 161 displays the acres suitable for timber production by alternative.

Table 161. Acres suitable for timber production by alternative

Alternative A	Alternative B modified	Alternative C	Alternative D
534,600	465,200	308,200	482,600

Restrictions on the use of wheeled motorized vehicles on roads and trails would occur under all alternatives. Alternative A retains the 1986 management direction regarding forest plan amendment 19 (grizzly bear habitat direction). This would result in a decrease in the current amount of wheeled motorized use, with an estimated 518 miles of road reclaimed and 57 miles of motorized trails that would no longer allow motorized wheeled use unless site-specifically amended. Thus, although alternative A has the most area suitable for timber production and potentially more road access, over time a larger amount of those roads would become unavailable for motorized wheeled access. Alternatives B modified and alternative D would result in no change from current conditions for wheeled motorized use and would have little to no effect on the area potentially accessible by motorized wheeled vehicles for the gathering of special forest products. Alternative C would decrease the amount of suitable wheeled motorized use compared to the current amount by an estimated 75 miles of motorized trail routes across the Forest, resulting in greater motorized restrictions than alternatives B modified and alternative D but less than alternative A. In all alternatives, although motorized use on roads and trails may be restricted, walking and mountain biking are usually allowed. Refer to section 3.10.3 for a more detailed discussion of changes in wheeled motorized road and trail access by alternative.

Huckleberries

Management activities, such as logging, that impact ground vegetation and soils can affect huckleberry cover and productivity. The rhizomes and roots of huckleberry plants are sensitive to disturbance. Initial decreases in huckleberry plants often occur after mechanical logging and slash treatment or after broadcast burning of slash (Arno et al., 1985; Coates & Haeussler, 1986; Martin, 1979; Oswald & Brown, 1993). These effects are generally temporary, but recovery to pretreatment conditions may take several years.

Opening the stand through harvest increases the amount of sun, which has the potential to improve conditions for huckleberry growth and berry production over the long term compared to preharvest conditions. On steeper south- or west-facing aspects where plants are subject to moisture stress, recovery after harvest may take longer than on more moist sites, continuing until the forest grows sufficiently to provide shade to understory plants (Arno et al., 1985).

Alternatives vary in the acres suitable for timber production and in the acres expected to be treated with timber harvest over the next decade. Table 162 displays the acres by alternative of lands suitable for timber production and the expected annual average acres of timber harvest over the next decade. Refer to section 3.21.1 for additional details on determination of the suitable lands and to section 3.21.2 for timber harvest amounts.

Table 162. Acres suitable for timber production^a and expected annual average timber harvest outputs^b over the next decade by alternative.

Area	Alternative A Acres	Alternative B Modified Acres	Alternative C Acres	Alternative D Acres
Total acres suited for timber production	534,600	465,200	308,200	482,600
Average annual acres treated by timber harvest over the next decade	1,699	3,138	2,577	1,833

a. As defined by the 2012 planning rule and described in the section 3.21 of this EIS.

b. Source: Spectrum model.

The existing plan (alternative A) and alternative D have higher acres suitable for timber production, but the amount of expected timber harvest acres under these alternatives are the lowest among the alternatives, mainly because these alternatives as modeled would tend to harvest timber in a more efficient manner (refer to section 3.21 for more details). Alternatives A and D would thus likely have a lower potential than alternatives B modified or C for decreased huckleberry production due to fewer acres of ground potentially disturbed by logging. Alternative C would have the next lowest potential, and alternative B modified would likely have the highest potential for impact to huckleberries from logging-related ground disturbance.

Conversely, because of the potential for better huckleberry growth and production with increased sunlight, harvest treatments that open up dense forest stands where huckleberry is present have the potential to improve berry production. Commercial thin treatments can be particularly beneficial because they create a favorable semi-open forest condition. Alternative C as modeled is anticipated to treat the most forest with nonregeneration harvest (mostly commercial thinning), followed by alternative B modified, alternative D, and alternative A (refer to table 19 in section 3.3.1). Thus, though alternative C has a relatively higher level of total harvest acres compared to other alternatives, a higher proportion of these acres is anticipated to be commercial thins, with has the potential to improve berry production by creating a more semi-open forest condition. Alternative B modified is the next most beneficial to huckleberries by this activity, followed by alternatives D and A.

For all alternatives, it is important to note that the estimates of amounts and type of harvest are generated by the model; actual treatment prescriptions and area treated would be determined on a site-specific basis during project analysis. The actual proportion of regeneration compared to nonregeneration could be quite different than the model predicts. In addition, these potential effects to huckleberries are very general in nature, with both the existence and degree of effect entirely dependent on site- and treatment-specific factors. For example, harvest areas may or may not have huckleberries present or capable of growing on the site. Berry production varies widely both across sites and seasons, affected by weather, past wildfire events, and other factors out of human control. Ground disturbance from harvest varies by logging method, season of harvest, site preparation method, and other treatment factors.

Mushrooms

Concerns are sometimes raised about the possible detrimental ecological effects of mushroom picking on, for example, soil conditions, invertebrates, or mushroom productivity. There is little if any scientific evidence that there are any broad adverse ecological effects caused by the picking of mushrooms. On a small, localized scale, intensive gathering by large numbers of people over long periods of time may possibly disturb soils and understory plants, much as could occur at an

intensively used recreation site. However, evidence that such harvesting could detrimentally impact mushroom productivity is lacking. A long-term study (over a 27-year period) conducted in a mixed hardwood/fir/pine forest in Switzerland found no difference in species richness or abundance of species of edible fungi in harvested areas compared to non-harvested sites (Egli, Peter, Buser, Stahel, & Ayer, 2006). The authors did note that very widescale harvesting, in which the depletion of spores over large areas might occur, deserves additional study. A study on post-fire morel abundance in a Sierra Nevada mixed conifer forest found that burned forests in Yosemite National Park alone could produce an average crop of more than 1 million morels per year (A. J. Larson et al., 2016).

On the Flathead, the amount and intensity of mushroom picking is greatly limited by the lack of easy access, the difficult and steep terrain, the periodicity of abundant mushroom crops, and the relative remoteness of the Forest when compared to areas adjacent to large cities. It is anticipated that there would be no effect to mushroom productivity or other ecological factors associated with mushroom picking on the Forest due to the implementation of the forest plan.

Management direction for special forest products and huckleberries

There is no forest plan direction related directly to huckleberries in the 1986 plan nor to the gathering of special forest products.

Under all action alternatives, the forest plan provides direction to provide for sustainable levels of all forest products, including special forest products. Forest plan components provide for protection of tribal treaty rights related to harvestable plants, including access to the Forest for the effective exercise of gathering rights. All the action alternatives have forest plan components that provide for the sustainable harvest of huckleberries by people and encourage the use of non-destructive berry-harvesting methods. These serve to protect the current and future availability of huckleberries for both wildlife and human use.

All alternatives, including the no-action alternative, contain plan components that protect soil quality and sustain soil ecological functions during vegetation management activities. These components also serve to protect huckleberry plants, roots, and rhizomes from excessive damage.

Consequences to special forest products and huckleberries from forest plan components associated with other resource programs or management activities

Effects from fire and fire management

Fire may increase or decrease the potential availability of some special forest products, such as mushrooms and firewood. Potential wildfire over the next five decades has been modeled to assess changes to vegetation conditions (refer to sections 3.3 and 3.8). Future wildfire patterns and amounts have a relatively high degree of uncertainty; modeling portrays a range of possible wildfire acres that are the same for all alternatives. Therefore, all alternatives would have similar potential to provide for some special forest products linked to fire events, specifically firewood, mushrooms, and, in some areas, huckleberries.

The interrelationship of fire with huckleberry presence and production is discussed under the “Affected environment” section above. As mentioned, huckleberry is well adapted to persist under the natural fire regimes of the Flathead National Forest, and its abundance and distribution is strongly influenced by fire. Fire suppression or exclusion will also have an influence, depending upon the status of the huckleberry at a particular site. Fire exclusion and suppression may result in maintained or increased berry production (i.e., in an early successional forest where plants are

increasing in vigor) or in decreased production (i.e., in a forest that is increasing in density and canopy closure).

Fire will remain the primary disturbance factor on huckleberry abundance and production in the ecosystems of the Flathead National Forest. The amount, location, and intensity of future fire, both planned and unplanned ignitions, are uncertain but are expected to occur to similar degree under all the alternatives because climate and weather are the primary drivers. Therefore, the potential effect on huckleberry production is expected to be similar under all alternatives. This effect will be highly varied across the landscape, depending on fire location and severity. The species is well adapted to persist under native fire regimes and is expected to benefit in the long term from the diverse forest conditions created by fire.

Effects from vegetation management

Timber harvest and other vegetation management activities may increase or decrease the potential availability of some special forest products. Firewood may increase, either due to an increase in commercial firewood sales or as a byproduct of other commercial timber sales. All alternatives propose timber harvest to some amount, and thus all would have the opportunity to increase the potential availability of certain special forest products.

Timber harvest activities may have impacts on huckleberries, as described in subsection “Effects by alternative” on huckleberries (section 3.22.3).

Cumulative effects

Flathead County and surrounding counties have experienced high rates of population growth over the past couple decades (refer to the section on population demographics under section 3.27.2). With this increased growth rate comes increased pressure on national forest lands for a variety of social needs and desires, including the use of special forest products and huckleberry gathering. The sustainable use of some of these resources may become increasingly vulnerable, requiring permitting and limitation of use.

The expected change in climate in future decades could influence the availability of some special forest products. Insofar as it alters the growing conditions of a site, climate change could influence presence and productivity of huckleberries and other plants. Increased frequency or severity of fire could also cause changes or shifts on the landscape in terms of plant species composition or abundance. More firewood might be available with the increased size or frequency of fire, but an increase in fire might eliminate other special products (such as huckleberries), at least over the short term. Significant uncertainty exists regarding the possible effects of climate change on vegetation and thus on the availability and distribution of plants that are gathered as special forest products.

Past logging practices have impacted huckleberry production on the Forest, both by decreasing and by increasing berry production, depending on site, types of treatments, and time since harvest. Previously harvested areas are in various stages of recovery. More recently harvested areas may still be experiencing an initial decline in huckleberry production but are expected to trend upwards in response to the increased light available to huckleberry plants as the forest and vegetation recovers.

3.23 Mineral Resources

3.23.1 Introduction

As directed by the Organic Administration Act of 1897 and the Multiple-Use Sustained-Yield Act of 1960, the national forests are managed by the USDA Forest Service for continuous production of the renewable resources on NFS lands—timber, clean water, wildlife habitat, forage for livestock, and outdoor recreation. Although not renewable, minerals are resources of the national forests and are important to the nation's welfare.

Forest Service role in minerals management

In the Mining and Minerals Policy Act of 1970, Congress declared that it is the continuing policy of the Federal government, in the national interest, to foster and encourage private enterprise in (among other goals) the development of domestic mineral resources and the reclamation of mined land. This Federal policy applies to NFS lands.

The Forest Service recognizes the importance of NFS mineral resources to the well-being of the nation and encourages bona fide mineral exploration and development. But, it also recognizes its responsibility to protect the surface resources of the lands under its care. Thus, the Forest Service is faced with a double task: to make minerals from NFS lands available to the national economy and, at the same time, minimize the adverse impacts of mining activities on other resources.

Land management planning, as mandated by the National Forest Management Act of 1976, is a principal tool for ensuring that mineral resources are given proper consideration. Before plans are approved, specialists evaluate resource activities, including existing and potential mineral development. Planners and decisionmakers then formulate plans to minimize potential resource conflicts and maximize the various uses and values of NFS lands. Since mineral resources are often subsurface, relatively rare, and governed by certain preferential laws, the land management planning procedures provide for the availability of minerals and development of mineral operations where possible.

Minerals management of NFS lands requires interagency coordination and cooperation. Although the Forest Service is responsible for the management of surface resources of NFS lands, the Bureau of Land Management is primarily responsible for management of government-owned minerals. Since it is not possible to separate mineral operations from surface management, the agencies have developed cooperative procedures to accommodate their respective responsibilities.

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. Lands that are open to location under the Mining Law of 1872 guarantee U.S. citizens the right to prospect and explore lands reserved from the public domain and open to mineral entry. The right of access for exploration and development of locatable mineral is guaranteed.
- **Leasable minerals:** Includes commodities such as oil, gas, coal, geothermal, potassium, sodium phosphates, oil shale, sulfur, and solid leasable minerals on acquired lands. Currently, there are 341 suspended oil and gas leases covering approximately 641,500 acres on the Forest. No activity can take place on the leases until an EIS is completed. A leasing decision will not be a part of this forest plan revision.

- **Salable minerals:** Includes common varieties of sand, stone, gravel, cinders, clay, pumice, and pumicite. The Forest Service has the authority to dispose of these materials on public lands through a variety of methods. The disposal of these materials is discretionary.

Regulatory framework

Laws and executive orders

Surface management authority

Organic Administration Act of June 4, 1897 (30 Stat. 11, as amended; 16 U.S.C. § 473 et seq.):

This act provides the Secretary of Agriculture the authority to regulate the occupancy and use of NFS lands. It provides for the continuing right to conduct mining activities under the general mining laws if the rules and regulations covering NFS lands are complied with. This act recognizes the rights of miners and prospectors to access NFS lands for all proper and lawful purposes, including prospecting, locating, and developing mineral resources.

Multiple-Use Sustained-Yield Act of June 12, 1960 (Pub. L. 86-517, 74 Stat. 215; 16 U.S.C. 528 et seq.): This act requires that NFS lands be administered in a manner that considers the values of the various resources when making management decisions and specifically provides that nothing in the act be construed to affect the use or administration of the mineral resources on NFS lands.

Wilderness Act of September 3, 1964 (Pub. L. 88-577, 78 Stat. 890; 16 U.S.C. § 1121, et seq.):

This act provides that, subject to valid rights existing prior to January 1, 1984, wilderness areas are withdrawn from all forms of appropriation and disposition under the mining and mineral leasing laws. Subsequent acts designating additional NFS lands as wilderness may contain specific provisions concerning mineral activities. Patents issued under the mining laws for mining claims staked after passage of this act within wilderness areas shall reserve the surface rights to the United States. The act provides for reasonable access to valid mining claims and other valid occupancies inside wilderness areas. The act also requires the survey of wilderness areas by the U.S. Geological Survey on a planned, recurring basis consistent with the concept of wilderness preservation to determine the mineral values that may be present.

National Environmental Policy Act of 1969, January 1, 1970 (Pub. L. 91-190, 83 Stat. 852; 42

U.S.C. § 4331 et seq.): This act requires federal agencies to use a systematic, interdisciplinary approach to ensure the integrated use of the natural and social sciences in planning and decisionmaking. It also requires an analysis of the probable environmental effects of proposed Federal actions. Generally, decisions on mineral and energy development are subject to this law.

Forest and Rangeland Renewable Resources Planning Act of August 17, 1974 (Pub. L. 93-378, 88 Stat. 476; 16 U.S.C. § 1600 et seq.): This act directs the assessment of all resources on NFS lands to determine the desired level of future production from Forest Service programs. Once approved, the policy statement and recommended program serve as a guide to future Forest Service planning and as a basis for future budget proposals.

National Forest Management Act of October 22, 1976 (Pub. L. 94-588, 90 Stat. 2949; 16 U.S.C. § 1600 et seq.): This act requires the Forest Service to establish a comprehensive system of land and resource planning, including the development and maintenance of a comprehensive and detailed inventory of lands and resources. The act also specifies the use of a systematic interdisciplinary approach to achieve integrated consideration of the physical sciences into planning for the management and use of NFS lands and resources.

Minerals management authorities

U.S. Mining Laws Act of May 10, 1872 (17 Stat. 91, as amended, 30 U.S.C. § 22 et seq.): This act (often referred to as the General Mining Act of 1872) sets forth the principles of discovery, right of possession, assessment work, and patent for hard-rock minerals on lands reserved from the public domain. The law applies to lode, placer, mill-site claims, and tunnel sites. Except as otherwise provided, all valuable mineral deposits, and the lands in which they are found, are free and open to exploration, occupation, and purchase under regulations prescribed by law.

Weeks Law Act of March 1, 1911 (Pub. L. 61-435, 72 Stat. 1571, as amended, 16 U.S.C. § 480 et seq.): This act authorizes the Federal government to purchase lands for streamflow protection, and maintain the acquired lands as national forests.

Mineral Resources on Weeks Law Lands Act of March 4, 1917 (Pub. L. 64-390, 39 Stat. 1149, 16 U.S.C. § 520): This act authorizes the Secretary of Agriculture to issue permits and leases for prospecting, developing, and utilizing hard-rock minerals on lands acquired under the authority of the act. This authority was later transferred to the Secretary of the Interior.

Mineral Leasing Act of February 25, 1920 (Pub. L. 66-146, 41 Stat. 437 as amended, 30 U.S.C. § 181 et seq.): This act authorizes the Secretary of the Interior to issue leases for the disposal of certain minerals (coal, phosphate, sodium, potassium, oil, oil shale, gilsonite, and gas). The act applies to NFS lands reserved from the public domain, including lands received in exchange for timber or other public domain lands, and lands with minerals reserved under special authority.

Clarke-McNary Act of June 7, 1924 (Pub. L. 68-270, 43 Stat. 653 as amended, 16 U.S.C. § 505 et seq.): All lands to which title is accepted under section 7 of this act become national forest lands, subject to all laws applicable to the lands acquired under the Weeks Act of March 1, 1911.

Reorganization Plan No. 3 of 1946 (60 Stat. 1097; 5 U.S.C. Appendix): This transferred the functions of the Secretary of Agriculture with respect to permits and leases for hard-rock minerals on acquired Weeks Law land to the Secretary of the Interior. However, Secretary of Agriculture consent to the issuance of permits or leases is required.

Mineral Materials Act of July 31, 1947 (Pub. L. 80-291, 61 Stat. 681, as amended, 30 U.S.C. § 601 et seq.): This act provides for the disposal of mineral materials on the public lands through bidding, negotiated contracts, and free use.

Mineral Leasing Act for Acquired Lands of August 7, 1947 (Pub. L. 80-382, 61 Stat. 913, as amended, 30 U.S.C. § 351 et seq.): This act extends the provisions of the mineral leasing laws to federally owned mineral deposits on acquired NFS lands and requires the consent of the Secretary of Agriculture prior to leasing.

Multiple Use Mining Act of July 23, 1955 (Pub. L. 84-167, 69 Stat. 368, as amended, 30 U.S.C. § 601 et seq.): This act requires the disposal of common varieties of sand, stone, gravel, pumice, pumicite, and cinders under the provisions of the Materials Act of July 31, 1947, and gives to the Secretary of Agriculture the authority to dispose of these materials. It also provides that rights under any mining claim located under the mining laws are subject to the right of the United States to manage and dispose of surface resources.

Geothermal Steam Act of December 24, 1970 (Pub. L. 91-581, 84 Stat. 1566, 30 U.S.C. § 1001-1025): This act provides the Secretary of the Interior the authority to lease NFS lands for geothermal steam development, subject to the consent and conditions the Secretary of Agriculture may prescribe.

Mining and Minerals Policy Act of December 31, 1970 (Pub. L. 91-631, 84 Stat. 1876, 30 U.S.C. § 21a): This act states that the continuing policy of the federal government is to foster and encourage private enterprise in the development of economically sound and stable domestic mining and minerals industries and the orderly and economic development of domestic mineral resources.

Federal Coal Leasing Amendments Act of August 4, 1976 (90 Stat. 1083; 30 U.S.C. § 201 et seq.): This act amends the Mineral Lands Leasing Act of February 25, 1920 (para. 3) by specifying that coal leases on NFS lands may be issued only after the consent of the Secretary of Agriculture and adherence to conditions the Secretary may prescribe. The act also provides that no lease shall be issued unless the lands involved in the lease have been included in a comprehensive forest land and resource management plan and the sale is compatible with that plan. The act authorizes the issuance of a license to conduct exploration for coal.

Federal Land Policy and Management Act of October 21, 1976 (Pub. L. 94-579, 90 Stat. 2713; 43 U.S.C. § 1701 et seq., 7 U.S.C. § 1212a, 16 U.S.C. § 478a, 1338a): This act defines procedures for the withdrawal of lands from mineral entry. It reserves to the United States the rights to prospect for, mine, and remove the minerals in lands conveyed to others and requires the recordation of claims with the Bureau of Land Management.

Surface Mining Control and Reclamation Act of August 3, 1977 (Pub. L. 95-87, 91 Stat. 445, 30 U.S.C. § 1201-1328): This act provides for cooperation between the Secretary of the Interior and States in the regulation of surface coal mining. It also restricts or prohibits surface coal mining operations on NFS lands, subject to valid existing rights and compatibility determinations.

Energy Security Act of June 30, 1980 (Pub. L. 96-294, 94 Stat. 611, 42 U.S.C. § 8855): This act directs the Secretary of Agriculture to process applications for leases and permits to explore, drill, and develop resources on NFS lands, notwithstanding the current status of the Forest's land and resource management plan.

National Materials and Minerals Policy, Research and Development Act of October 2, 1980 (94 Stat. 2305; 30 U.S.C. § 1601-1605): This act restates congressional intent to promote policies that provide for an adequate and stable supply of materials while considering long-term needs, a healthy environment, and natural resource conservation. The act also requires the Secretary of the Interior to improve the availability and analysis of mineral data in Federal land use decisionmaking.

Federal Onshore Oil and Gas Leasing Reform Act of 1987 (30 U.S.C. § 181 et seq.): This act expands the authority of the Secretary of Agriculture in the management of oil and gas resources on NFS lands. The Bureau of Land Management cannot issue leases for oil and gas on NFS lands over the objection of the Forest Service. The Forest Service must approve all surface-disturbing activities on NFS lands before operations commence.

Federal Cave Resources Protection Act of 1988 (102 Stat. 4546; 16 U.S.C. § 4301-4309): This act provides for the protection and preservation of caves on federal lands.

Omnibus Parks and Public Lands Management Act of 1996 (Pub. L. 104-333, 110 Stat. 4093; 16 U.S.C. § 497c): This act automatically withdraws from all forms of appropriation under the mining laws and from disposition under all laws pertaining to mineral and geothermal leasing all lands located within the boundaries of ski area permits.

Executive Order 13211, issued May 18, 2001: This executive order titled "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use" requires Federal agencies

to prepare and submit a statement of energy effects to the Office of Management and Budget describing the effects of certain regulatory actions on energy supply distribution, or use.

Executive Order 13212, issued May 18, 2001: This executive order titled “Actions to Expedite Energy-Related Projects” requires Federal agencies to take actions, to the extent consistent with applicable law, to expedite projects that will increase the production, transmission, or conservation of energy.

Energy Policy Act of 2005 (Pub. L. 109-58): This act directs Federal agencies to undertake efforts to ensure energy efficiency and the production of secure, affordable, and reliable domestic energy.

128 Stat. 3828 (Pub. L. 113–291—Dec. 19, 2014) Sec. 3063: This statute establishes the North Fork Federal Lands Withdrawal Area, “to withdraw certain Federal land and interests in that land from location, entry, and patent under the mining laws and disposition under the mineral and geothermal leasing laws and to preserve existing uses” (see figure B-29). Nothing in this section prohibits the Secretary of the Interior from taking any action necessary to complete any requirement under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) or the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) required for permitting surface-disturbing activity to occur on any lease issued before the date of enactment of this act.

Code of Federal Regulations

36 CFR § 228—Minerals: These regulations set forth rules and procedures governing use of the surface of NFS lands in conjunction with operations authorized by the general mining laws, oil and gas leasing, and mineral material disposal laws.

- Subpart A: Locatable Minerals
- Subpart B: Leasable Minerals (Reserved)
- Subpart C: Disposal of Mineral Materials
- Subpart D: Miscellaneous Minerals Provisions
- Subpart E: Oil and Gas Resources

36 CFR § 251—Land Uses.

43 CFR § 2300—Land Withdrawals.

Other regulation, policy, and guidance

Interagency agreements

The Forest Service has entered into interagency agreements with agencies within the U.S. Department of the Interior to cooperate and coordinate in the management of federally owned minerals within NFS lands. The principal agreements include

- a November 8, 1946, agreement with the Bureau of Land Management detailing procedures for mineral leases and permits administered under section 402 of the President’s Reorganization Plan No. 3 of 1946;
- a May 18, 1957, memorandum of understanding with the Bureau of Land Management describing work procedures for land applications, mining claims, and patents;
- a March 4, 1977, cooperative agreement with the U.S. Geological Survey concerning oil and gas operations;

- a May 20, 1980, memorandum of understanding with the Bureau of Land Management describing the coordination of activities under the Federal coal management program;
- a November 26, 1980, cooperative agreement with the U.S. Geological Survey for operations under solid mineral leases and permits;
- a December 3, 1981, memorandum of understanding with the U.S. Geological Survey and the Bureau of Land Management for the geothermal steam leasing program;
- a December 11, 1989 memorandum of understanding with the Montana Department of Environmental Quality (formerly the Montana Department of State Lands) to promote efficiency and effectiveness in administration and regulation of mineral resources;
- a July 31, 1990, memorandum of understanding with the Office of Surface Mining Reclamation and Enforcement describing the management of surface coal mining operations on NFS lands;
- a November 11, 1991, interagency agreement with the Bureau of Land Management describing the procedures by which the Forest Service can authorize the Bureau of Land Management to offer NFS lands for oil and gas leasing; and
- a November 19, 1991, interagency agreement with the Bureau of Land Management describing the procedures for coordinated administration of oil and gas operations on Federal leases within the NFS.

Key indicators

- Locatable minerals—acres available for mineral entry (not withdrawn)
- Leasable minerals—acres available for leasing proposals and proposed no surface occupancy stipulation acreages
- Salable minerals—acres available for disposal of mineral materials

Methodology and analysis process

The acres that are available for locatable mineral resource development are determined by subtracting the number of acres that are withdrawn from the total number of acres for the Flathead National Forest. The number of acres that are withdrawn from mineral entry is a matter of record. By law, the Bureau of Land Management keeps official records in the General Land Office.

The number of acres that are available for leasing proposals is determined by subtracting the number of acres that are legally unavailable from the total number of acres on the Flathead National Forest. Currently, there are 341 suspended oil and gas leases covering approximately 641,500 acres on the Forest. No activity can take place on the leases until an EIS is completed. A leasing decision will not be a part of this forest plan revision.

Lands which are legally unavailable for leasing are

- lands withdrawn from mineral leasing by an act of Congress or by an order of the Secretary of the Interior;
- lands recommended for wilderness allocation by the Secretary of Agriculture;
- lands designated by statute as wilderness study areas, unless oil and gas leasing is specifically allowed by the statute designating the study area; and

- lands within areas allocated for wilderness or further planning in Executive Communication 1504.

The number of acres that are available for the disposal of mineral materials is determined by subtracting from the total number of acres on the Flathead National Forest the number of acres where the Forest Service has exercised its discretion to refrain from authorizing the disposal of mineral materials.

Information sources

The Bureau of Land Management keeps official records on active and closed mining claims on public lands. Current records are kept in the LR2000 database. These records are the source for the documentation of mining claims on the Flathead National Forest. Published and unpublished mineral resource assessments and maps produced by the Forest Service, Bureau of Land Management, U.S. Geological Survey, and the Montana Bureau of Mines and Geology were reviewed to determine the occurrence potential for minerals, oil and gas, and geothermal resources.

Incomplete and unavailable information

There is no incomplete or unavailable information pertinent to energy and minerals.

Analysis area

The analysis area is the national forest lands within the Forest. The temporal scope of the analysis is the anticipated life of the plan (15 years).

3.23.2 Affected environment (existing condition)

A variety of mineral deposit types and mineral resources, including gold, silver, and copper, occur within the boundaries of the Forest. The Forest Service recognizes that minerals are fundamental to the nation's well-being and, as policy, encourages the exploration and development of the mineral resources it is authorized to manage. The Secretary of Agriculture has provided regulations (36 CFR § 228) to ensure surface resource protection while encouraging the orderly development of mineral resources on NFS lands. Refer to figure 1-67, which shows mineral potential on the Forest, and figure 1-68, which displays oil and gas potential.

With respect to national forest management, mineral resources are divided into three groups: locatable minerals, leasable minerals, and mineral materials. The authority of the Forest Service to influence and regulate the exploration, development, and production phases of mining operations varies with each group. As a result, the Forest Service manages mineral resource programs that are specific to each group.

Locatable minerals

If the land is open to mineral entry and the mining claim is properly filed with the Bureau of Land Management, the claimant has legal title to the minerals. The Bureau of Land Management's mining claim database, LR2000, lists active (current) and closed mining claims recorded on public lands. The status of mining claims can change on an annual basis, and new claims can be recorded at any time throughout the year. In general, the Flathead National Forest is rated as having a low to very low potential for locatable minerals.

Currently, there are no authorized locatable mineral activities, such as exploration or development operations for the locatable minerals within the boundaries of the planning area. Based on the results of a July 27, 2015, query of the Bureau of Land Management mining claim database, one active

mining claim (MMC 195448) is located within the planning area. The Mary Dee II lode claim is located on the Hungry Horse Ranger District. Refer to figure 1-67 for a map of locatable minerals potential on the Forest.

Currently, the 2.4-million-acre Flathead National Forest contains 1,075,559 acres of designated wilderness, which is all withdrawn from mineral entry. In 2015, Section 3063 of the Howard P. 'Buck' McKeon National Defense Authorization Act withdrew the North Fork of the Flathead from mineral entry. This resulted in approximately 420,000 acres being withdrawn from location, entry, and patent under the mining laws and disposition under all laws relating to mineral leasing and geothermal leasing. This does not affect minerals materials. Currently, approximately 62 percent of the Flathead National Forest is withdrawn from mineral entry as either designated wilderness or as a part of the North Fork of the Flathead withdrawal.

Leasable minerals

At this time, there is no leasable mineral exploration or mining activity on the Forest. However, as of April 15, 2013, there were 341 suspended oil and gas leases covering approximately 641,500 acres on the Flathead National Forest (see figure 1-79). The Bureau of Land Management suspended the oil and gas leases in 1985 after the *Conner v. Burford* district court decision [*Conner v. Burford*, 605 F. Supp.107 (D. Mont. 1985)]. The court found the environmental effects analysis supporting lease issuance on the Gallatin and Flathead National Forests to be inadequate. The court specified that no activity may take place on the leases until an EIS is completed.

In 1987, Congress passed the Federal Onshore Oil and Gas Leasing Reform Act. The act authorized the Secretary of Agriculture to develop procedures and regulations governing leasing of oil and gas resources on lands administered by the National Forest Service. Forest Service regulations implementing the Leasing Reform Act went into effect on April 20, 1990 (36 CFR Subpart E). Sections 102-104 of Subpart E speak directly to the leasing process, its various options and effects analysis, and the decisions to be made. The regulations also provide that the required effects analysis can be completed as part of the Forest's planning process or as a standalone analysis. The forest supervisor for the Flathead National Forest has decided that the analysis required to answer oil and gas lease decisions is well beyond the broad programmatic analysis and the decisions for the forest plan revision. Until a leasing decision is completed, no oil and gas exploration or development can take place on the Flathead National Forest. Most of the Forest has moderate to high potential for the occurrence of oil and gas (Long, 1997) (see fig. 1-54) but low potential for development of these resources due to the lack of NEPA analysis discussed above. There is low occurrence potential for geothermal resources (Sonderegger & Bergantino, 1981) or any other leasable mineral on the Forest.

Salable minerals

Salable minerals, also known as "common variety" minerals, are subject to the Mineral Materials Act of 1947, as amended. These minerals are disposed of by sale, issuance of free-use permits, or contracts for in-service needs. These minerals include petrified wood, common varieties of sand, rock, stone, cinders, gravel, pumice, clay, and other similar materials. Such common-variety mineral materials include deposits that, although they have economic value, tend to be relatively widely available and do not have a distinct and special value. These minerals are most commonly used as building stone, landscaping, and constructions materials.

The Forest uses mineral material, such as gravel, riprap, and crushed aggregate, for road maintenance, road construction, recreation sites, and trailheads. Other uses include Forest contract work, culvert replacement, and repair of damage caused by fire, floods, and landslides. The mineral material utilized by the Forest is primarily derived from Forest Service pits and quarries located in

the planning area. The type volume and source of locations for in-service use varies year by year and according to need. The Forest in-service pits, type of material, and quantities for fiscal years 2012 and 2013 are listed below in table 163 and table 164.

Table 163. Forest in-service mineral material use for fiscal year 2012

Pit Name	Type	Volume (cubic yards)
007 Quarry	riprap	321
007 Quarry	¾" crushed aggregate	370
007 Quarry	large rock	17
Airport Pit	crushed gravel	800
Airport Pit	¾" crushed aggregate	560
Piper Creek	crushed aggregate	410
Langford Pit	pit run material	500
Logan Pit	¾" crushed aggregate	20
Logan Pit	riprap	50
McGovern Pit	¾" crushed aggregate	10
Owl Pit	¾" crushed aggregate	40

Table 164. Forest in-service mineral material use for fiscal year 2013

Pit Name	Type	Volume (cubic yards)
Owl Creek	crushed aggregate	120
007	crushed aggregate	4,310
Piper Creek	crushed aggregate	3,316
Peters Quarry	riprap	100
Peters Quarry	crushed aggregate	30
Spotted Bear Airstrip	crushed gravel	150
Kraft	riprap	227
Star Logan	crushed aggregate	10
Star Logan	boulders	5
Porcupine	pit run	495

The Forest also disposes of minerals materials via free-use permits. These can be issued to any State, Federal, or territorial agency, unit, or subdivision, including municipalities, county road districts, nonprofit associations, or individuals (36 CFR § 228.57). The Glacier View Ranger District issued 36,000 cubic yards of crushed stone to Flathead County for maintenance and improvement of the North Fork Road in 2012. At this time, there are no planned sales or free-use allocations to the State, county or other agencies, although they may occur in the future.

The Forest also issues free-use permits to the public for the collection of up to four tons of loose rock suitable for landscaping use from Forest-administered lands along open roads. An individual may obtain a permit and collect rock, as long as it is not for commercial use, sale, or barter. Only hand tools can be used to collect the rock; no digging is permitted, and the collection of loose rock only is authorized. On average, about 75 permits are issued each year.

3.23.3 Environmental consequences

Expected future mining activity

Locatable mining activity has occurred on the Forest in the past, but in recent years there has been very little activity and nothing is currently authorized. It is likely that very little locatable mining activity will occur on the Forest over the next 15 years. The same can be said for leasable mineral activity. Oil and gas leasing cannot occur without a separate leasing analysis EIS, and this is not likely to be completed in the next 15 years. There is low to no potential for any other type of leasable mineral development on the Forest within the next 15 years. Salable mineral mining activity is expected to continue at current levels, and the mineral materials are predominantly being used by the Forest and local county governments to improve and maintain roads throughout the Forest.

None of the alternatives propose to make any site-specific changes to the existing availability of land for locatable minerals or leasable minerals on the Forest. No need for new withdrawals has been identified, and no additional areas are proposed for withdrawal. No changes to existing access are proposed.

Locatable minerals

Alternative A has approximately 1,471,000 acres formally withdrawn from mineral entry.

Alternatives B modified, C, and D do not propose any additional lands for withdrawal from mineral entry. There is no difference between the alternatives in regards to land available for locatable mineral development. A total of approximately 1,471,000 acres of NFS lands are withdrawn from mineral entry for all alternatives.

Leasable minerals

Alternative A has approximately 1,455,000 acres legally unavailable for mineral leasing.

Alternatives B modified, C, and D do not propose to make any additional lands legally unavailable for mineral leasing. Alternatives B modified and D do not include any stipulations as to surface use or occupancy. Alternative C proposes no surface occupancy stipulations on any future oil and gas leases within the primary conservation area or zone 1, and these would be included in any future oil and gas leasing analysis. Any other stipulations would be identified through the oil and gas leasing analysis.

Salable materials

The availability of salable mineral materials varies by alternative based on suitability by management area. For the action alternatives, management areas 1a, 1b, 3b, 4a, and the wild segments of 2a and 2b are not suitable for the removal of salable mineral materials. Table 165 displays the acres suitable for salable minerals by alternative. Alternative D has the most and alternative C has the least acres suitable for removal of salable minerals.

Table 165. Acres suitable for salable mineral disposal by alternatives

Area	Alternative A acres	Alternative B modified acres	Alternative C acres	Alternative D acres
Total NFS lands	2,392,800	2,392,800	2,392,800	2,392,800
Lands not suitable for mineral material disposal	1,180,500	1,272,100	1,582,900	1,097,800

Area	Alternative A acres	Alternative B modified acres	Alternative C acres	Alternative D acres
Total lands suitable for mineral material disposal	1,212,300	1,120,700	809,900	1,295,000

In addition to the direction on suitability for removal of mineral materials by management area, the forest plan contains a guideline that mining and extraction of sand and gravel at new sites should not occur within riparian management zones (FW-GDL-RMZ-06). This guideline would limit this activity in all riparian management zones (410,863 acres forestwide), and the effects would be the same for all action alternatives.

Consequences to minerals from forest plan components associated with other resource programs or management activities

Effects from access and recreation management

Access and recreation management direction under any of the four alternatives would not result in any change in the lands available for locatable minerals, leasable minerals, or salable minerals development.

Inventoried roadless area management regulations under alternatives A, B modified, C, and D would have the same effects on access. Road construction or reconstruction associated with mineral leases or salable mineral disposal may not occur in inventoried roadless areas.

Effects from vegetation management

Vegetation management direction under any of the four alternatives would not result in any change in the lands available for locatable minerals, leasable minerals, or salable minerals development.

Effects from fire and fuels management

Fire and fuels management direction under any of the four alternatives would not result in any change in the lands available for locatable minerals, leasable minerals, or salable minerals development.

Effects from wildlife management

Wildlife management direction under any of the four alternatives would not result in changes in valid existing rights for locatable minerals, leasable minerals, or salable minerals development.

Habitat security requirements and other mineral mitigation measures for grizzly bear can be expected to affect the cost of locatable, leasable and salable mineral exploration and development under all alternatives. Where roads, and the access they provide, are necessary, limitations on road construction and operating seasons can be expected to have the effect of prolonging exploration or development work. Areas most affected would be bear management units in the NCDE primary conservation area (see standards FW-STD-E&M-01, 02, and 04 through 08 and guidelines FW-GDL-E&M-01 through 06).

Currently, approximately 1.5 of the Forest's 2.4 million acres (about 63 percent) is withdrawn from mineral entry because it is designated wilderness (management area 1a) or is part of the North Fork of the Flathead withdrawal area (see figure B-29). These areas are in the grizzly bear primary conservation area. Under alternative B modified, the no surface occupancy stipulation would apply to new oil and gas leases across the remainder of the NCDE primary conservation area but would not

apply to valid existing rights. Under alternative C, the no surface occupancy stipulation would apply to new oil and gas leases across the remainder of the NCDE primary conservation area and zone 1 but would not apply to valid existing rights. Although the potential for oil and gas development on the Forest is very low, the no surface occupancy stipulation proposed in alternative C would make it more costly or infeasible to develop oil and gas resources for new leases. Under alternative B modified, additional areas of no surface occupancy would affect the potential cost of development for new leases in a much smaller area of the Forest than alternative C. With alternatives A and D, no new area would be affected by a no surface occupancy stipulation.

New locatable, leasable, and salable mineral exploration and development might also be affected in lynx analysis units on the Forest. Standard ALLS1 requires that habitat connectivity is maintained, and guideline HU G12 gives direction that winter access should be limited to designated routes or designated motorized over-snow vehicle routes, but this is also subject to valid existing rights (see appendix A for lynx management direction and figures 1-42 through 1-45 for motorized over-snow vehicle use suitability by alternative). Although the potential for leasable and locatable mineral development is low, implementation of these plan components could make minerals development more costly.

Effects from watershed, soil, riparian, and aquatic habitat management

Aquatic management direction under any of the four alternatives would not result in any change in the lands available for locatable minerals, leasable minerals, or salable mineral development.

Under alternative A, surface occupancy associated with salable and leasable minerals would not be allowed in riparian habitat conservation areas unless there are no other options for location, the riparian management objectives can be attained, and adverse effects to inland native fish can be avoided (INFISH Standard MM-4). Alternatives B modified, C, and D include guidelines to minimize adverse effects to inland native fish species from mineral operations in riparian management zones. Because of the low leasable mineral occurrence potential (other than oil and gas) on available lands, and the expected low demand for leases, there is likely to be little to no effect to leasable minerals. Potential oil and gas development would be impacted by making it more expensive and possibly infeasible. Since there are plentiful sources for salable minerals outside of these areas, there is likely to be little to no effect on salable minerals. There would be no impact to locatable minerals.

Effects from lands and special uses management

Lands and special uses management direction under any of the four alternatives would not result in any change in the lands available for locatable minerals, leasable minerals, or salable mineral development.

Cumulative effects

Cumulative effects evaluate the potential impacts to mineral resources from the action alternatives when combined with past, present, and reasonably foreseeable actions. All lands within the Flathead National Forest boundaries form the geographic scope for cumulative effects. The temporal bound would be the life of the forest plan, which is estimated to be 15 years.

In order to integrate the contribution of past actions to the cumulative effects of the action alternatives, existing conditions are used as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior actions that have affected access and might contribute to cumulative effects. Mineral resources across the Forest are likely to be

influenced by a variety of factors, and as described in the “Affected environment” section, there are a number of actions that may occur over the life of the plan.

Requests for approval of small lode and placer mining operations may occur, but it is not possible to predict how many may be submitted in any given year or how many might be approved, but there is low potential for locatable mineral development on most of the Forest. Since Congress has imposed a moratorium on the patenting of mining claims, there would be no change in the acres of patented lands unless Congress lifts the moratorium.

Given the low probable occurrence of leasable minerals other than oil and gas on open/available lands on the Flathead National Forest, the court decision in *Conner vs. Burford* suspending existing oil and gas leases, and the low probability of an EIS for oil and gas leasing being prepared in the next 15 years, there is little likelihood of mineral lease applications being made on the Forest.

Mineral material use can be expected to continue for in-service needs (e.g., road maintenance and watershed improvement activities) and as a salable commodity and would result in the further depletion of this non-renewable mineral resource from NFS lands.

Reclamation work is likely to occur on select abandoned mine sites as well as on mineral material sites that have reached the end of their useful life.

3.24 Livestock Grazing

3.24.1 Introduction

Livestock grazing on NFS land is a valuable resource to livestock owners. It has been a legitimate use of public lands since the inception of the NFS and has become an important part of the culture of the rural West. The objectives for Forest Service management of rangelands include managing range vegetation to provide ecosystem diversity and ecosystem and environmental quality while maintaining relationships with livestock owners, meeting the public's needs for rangeland uses, providing for livestock forage, maintaining wildlife food and habitat, and providing opportunities for economic diversity.

Rangeland management is an essential part of the Forest Service's multiple-use strategy to manage its lands. This strategy ensures that rangelands provide essential ecosystem services such as wildlife habitat and related recreation opportunities, watershed functions and livestock forage. The Forest Service has primarily managed rangelands for livestock forage (Kendall, 2013).

Forage is a provisionary service in that it is a tangible product from an ecosystem that humans use for nutrition, materials, or energy. Being a tangible product, forage is managed by the Forest Service to be sustainable by ensuring that it will be available for future generations while still providing the other rangeland's ecosystem services required by their multiple-use strategy. To accomplish this, the Forest Service divides rangelands into allotments and monitors each one to maintain the overall rangeland health. Additionally, the Forest Service manages forage in transitory ranges. Transitory range is defined as forested lands that are suitable for grazing for a limited time following a timber harvest, fire, or other landscape event (Spreitzer, 1985).

Grazing permits for each allotment are issued to eligible commercial livestock owners for the grazing of livestock. To determine the livestock numbers per allotment, which is often called the stocking rate, rangeland managers use animal unit months. An animal unit month is defined as the amount of dry forage required by one mature cow of approximately 1,000 pounds or its equivalent for one month. The forage allowance per day has been determined to be 26 pounds. In determining the animal unit months per allotment, the livestock used by permitted outfitters, guides, and other recreational visitors are not included.

Livestock grazing management is established through forest plans, the Forest Service grazing guidelines, and individual allotment management plans. These plans are developed to be comprehensive using sound science and incorporating public involvement. Plans are revised and updated to ensure that livestock grazing management decisions are based on existing and future ecological, social, cultural, and economic conditions.

Regulatory framework

Laws and executive orders

Federal acts and executive orders guide rangeland resource management and commercial livestock grazing on NFS lands. Other laws pertinent to rangeland management and livestock grazing on NFS lands can be found in Forest Service Manual 2200.

Federal law

Organic Administration Act of 1897: This act authorizes the President to modify or revoke any instrument creating a national forest; states that no national forest may be established except to improve and protect the Forest within its boundaries, for the purpose of securing favorable conditions of water

flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States. Authorizes the Secretary of Agriculture to promulgate rules and regulations to regulate the use and occupancy of the national forests.

Bankhead-Jones Farm Tenant Act of 1937: This act directs the Secretary of Agriculture to develop a program of land conservation and use to correct maladjustments in land use and to assist in such things as control of soil erosion, reforestation, preservation of natural resources, and protection of fish and wildlife.

Granger-Thye Act of 1950: This act provides for the issuance of grazing permits for a term of up to 10 years. It also provides for the use of grazing receipts for range improvement work.

Wild Horse Protection Act of 1959: This act prohibits the use of a motor vehicle to hunt for the purpose of capturing or killing any wild horse, mare, colt, or burro running at large on the public lands. The act also prohibits the pollution of watering holes on public lands for the purposes of trapping, killing, wounding, or maiming any of these animals.

Multiple-Use Sustained-Yield Act of 1960: This act provides that national forests are established and administered for several purposes, including livestock grazing. This act also authorizes the Secretary of Agriculture to develop the surface renewable resources of national forests for multiple use and sustained yield of the services and products to be obtained from these lands, without impairment of the productivity of the land.

Wilderness Act of 1964: This act provides that livestock grazing, and the activities and facilities needed to support grazing, are allowed to continue in wilderness areas when such grazing was established before the wilderness was designated.

National Historic Preservation Act of 1966: This act secures protection of archaeological resources and sites on public and Native American lands.

National Environmental Policy Act of 1970: This act directs all Federal agencies to consider and report the potential environmental impacts of proposed Federal actions. The act also established the Council on Environmental Quality.

Clean Water Act of 1972: This act sets the basic structure for regulating discharges of pollutants to waters of the United States.

Endangered Species Act of 1973: This act protects animal and plant species that are currently in danger of extinction (endangered) and those that may become endangered in the foreseeable future (threatened). The act provides for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend, both through Federal action and by encouraging the establishment of State programs.

Forest and Rangeland Renewable Resource Planning Act of 1974: This act directs the Secretary of Agriculture to develop a process for the revision of NFS lands resource management plans. This includes the identification of the suitability of lands for resource management.

Federal Land Policy and Management Act of 1976: This act states that public lands will be managed in a manner that will provide food and habitat for fish, wildlife, and domestic animals.

Public Rangelands Improvement Act of 1978: This act recognizes the need to correct unsatisfactory conditions on public rangelands by increasing funding for maintenance and management of these lands.

Rescissions Act of 1995: This act directs the Forest Service to complete site-specific National Environmental Policy Act analyses and decisions for grazing allotments on a regularly scheduled basis based on the permits requirements.

Executive orders

Secretary's Administrative Order of 1963: This executive order provides administration of NFS lands under Title III of the Bankhead-Jones Farm Tenant Act; establishment of national grasslands.

Regulation, policies, and guidance

The following regulations and policies have been developed to support implementation of the acts and executive orders previously presented:

Departmental Regulation, Number 9500-5, dated December 15, 1983; subject: Policy on Range.

National Grasslands Management—A Primer (1997): A document that identifies and interprets the laws and regulations applicable to the administration of the national grasslands.

36 CFR Chapter II, Forest Service, Department of Agriculture:

- 219 Planning
- 222 Range Management
- 241 Fish and Wildlife

Forest Service manuals and handbooks

- Forest Service Manual 2200—This manual summarizes laws and regulations governing rangeland management and forest planning.
- Forest Service Handbook 2209.13—Grazing Permit Administration Handbook
- Forest Service Manual 2600—This manual summarizes laws and regulations governing fish and wildlife
- Forest Service Handbook 2609.13—Wildlife and Fisheries Program Management Handbook

Other agreements and plans

The following agreements and plans also support the Forest Service's rangeland management program:

Memoranda of understanding for forage reserves. Forage reserves are allotments under a term grazing permit but may be used by other permittees that have been temporarily displaced due to wild or prescribed fire, drought, or other situations that have made forage unavailable.

Non-use for resource protection agreements. These agreements may be established to establish long-term non-use to allow rangelands to recover, provide forage on a temporary basis to allow resource recovery on other grazing units, provide temporary resolution of conflicts created by predation on livestock, or provide supplemental forage in times of drought to assist area livestock operators and lessen the resource impacts of grazing.

Allotment management plans: Developed through site-specific environmental analysis, an allotment management plan uses forest plan direction and current issues to determine desired conditions and a broad strategy for meeting desired conditions. These plans describe site-specific grazing strategies, stocking, structural and non-structural range improvement needs, and coordination with other resources.

Key indicators

Indicators for livestock grazing within the Flathead National Forest are listed below, and table 166 shows how these indicators are used in rangeland analysis:

- Permitted use; measured as the acres and percentage of NFS land in active grazing allotments
- Forage, via suitability for and utilization by cattle; measured as animal unit months of cattle grazing
- Forage, via suitability for and utilization by sheep; measured as animal unit months of sheep grazing

Table 166: Resource indicators and measures for assessing effects from livestock grazing

Resource Element	Resource Indicator	Measure
Use	Permitted Use	Acres and percentage of allotments
Forage	Suitability and utilization	Animal unit months and available forage

Methodology and analysis process

The alternatives include management standards and guidelines that describe actions that may or may not impact the management of grazing livestock within the Forest. For the purpose of this analysis, each alternative is evaluated using one or more of the key indicators to determine the overall impacts to livestock grazing within NFS land. Then, the impacts of each alternative are compared to the current conditions, also known as the existing baseline or no-action alternative, and then to the other alternatives.

The National Forest Management Act of 1976 requires the identification of the suitability of lands for resource management, including grazing. An analysis to determine lands capable of producing forage and suitable for grazing livestock was completed as part of the Flathead National Forest's forest plan revision. Although an area may be deemed capable and suitable for use by livestock in the forest plan, a project-level analysis evaluating the site-specific impacts of the grazing activity is required to authorize and dictate the management of livestock grazing in a specific allotment.

An analysis of acres by management area was used to quantify the impact. For example, if there are more acres available in a management area for livestock grazing under alternative B modified than the existing baseline or no-action alternative, then it is assumed that livestock grazing would benefit more under alternative B modified than under the no-action alternative.

For analysis purposes, when the degree of impact cannot be quantified, a qualitative assessment is prepared based on professional judgment and, when possible, in conjunction with available acreage data.

Assumptions

In all quantitative and qualitative analyses, the following assumptions are used to determine the degree of impacts on livestock grazing. These assumptions are based on previous assessments, professional judgment, and Forest Service range management directives.

- Livestock that use rangelands can remove plant material, trample soils, and alter water flow patterns. However, with proper management, these impacts are insignificant in comparison to the natural resilience of ecosystems (Holling, 1973). Therefore, for the purpose of this analysis, livestock grazing is not considered a surface-disturbing activity.

- Livestock grazing will be managed to meet specific standards and guidelines for rangeland health, including riparian standards and guidelines. In addition, range improvements will be used to meet standards and guidelines for rangeland health and to achieve rangeland management goals.
- Within the Flathead National Forest, the grazing system in each allotment will remain the same. Additionally, the animal unit months for each allotment is not expected to increase; it will remain at current levels.
- Impacts on livestock grazing are generally the result of activities that affect forage levels or the limiting of access to designated allotments such that livestock can no longer use rangelands.
- Mitigations for impacts to, or from, livestock for any resource will be addressed in a site-specific analysis.
- Grazing use is managed similarly under all alternatives.
- Grazing allotments will remain open as long as there continues to be demand. If a permittee is willing to vacate their allotment, the allotment could be closed and the permit could be terminated. The decision to close an allotment and terminate a permit may be based on the demand for permitted use and utilization of forage or the dedication of the land to another purpose.

Limitations

The livestock grazing analysis is limited to the active allotments within the Flathead National Forest. Livestock grazing outside existing allotments, including rangelands available to pack stock and transitory range, is included in the analysis; however, this is discussed as a qualitative assessment.

Information sources

Information sources include literature, records, documents and information from Forest Service range program assessments, and information from Forest Service range program managers.

Incomplete and unavailable information

The information sources used contained sufficient information to complete this analysis. Project-level analysis may require site-specific data to conduct an impact analysis.

Analysis area

The analysis area includes rangeland within active allotments on NFS lands on the Flathead National Forest (for an overview of grazing allotments within the Forest, see figure 1-69), specifically within the area designated as the grizzly bear primary conservation area and zone 1. For the purposes of the cumulative effects analysis, properties adjacent to the Forest are considered in respect to the associated permit-holding ranch operations and potential impacts to open space. The temporal scope of the analysis is the anticipated life of the plan (15 years).

3.24.2 Affected environment (existing condition)

In 1986 there were 20 active allotments on the Flathead National Forest; however, over the past several years more than half have been vacated and closed. The decrease in allotments can be correlated to the decline in ranching in the Flathead Valley. With the decline in grazing, active allotments are administratively closed when they are no longer being used by the permittee. Permitted livestock numbers and seasons of use are often based on past actual and permitted use levels but are also based on the site conditions.

Commercial livestock are generally authorized through issuance of a term (i.e., 10-year) grazing permit. These permits include numerous requirements and conditions and describe the responsibilities of the permit holder. These terms and conditions are also incorporated into an allotment management plan. The allotment management plan establishes site-specific goals and objectives and provides management strategies to achieve them. These strategies may include levels of grazing use, seasons of use, rotations, and a schedule for implementing range-improvement projects such as fences and water developments. This plan also includes requirements for monitoring and inspections, payment of grazing fees, ownership of livestock and base property, livestock management, range improvement maintenance and construction, and other terms as appropriate. Once approved, the allotment management plan becomes a part of the permit.

As of 2014, the Flathead National Forest had seven active range allotments, which included two on the Tally Lake Ranger District and five on the Swan Lake Ranger District (table 167). All seven of the active grazing allotments are permitted for cattle grazing. There are no sheep allotments on the Flathead National Forest, nor are any sheep grazing permits anticipated to be issued in the future (Kendall, 2013). Each grazing allotment lies within one of the NCDE grizzly bear management zones (table 167). The seven active allotments consist of 72,540 acres and support 1,407 animal unit months (USDA, 2014b).

Table 167. 2014 Flathead National Forest range allotments and their respective locations within the NCDE grizzly bear management zones

Allotment name	Ranger District	Acres	Capable acres	Authorized animal unit months	Seasons of non-use 2006-2014	NCDE Grizzly Bear Management zone
Barber Creek	Swan Lake	7,864	5,635	206	4	Primary conservation area
Browns Meadow	Swan Lake	8,440	1,163	169	7 ^a	Zone 1
Holland	Swan Lake	20,020	5,365	265	1	Primary conservation area
Island Meadows	Tally Lake	8,461	3,125	329	1	Zone 1
Kerr Mountain	Swan Lake	11,610	212	83	0	Zone 1
Lemonade Springs	Tally Lake	10,569	6,507	329	2	Zone 1
Piper Creek	Swan Lake	5,576	5,516	26	0	Primary conservation area
Swaney	Tally Lake	[18,254]	–	Vacant	3	Zone 1
Wild Bill	Swan Lake	[9,060]	–	Vacant	3	Zone 1
Total		72,540 ^c	27,523	1,078 ^b	–	–

a. This grazing permit was in non-use status for four consecutive years starting in 2011.

b. The permittee for Island Meadows and Lemonade Springs moves the cattle between these two allotments, so the acres not counted twice in the total.

c. Vacant allotment acres are not counted in the total. No grazing permit has been issued; awaiting NEPA decision to be closed.

Range management and the designated range allotments are administered by the District's resource assistants, with the forest range program manager providing program management and oversight. The

resource assistants and the forest range program manager work with grazing permit holders to ensure that the range management goals and objectives of the allotment management plan are being met.

The current forest plan (USDA, 1986b) contains specific desired conditions, objectives, standards, and guidelines that were developed for livestock grazing. The current plan also identifies approximately 485,000 non-wilderness acres that are considered potentially suitable for livestock grazing and a maximum transitory range that could support a maximum of 12,000 animal unit months (Kendall, 2013). Timber harvest areas create transitory range within an allotment that provides forage for livestock. As the forest grows back, the available range decreases. If adjustments are made to account for transitory range that is manageable and accessible, the Flathead National Forest could support roughly 4,120 animal unit months. The Forest currently permits 1,407 animal unit months (table 167).

The acres of capable rangeland identified in table 167 were determined through GIS analysis. Capable acres are those areas within an allotment with the capability to produce forage; they do not equal total allotment acres for several reasons. An allotment may only have a few acres of suitable grasslands within its borders, and the rest may be heavy forest or rock outcrops. Some allotments may contain small amounts of capable acres that were not identified in the GIS analysis, and grazing may occur in areas based on site-specific conditions.

In response to localized conditions, such as rehabilitation, drought, or predation, some allotments have sporadically been placed in non-use status, which results in actual grazing use being considerably lower than permitted use. In addition, certain circumstances may delay access to allotments (e.g., a prolonged winter), and as a result some grazing seasons are temporarily shortened; however, permitted animal unit months are not affected by these conditions or circumstances.

Livestock grazing tends to have the greatest impacts on the following areas (Kauffman & Krueger, 1984):

- low-gradient riparian and wetlands areas,
- fine-textured soils with a minimal amount of rocks, cobbles, or boulders,
- open canopy or low shrub vegetation types,
- areas with naturally available water (although there may be some avoidance of standing water areas),
- areas of concentration due to natural or human-created obstacles (e.g., narrow drainages), and
- alpine soils (the Forest does not have any allotments in areas with alpine soils).

The magnitude of impacts depends on the timing of use, the kind and class of livestock, the intensity, duration, and frequency of grazing, and the associated management practices, including the level of active permittee management and involvement.

Site-specific NEPA analysis for each allotment or set of allotments is completed during the allotment management planning process. The Flathead National Forest has revised allotment management plans as mandated by the 1995 Rescissions Act. Project-level allotment NEPA decisions were determined in consideration of the goals and objectives as well as the standards and guidelines of the 1986 forest plan, as amended.

In general, the grazing management program helps to ensure a reliable and consistent level of native rangeland forage for permitted commercial livestock production. This resource helps local ranches maintain an economical operation that, in turn, maintain open space adjacent to the Forest, which is

integral to meeting desired resource conditions and maintaining the economic and social sustainability of local communities.

Resource indicator for permitted use

The Flathead National Forest has 72,540 acres within active grazing allotments (approximately 3 percent of the total acres managed by the Forest). Of the allotment acres, only 27,523 are capable acres (approximately 1 percent of the total acres managed by the Flathead National Forest). Capability is used to determine the suitability for grazing based on lands capable of producing forage. Of the seven active allotments within the Flathead National Forest, three active allotments are located within the primary conservation area, and the other four are located in zone 1 (table 167). As previously stated, there are no sheep grazing allotments within the Forest.

Resource indicator for suitability and utilization

Currently, 1,407 animal unit months are designated on all active grazing allotments of the Flathead National Forest (table 167). The majority of the animal unit months (910) are located within zone 1.

3.24.3 Environmental consequences

This section describes the effects of implementing the action alternatives on livestock grazing. The action alternatives are described in chapter 2. Effects are analyzed in relation to the no-action alternative (i.e., alternative A).

Acres available for livestock grazing and allotted animal unit months are the same under each alternative (table 166 lists these indicators for livestock grazing). Figure 1-69 provides a map of the grazing allotments. None of the action alternatives change the existing allotments, nor do they provide any specific direction regarding current allotments. The most significant environmental consequence on livestock grazing from any alternative is the effect it would have on the future availability of suitable livestock grazing acres and animal unit months. Within the grizzly bear primary conservation area, the action alternatives are the same. The action alternatives differ in grizzly bear management zone 1.

The standards and guidelines are designed to protect upland and riparian resources, manage noxious weeds, and manage grazing allotments in accordance with the draft NCDE Grizzly Bear Conservation Strategy (USFWS, 2013) in all alternatives. Furthermore, there are resource mitigations and best management practices that are part of allotment plans that are designed to protect forest resources from potential disturbances from livestock grazing. These are site specific for each allotment and not part of this analysis. In conjunction with this analysis, a discussion of the social and economic impacts related to livestock grazing can be found in section 3.27.

Alternative A—No action

The existing forest plan, with permit- and/or contract-specific terms and conditions, is the current management being used by the Flathead National Forest to address livestock grazing. This direction represents the no-action alternative and is the baseline to which the action alternatives are compared. Thus, it is important to understand which actions would continue under the no-action alternative.

Management direction for alternative A—No action

Under the 1986 forest plan, the management of domestic livestock grazing allotments is consistent with management area direction and objectives. The plan considers the dependency of the ranching community on forage management and controls grazing to support tree regeneration and to maintain water quality and fisheries habitat when grazing occurs in riparian areas. Management direction related to noxious weeds is also provided (USDA, 1986b).

Indirect effects of the no-action alternative

Under the no-action alternative, grazing management, as outlined in the “Affected environment” section, would continue. Additionally, allotment plans and associated protections for forest resources would also continue. Forage management would continue to provide the necessary animal unit months designated on grazing permits. The quantity and size of grazing allotments could change from the current condition. Additional grazing allotments could be added if they met the goals and guidelines of the existing management areas.

Impacts, known and unknown, to livestock grazing under the no-action alternative were considered in reference to the disturbance associated with continuing management and the proposed implementation of the draft Grizzly Bear Conservation Strategy. These impacts are summarized below.

Vegetation management

Under the no-action alternative, transitory range would increase in areas that experienced a timber harvest or other vegetation management action, thereby increasing the forage capacity of that allotment; however, these increases would be temporary and, as the forest overstory returns, the capable range would decrease in these areas. If additional grazing allotments are added it would increase the total grazed acreage.

Riparian and wetland management

Under the no-action alternative, livestock grazing within riparian areas would be controlled to maintain water quality and fisheries habitat. This is consistent with the draft Grizzly Bear Conservation Strategy in that it maintains the desired species composition and ecological processes. Any additional measures to protect and mitigate impacts to riparian and wetland resources for individual grazing allotments would be addressed during site-specific evaluations prior to the issuance of the grazing permits.

Noxious and invasive species

Under the no-action alternative, management direction for noxious weeds and invasive species would continue as part of the process of issuing grazing permits and other vegetation management programs. Specific strategies would be evaluated for site-specific projects.

Management areas

Under the no-action alternative, management area direction related to livestock grazing must meet the goals established for each management area. Therefore, it is not anticipated that management area direction would impact livestock grazing because any grazing that would occur within a management area would be consistent with the management area direction.

Wildlife management

Under the no-action alternative, new grazing permits would be allowed if they met the management area objectives and if the ranching community needed to increase the number of allotments and animal unit months within grizzly bear habitat. Although there is no history of conflicts between grizzly bears and cattle on the Forest, increased cattle numbers could slightly increase the risk of conflicts in the future (see section 3.7.5 for more details).

Other resources

Impacts from the no-action alternative from other resources are similar to the other alternatives. Refer to the effects analysis sections for alternatives B modified, C, and D.

Action alternatives B modified, C, and D

For each resource area or activity described below, the environmental consequences to livestock grazing are compared by alternative, based on the key indicators of permitted use and forage determined by assessing suitability and utilization.

Effects of forestwide direction

Effects from vegetation management

Timber harvest and other vegetation management activities can provide transitory range that would be available for livestock and wildlife grazing. Transitional range forage capacity decreases over time as the forest overstory grows back and shades the grass understory. As the overstory returns, the transitional range is reduced to a level that does not provide enough grazing to be utilized. As timber is harvested, areas may open up to livestock that were not previously available, increasing capable acres. These newly accessible areas would be used as transitory range, as long as the acreage occurs within an existing allotment.

Timber harvest could also open up range that is inaccessible to livestock because of natural barriers. This could cause livestock control and management problems if the previously unharvested timber stands were used as natural barriers between allotments or other critical area. If this were to occur, additional range improvements would need to be installed to control livestock access.

To evaluate the impact of vegetation management activities on livestock grazing, the acres of land suitable for timber production is used to determine the acres that could be used as a transitory range. The location of a timber harvest (or other vegetation management activity) would need to be within an existing allotment. In most cases, grazing allotments on the Forest overlap with the wildland-urban interface, where timber harvest is likely to continue to occur under all alternatives.

More acres would be suitable for timber production under the no-action alternative (alternative A) than under the action alternatives. Under alternative C, fewer acres would be suitable for timber production than under the other alternatives. This means that suitability and utilization for livestock grazing under the no-action alternative (alternative A) could result in the creation of more transitory range than the action alternatives. Alternative C has the lowest number of acres suitable for timber production and would have the lowest potential for the creation of transitory range, limiting potential suitability and utilization. The acres available for timber production are about the same under alternatives B modified and D, and therefore the potential for the creation of transitory range is the same.

Effects from roads and trails management

The primary impact to livestock grazing from roads and trails management is focused on the level of motorized access to and on an allotment. Generally, the greater ease and availability of motorized access into and throughout an allotment, the more efficient and cost effective it is to manage livestock and maintain structural improvements. Livestock are trailed or trucked to and from grazing allotments along roads, and permittees access cow camps using travelways.

Motorized recreational use on allotments can increase the difficulty of maintaining positive control of livestock (i.e., gates may be left open and livestock are inadvertently or purposely moved), which complicates allotment management and increases management costs. Structural range improvements generally receive less disturbance and vandalism when recreational vehicles are restricted to designated roads and trails; however, permit holders need more time to obtain prior authorization to travel off roads or on trails in their allotments. Motorized winter recreation has no effect on livestock because permitted grazing does not take place during the winter.

Evaluation of the impacts of road and trail management on livestock is based on a qualitative assessment that compares the action alternatives to the no-action alternative. Based on the qualitative assessment of the location of livestock allotments on the Forest, the impacts would be similar under all action alternatives. Limitations on motorized access associated with alternative A could affect motorized access to and on the three active cattle-grazing allotments on about 33,460 acres of the primary conservation area, but the exact location of road restrictions and the magnitude of the effects is uncertain at the programmatic level.

Effects from fire management

Fires and fuel management can have very differing short-term and long-term effects on livestock grazing. Effects depend upon burning conditions and burn type because the results and timing of a wildfire are much less predictable than those from a controlled burn/prescribed fire.

Prescribed burning often results in an increase in forage production and availability and in a shrub community that is more compatible with a variety of wildlife species. A reduction in shrub density can accelerate the recycling of nutrients and make water more accessible across the landscape, such as in springs, seeps, and intermittent streams. This accessibility can have the effect of simplifying livestock management, improving livestock or wildlife distribution, and increasing available animal unit months. An effect often results from underburns in conifers or other types of burns that can increase forage production and accessibility. Thus, alternatives that use more prescribed fire would be expected to result in increases in the effects described above. Areas that are typically grazed may have use deferred for up to two growing seasons following a prescribed burn to allow for vegetative recovery. This “resting” requires that the permittee be flexible in management and involved in considerable advance planning and coordination. If a prescribed fire does not take place on schedule, arrangements need to be made again in successive attempts, which can accrue additional costs to the ranchers and/or Forest Service.

A wildfire can have similar effects as prescribed fire but is likely to have unplanned adverse effects as well. Wildfire may result in the entirety of an allotment being burned, and livestock may have to be completely removed from an allotment or a permittee may be forced to move their livestock to other lands in their operation (e.g., private, State). Wildfire may remove trees and open forest understories to a flush of grass and forb production for many years. Similar to prescribed fire, this can have the effect of recycling nutrients and improving the quality and quantity of forage for livestock and wildlife. However, since the timing, location, and burn conditions are not controllable, wildfires are less likely to provide the same amount of positive effects as prescribed burns.

To evaluate the impact of fire management activities on livestock grazing, the projected acres of prescribed fire are used to identify the areas most likely to create more suitable forage. The location of prescribed fire treatments are not currently known, but they would need to be within an existing allotment for the fuel treatment to affect the amount of acres that could be considered suitable for livestock grazing.

Effects from wildlife management

Under all alternatives, there is a potential for grizzly bear-livestock conflicts to occur within grizzly bear habitat where livestock operations occur on Forest lands (see figure 1-69 for grazing allotments on the Forest). Many reported conflicts are associated with livestock operations, both with cattle and sheep (Wilson et al., 2005). There are no sheep allotments on the Flathead National Forest. There is no history of conflicts between grizzly bears and cattle on the Forest. Food storage orders are in place and would continue under all alternatives; these include requirements that reduce the risk of conflicts (e.g., the removal of boneyards, the quick removal of dead animals from grazing allotments). Food storage orders reduce the risk of cattle loss on existing allotments. Annual monitoring of livestock allotments is performed to check on conflicts and compliance with food storage orders. Additionally, the Forest Service coordinates and cooperates with State and other Federal agencies when bear-human conflict occurs.

Under alternatives B modified, C, and D, the Flathead National Forest would continue to allow cattle grazing in the seven active allotments, but there would be no increase in cattle allotments within the grizzly bear primary conservation area. There are three active cattle grazing allotments on about 33,460 acres in the primary conservation area. Although there is no history of conflicts between grizzly bears and cattle on the Forest, limits to cattle allotments could slightly reduce the risk of conflicts in the future (see section 3.7.5 for more details). Under alternative C, there would be the same limit on future cattle allotments in the primary conservation area as under alternatives B modified and D. In addition, alternative C has no increase in cattle allotments within zone 1. There are four active cattle grazing allotments on about 39,080 acres in zone 1. Rangeland management would continue to issue permits and manage allotments in accordance with the forest plan and allotment plans, so impacts on current grazing allotments would not occur.

Grazing livestock share habitat resources with other wildlife species besides grizzly bears. For example, grazing cattle use the same resources as big game species. Big game grazing and browsing is compatible with livestock grazing and browsing. There is a large dietary overlap (40 to 80 percent) between elk and cattle and a similar though smaller dietary overlap with deer (Hansen & Reid, 1975; Wallmo, Gill, Carpenter, & Reichert, 1973). Elk grazing patterns have been shown to be strongly influenced by livestock grazing because they seek areas of forage regrowth following grazing by livestock (Crane, Mosley, Brewer, Torstenson, & Tess, 2001). In certain cases, permit limitations may be placed on forage use by permitted livestock to ensure adequate forage for the wild ungulate populations, particularly on crucial winter range.

The evaluation of the effects that big game habitat management has on livestock grazing is based on a qualitative assessment that compares action alternatives to the no-action alternative. Based on the qualitative assessment, the effects would be similar under all the alternatives, including the no-action alternative. For all alternatives, including the no-action alternative, big game habitat management actions would not limit livestock forage. These impacts of big game habitat management would not affect permitted use, suitability, or utilization within the grazing allotments.

Effects from recreation management

Recreation management can alter livestock grazing in several ways. Achieving reasonably uniform livestock distribution across an allotment is one objective of livestock management because it allows the optimal use of available forage resources. Areas with campers, pet dogs, all-terrain vehicles, and other concentrated human activity are generally avoided by livestock. Concentrated or frequent recreational use along roads and near popular areas can cause livestock to avoid grazing or passing through an area and work directly against a permittee's attempts to distribute livestock evenly. People using camping or picnic sites on the Forest sometimes become concerned with livestock in and around their recreation sites. Cattle are occasionally shot by mistake or otherwise during hunting seasons or are struck and injured or killed by vehicles, resulting in a direct economic loss. Fences are a common solution but require installation and maintenance and can be costly. Fencing of roadways may result in a safer travelway for motorists and livestock but may also result in a loss of forage available to permitted livestock. Right-of-way fence can either disrupt planned grazing management or increase management flexibility by creating additional pastures. Higher levels of summer recreation could create increased levels of potential conflicts with livestock grazing. Alternatives that allow more areas of motorized access in grazing allotment areas may adversely impact livestock grazing the most. Winter recreation and motorized over-snow vehicle use would not impact livestock grazing because the permitted grazing season would not occur during the winter months.

The evaluation of the impact of recreation management activities on livestock grazing is based on a qualitative assessment that compares the action alternatives to the no-action alternative. Based on the

qualitative assessment, effects are similar under all alternatives, including the no-action alternative. For all alternatives, allotment areas do not overlap with focused recreation areas (management area 7). Additional road closures may occur within the three allotments in the Swan Valley portion of the primary conservation area under all alternatives, which may reduce permittee access, but the exact locations are not predictable.

Effects from noxious and invasive species

Infestations of noxious weeds can significantly impact livestock grazing if they are extensive enough to reduce the amount of available forage. Once established, noxious weeds and other invasive plant species have the ability to outcompete native vegetation for nutrients and water. In addition to being undesirable forage, noxious and invasive species are usually less dense, resulting in more bare soil and a higher erosion potential, resulting in less water storage and more difficulty and expense in the reestablishment of native plant communities. Any ground-disturbing activity has the potential to expose a site to noxious and invasive plants, particularly when motor vehicles are involved. Likewise, established motorized access can make noxious and invasive plant treatment much easier and more cost effective. Even though grazing can be used as a noxious weed and invasive species control mechanism, the risk of spreading undesired species to other areas within the Forest remains unless there is mitigation such as cleaning livestock before and after they have been in an area known to be infested with undesired species.

The impact of noxious and invasive species management on livestock is evaluated based on a qualitative assessment that compares action alternatives to the no-action alternative. Impacts are similar between all alternatives, including the no-action alternative. The permitted use and suitability and utilization of grazing allotments would not change among the alternatives. Under all alternatives, noxious and invasive species management actions would not limit livestock forage. However, access to areas may be temporarily closed for weed management activities. Also, mitigations such as livestock washing may be included in the grazing permit and allotment plan. These temporary closures may limit access to permittee allotments.

Effects from renewable and non-renewable energy and mineral resources management

Increased energy and mineral development can lead to increased road systems, travel, and potential for the introduction of noxious weeds to result in reduced localized forage for livestock grazing. To evaluate the impact of energy and minerals management activities on livestock grazing, surface occupancy is used to determine the areas most likely to experience potential conflicts with livestock use. Surface occupancy is defined in section 3.23 and is used because it determines the locations where impacts would be most likely to occur. Areas with no surface occupancy would not experience impacts. For impacts from energy and mineral resource activities to occur, a surface occupancy would have to occur within an existing allotment.

Under alternative C, no surface occupancy would occur in either the primary conservation area or in zone 1. Since all of the grazing allotments are located in the primary conservation area and zone 1, no surface occupancy would occur on the existing grazing allotments and no impacts from renewable and non-renewable energy and mineral resource management would occur.

Under the no-action alternative (alternative A) and alternatives B modified and D, surface occupancy could occur in portions of the primary conservation area and zone 1. Therefore, if the surface occupancy occurs inside an existing grazing allotment, then the impacts discussed may potentially occur and livestock may experience less available forage and suitability and utilization could be affected.

Overall, alternative C would have no adverse effect on livestock grazing because renewable and non-renewable energy and mineral resource impacts would not occur. The no-action alternative (alternative A)

and alternatives B modified and D could potentially impact livestock grazing by limiting suitability and utilization, but the likelihood is low because the Flathead's minerals and oil and gas potential is low (see section 3.23 for more details).

Effects from riparian and wetland management

Management and protection of riparian and wetland resources are emphasized under all alternatives. The plan components for protecting riparian and wetland resources have some of the greatest influence on the ability of the Forest's grazing program to achieve desired conditions. Changes have been made in grazing management and practices to protect riparian and wetland resources, which are reflected in current resource conditions. Effects to riparian and wetland management would be similar under all alternatives.

The impact of riparian and wetland management on livestock is evaluated based on a qualitative assessment that compares alternatives to the no-action alternative. Impacts are similar under all alternatives, including the no-action alternative. The permitted use and the suitability and utilization of grazing allotments would not change under the alternatives because management direction for all alternatives would limit access to riparian or wetland areas when conditions in the permit are not met. Under all alternatives, including the no-action alternative, riparian and wetland management could limit permitted use of the allotment or livestock forage. Also, mitigation, such as the construction of fences to limit access, may be used as part of the grazing permit and allotment plan. These may limit a permittee's ability to access an allotment.

Effects from soil and watershed management

These effects would be similar to those discussed above in the riparian and wetland management section).

Effects from cultural resources management

Livestock can contribute to the deterioration of cultural resources through physical contact (e.g., hoof action, rubbing on structures) or by contributing organic matter to a site. They can remove or alter vegetation that serves to protect sites from erosion and make these resources more visible for unauthorized collection. In cases where the level of impact is determined to be unacceptable, the impacts can be mitigated with fencing or with changes in management (intensity or timing). If livestock are excluded from a site or forage use levels are reduced, total animal unit months on an allotment may be reduced, which limits a site's suitability and utilization. Impacts would be similar under all alternatives.

Effects of management area direction

Management area direction includes specific designations, such as administrative sites, experimental and demonstration forests, general forest, and roadless areas. These areas could be grazed to maintain the vegetative desired conditions. However, livestock grazing would only occur in these areas if the permit holder has the ability to access the area and if it occurs in a permitted allotment. The management area direction would have little to no impact on livestock grazing because of the established goals and regulations for each management area and the existing allotment plans within these management areas.

Effects from recommended wilderness

If recommended wilderness occurs within grazing allotments it could affect future management. In accordance with congressional grazing guidelines, livestock grazing "and activities and the necessary facilities to support a livestock grazing program, will be permitted to continue in National Forest wilderness areas, when such grazing was established prior to classification of an area as wilderness" (Washington Office Amendment 2300-90-2, Forest Service Manual 2323.2 pp. 19-26). There is to be "no curtailment of grazing permits or privileges in an area simply because it is designated wilderness. . . . Wilderness designation should not prevent the maintenance of existing fence or other livestock

improvements, nor the construction and maintenance of new fences or improvements which are consistent with allotment management plans and/or which are necessary for the protection of the range.”

There are no grazing allotments within recommended wilderness areas on the Forest (see figure 1-69 and section 3.15 for more details). Impacts to livestock grazing would not occur under any alternative.

Effects of geographic area direction

Livestock allotments occur in the Salish Mountains and Swan Valley geographic areas. Under alternatives B modified, C, and D, these geographic areas have transitory forage, so grazing would be available within active grazing allotments as long as grazing is compatible with other resources. Management direction would have no effect on existing livestock grazing because it does not limit permitted use within existing allotments, nor does it affect the suitability and utilization of forage. Therefore, under this direction no impacts to livestock grazing would be expected to occur.

Guideline GA-SV-GDL-04 for the Swan Valley geographic area states: “For efficient management of the grazing program, open and active cattle grazing allotments should be closed if the opportunity arises with a willing permittee.” Grazing allotments that are inefficient to operate may decrease in this geographic area in the future as a result.

Climate change

Climate change affects vegetation, which in turn could affect livestock grazing. Although outside the control of the Forest, potential effects include, but are not limited to, changes in type, amount, and distribution of precipitation, which directly affects type, abundance, and distribution of vegetation. Lower-elevation grasslands and shrubland habitat are expected to become drier and habitat zones to shift upward in elevation (Finch, 2012). The result of these potential changes could be an increase in suitable cattle forage, thereby causing increased suitable forage for cattle grazing at higher elevations within an allotment.

Another consideration is related to the time frame of climate change. It is possible for climate change to impact resource use within a short time frame, which could change the suitability and utilization of forage. For example, there have been periods of increased summer temperature and decreased summer precipitation over a 15- to 20-year period, which would indicate that changes in the suitability and utilization of forage within a grazing allotment may occur within a planning period. This could cause beneficial or negative impacts to the permitted use of a grazing allotment for the suitability and utilization of a grazing allotment.

Though the impacts to grazing from climate change remains to be fully understood or experienced by permittees of the Flathead National Forest, the Forest Service has tools to adapt to unexpected conditions and annual and long-term changes in resource conditions through stocking adjustments and management practices. The impact to livestock grazing could include limited use of allotments and a shortfall of available forage until suitable pasture is available.

Cumulative effects

Spatial context for effects analysis

The spatial context for this analysis is limited to the existing active allotments within the Flathead National Forest. Additionally, the properties adjacent to the Flathead National Forest were considered in respect to the associated permit-holding ranch operations and potential impacts to open space.

Cumulative effects common to all alternatives

This discussion considers impacts from the historic livestock use of the Flathead National Forest from the current forest plan (approved in 1986) through the next planning period (15 years from today). The impacts from historic livestock grazing influences livestock management today. For example, areas that were once heavily grazed or improperly grazed are continuing to recover. Riparian areas altered by livestock use continue to recover. Fire suppression activities in the past have resulted in conifer encroachment in affected areas, which in turn can limit forage production and availability and affect livestock use and distribution patterns today.

Based on continuing and increasing public use, it is expected that the impact of recreational uses could increase as the population of local communities increases, and as more people nationwide continue to look for places to recreate. Vegetation management and the use of prescribed fire would likely increase to address vegetative health, fuel loads, and public safety. These trends could result in short-term expenses and long-term benefits to livestock grazing.

Livestock grazing is influenced by the multiple effects described throughout this analysis. These include effects that impact the allocation of forage resources between livestock and wildlife; predation and disease transmission; management adjustments to protect cultural resources; fisheries; threatened and endangered species; water quality; considerations necessary due to wildfire and prescribed fire management, and recreation. All of these factors add to the complexity and expense for the ranching operations that are permitted to graze livestock on the Forest (Rimbey & Torell, 2011). Despite all these factors, continued demand and the need for livestock grazing is likely to remain at, or below, current levels. Livestock management is generally considered more difficult on NFS lands than on private lands for many of the reasons previously presented. In addition, the business of livestock management is subject to factors most often not under the control of livestock operators, such as tourism; land values, and potential subdivision of ranches; labor prices and availability; domestic and foreign demand for livestock products, markets and meat prices; Forest Service budgets and farm programs; fuel prices; predator control; social values; and federal policy.

Because of, and in many cases despite of, the effects and unpredictability described above, livestock grazing is expected to continue at, or below, the current permitted level into the future.

Economic, Social, and Cultural Environment

The following sections are grouped under this heading:

- cultural resources
- American Indian rights and interests
- social and economic environment

3.25 Cultural Resources

3.25.1 Introduction

Cultural resources are defined by the National Historic Preservation Act and by Forest Service Manual 2360, as an object or definite location of human activity, occupation, or use identifiable through field survey, historical documentation, or oral evidence. Cultural resources are prehistoric, historic, or archaeological sites, structures, places, or objects and traditional cultural properties.

Historic properties include cultural sites that reflect past use of the area, having value as defined by the National Register of Historic Places (also known as the “National Register”) criteria for eligibility for their association with important events, association with important people in our history, distinctive historical or architectural style, and potential to provide information about the past. A property can be eligible under one or more of these criteria and is generally at least 50 years old.

The process of determining the eligibility of a site to the National Register includes identifying historic properties through field inventory, evaluating sites for potential inclusion in the National Register, and then selecting sites to formally nominate to the National Register. Through this process, current and potential impacts to eligible properties are identified and protection measures are designed and implemented.

Cultural resources include the entire spectrum of resources for which the Forest Service’s heritage program is responsible, from artifacts to cultural landscapes, without regard to eligibility for listing in the National Register of Historic Places (Forest Service Manual 2360).

Regulatory framework

Laws and executive orders

National Historic Preservation Act of 1966 (Pub. L. 89-665, as amended, 91-423, 94-422, 94-458 and 96-515):

Section 101(a) (8): Gives the Secretary of the Interior the responsibility and authority to assess “significant threats” to properties included in, or eligible for inclusion in, the National Register in order to determine the kinds of properties that may be threatened; ascertain the causes of the threats; and develop and submit to the President and Congress recommendations for appropriate action.

Section 106: Requires each agency to take into account the effects of its actions on historic properties prior to approving expenditure of Federal funds on an undertaking or prior to issuing any license. Furthermore, an agency must afford the State Historic Preservation Office, the Tribal Historic Preservation Office, and the Advisory Council on Historic Preservation (an independent

Federal agency created by the National Historic Preservation Act) an opportunity to comment on any of the agency's undertakings that could affect historic properties.

Section 110 (a)(2)(A): Directs Federal agencies to establish “a preservation program for the identification, evaluation, and nomination to the National Register of Historic Places, and protection of historic properties” to “ensure that such properties under the jurisdiction or control of the agency are identified, evaluated, and nominated to the National Register.” This would require development of a schedule for the identification, evaluation, and nomination of unrecorded sites.

36 CFR § 800: Provides explicit direction for the identification of sites, the determination of project effects on sites, and requirements for consultation with the appropriate State Historic Preservation Office, any relevant Tribal Historic Preservation Office, and the Advisory Council on Historic Preservation, as well as how to develop agreements.

36 CFR § 79: Establishes standards, procedures, and guidelines to be followed by Federal agencies to preserve collections of prehistoric and historic material remains and associated records that are recovered in conjunction with Federal projects and programs under certain Federal statutes. This action should ensure that federally owned and administered collections of prehistoric and historic materials remains and associated records are deposited in repositories that have the capability to provide adequate long-term curatorial services.

36 CFR § 60: Sets forth basic procedures for evaluating and nominating sites to the National Register of Historic Places, procedures for the operations of state historic preservation officers, and minimum qualification standards for cultural resource professionals.

36 CFR § 219.24: Provides guidance for addressing cultural resources in forest plans. Forest planning shall provide for the identification, protection, interpretation, and management of significant cultural resources on NFS lands. Forest planning shall provide an overview of known data relevant to the history, ethnography, and prehistory of the area under consideration, including known cultural resource sites; identify areas requiring more intensive inventory; provide for evaluation and identification of appropriate sites for the National Register of Historic Places; establish measures for the protection of significant cultural resources from vandalism and other human depredation as well as natural destruction; identify the need for maintenance of historic sites in or eligible for inclusion in the National Register; and identify opportunities for interpretation of cultural resources for the education and enjoyment of the American public.

Executive Order 11593 of 1971 (Protection and Enhancement of the Cultural Environment): States that the Federal government will provide leadership in preserving, restoring, and maintaining the historic and cultural environment of the nation. Directs Federal agencies through Federal plans and programs to preserve cultural resources and contribute to the preservation and enhancement of non-federally owned sites, structures, and objects of historic, architectural, or archaeological significance. It orders Federal agencies to locate, inventory, and nominate to the National Register all properties under their control or jurisdiction that meet the criteria for nomination. It also directs Federal agencies to exercise caution during the interim period to ensure that cultural resources under their control are not inadvertently damaged, destroyed, or transferred.

Archaeological Resources Protection Act of 1979 (Pub. L. 96-95, section 2a, and 43 CFR § 7, Section 2a): The Congress finds:

- Archaeological resources on public lands and Indian lands are an accessible and irreplaceable part of the nation's heritage;
- These resources are increasingly endangered because of their commercial attractiveness;
- Existing federal laws do not provide adequate protection to prevent the loss and destruction of these archaeological resources and sites resulting from uncontrolled excavations and pillage; and
- There is a wealth of archaeological information that has been legally obtained by private individuals for noncommercial purposes and which could voluntarily be made available to professional archaeologists and institutions.

Section 470ii (c): States that “each federal land manager shall establish a program to increase public awareness of the significance of the archaeological resources located on public lands and Indian lands and the need to protect such resources.” It further directs that an annual report of such progress will be submitted to Congress.

Section 470mm: Directs Federal agencies to

- develop plans for surveying lands under their control to determine the nature and extent of archaeological resources on those lands;
- prepare a schedule for surveying lands that are likely to contain the most scientifically valuable archaeological resources; and
- develop documents for the report of suspected violations of this act and establish when and how those documents are to be completed by officers, employees, and agents of their respective agencies.

Native American Graves Protection and Repatriation Act of 1990 (Pub. L. 101-601, 25 U.S.C. 3001-3013; 43 CFR § 10): Addresses the rights of lineal descendants and members of Indian tribes and Alaska Native and native Hawaiian organizations to certain human remains and precisely defined cultural items. It covers items currently in Federal repositories as well as future discoveries. The law requires Federal agencies and museums to provide an inventory and summary of human remains and associated funerary objects. The law also provides for criminal penalties for illegal trafficking in Native American human remains and cultural items.

Executive Order 13287 of 2000 (Preserve America): Reinforces the Federal government policy of “protection and enhancement of America’s historic treasures, and to recognize and treat cultural resources as assets. Federal agencies shall advance this policy through the protection of, continued use of, and reinvestment in, the federal government’s historic buildings and sites and by conforming to the highest standards of care for, and consideration of, the unique cultural heritage of communities, and of the Nation.” Each agency is directed to (a) review its regulations, management policies, and general operating procedures for compliance with section 110 of the National Historic Preservation Act and (b) develop annual goals and measures as part of their compliance with the Government Performance and Results Act (Pub. L. 103-62) and report annually on the protection of historic and archeological properties within its care. The order also encourages the formation of partnerships with tribal, State, and local governments and the private sector to promote public understanding of the preservation and use of historic properties.

Executive Order 13007, 1996 (Indian Sacred Sites): Directs Federal agencies, to the extent practicable, to accommodate access to and ceremonial use of sacred sites by Indian religious practitioners while avoiding adversely affecting the sites and maintaining the confidentiality of the sites.

Key indicators

Ground disturbance is a key consideration when determining impacts to cultural resources because ground disturbance may totally or partially expose properties. Adverse impacts to cultural resources can be further exacerbated by interactions with fire, weather events, human actions, and environmental change. The key indicators used in the analysis are shown in table 168.

Table 168. Key indicators for cultural resources

Resource Indicator	Measure
Ground disturbance	Degree of activity or natural condition that poses a potential threat to cultural resources
Access to sacred sites	Degree of activity that changes access to sacred sites

Methodology and analysis process

Analysis methods used for historic properties include a review and synthesis of all pertinent literature, records, and documentation available on the history and prehistory of the Forest. This includes not only information available from a variety of generalized sources but also information resulting from Forest Service cultural resource inventories. Information on previously documented sites can be an indicator of the type, frequency, and location of sites likely to be found within the analysis area.

Information sources

Information sources include literature, records, and document review, information from Forest Service cultural resource inventories and overviews, and information from Forest Service archaeologists.

Incomplete and unavailable information

No Forest has been fully assessed for cultural resources; however, many acres have been inventoried. These inventories have generally occurred in areas where there have been management activities in association with vegetation and fuels treatment, recreation development, special uses, and engineering projects. Information is continuously updated in conjunction with completed surveys and ongoing research.

Analysis area

The geographic scope of the analysis for cultural resources is the NFS lands of the Flathead National Forest. This area represents the NFS lands where changes may occur from activities that result from the action alternatives. The temporal scope of the analysis is the anticipated life of the plan (15 years).

3.25.2 Affected environment (existing conditions)

The Flathead National Forest encompasses an area with a long and rich heritage. The earliest evidence of human occupation in the Flathead Valley is after the last ice age, about 10,000 years ago.

Members of the Salish, Pend d'Oreille, and Kootenai Tribes commonly used and permanently occupied this area. Many other American Indian groups, including the Blackfoot Tribe, traveled through and briefly used the Flathead Valley.

Western Montana received some of the earliest European explorers in the Northwest. Shortly after the explorers, fur traders arrived. David Thompson, a fur trader for the British Northwest Company, came to the Flathead Valley in 1809. Trappers and traders traveled along the Flathead River in the 1820s and 1830s. The first settlers arrived in the Flathead Valley in the 1850s. Most were former employees of the Hudson's Bay Company and made their living raising cattle or sheep or trading with American Indians.

By the 1880s, the natural resources of the land were attracting settlers to the area to pursue farming, ranching, and logging. Many settlements were established in the Flathead Valley during this period. The construction of railroads around the turn of the century played an important role in the settlement and development of the Flathead Valley.

The newly formed Forest Service also played a major role in the history of the Flathead Valley. In the early 1900s, its responsibilities included building trail and road systems; overseeing timber harvesting, livestock grazing, and mining activities; and suppressing forest fires. The historic district at Spotted Bear and patrol cabins in the Bob Marshall and Great Bear Wildernesses are physical reminders of the long-term role of the Forest Service in the history of the area.

The Flathead National Forest has approximately 350 recorded cultural resources on NFS lands within its boundaries. Of these, the majority (approximately 275) are historic-period sites associated with historic Forest Service land management (lookouts, ranger stations, ranger cabins, and phone lines), early-20th-century Euro-American farming and mining, and historic logging. The remaining sites (approximately 75) are archaeological sites associated with Native American uses of the land; these include lithic scatters, travel routes, Indian scarred trees, and rock art.

Five historic properties—Hornet Lookout, the Flathead National Forest Backcountry Administrative Facilities Historic District, the South Fork Phone Line, the Wurtz homestead, and the Big Creek Ranger Station Historic District—are listed in the National Register of Historic Places. The Backcountry Administrative Facilities Historic District has 67 contributing buildings, sites, and objects. The South Fork Phone Line is 40 miles long and is the last of its kind in the nation. A small part of a much larger Blackfeet traditional cultural property, the Badger-Two Medicine, located on the Lewis and Clark National Forest overlaps onto the Flathead; this traditional cultural property is eligible for listing in the National Register. There is also an aboriginal trail network with more than 30 associated archaeological sites in the South Fork that has been identified by the Confederated Salish and Kootenai Tribes and has been determined eligible for listing in the National Register. An additional 75 heritage properties also have been determined eligible for listing. Additional information about the Flathead's cultural resources can be found in the Flathead assessment (USDA, 2014a).

3.25.3 Environmental consequences

Compliance with section 106 of the National Historic Preservation Act and 36 CFR § 800 regulations is required for Forest Service activities and is fulfilled by a process of identifying the presence of any known or potential cultural resources within the area of potential effect for each alternative through background research, consultation with the Montana State Historic Preservation Office and appropriate tribes, and an appropriate level of field investigation. When consultation is conducted, the magnitude of the undertaking, its likely effects, and any alternatives are taken into account as well as the views of the State Historic Preservation Office, the appropriate Tribal Historic Preservation Office, and other interested parties.

Each Forest is required to consult with Native American traditional religious leaders on any project having the potential to affect Native American cultural sites, including burial and ceremonial sites and practices. Consultation requirements would apply under all alternatives.

Effects to eligible historic properties can be either “no adverse” or “adverse.”

- No adverse effects could include stabilizing a property by controlling erosion of an archaeological site, restoring and maintaining a historic building, or reducing the fuels around a historic property.

The appropriate treatment is designed and agreed upon through consultation conducted under section 106 of the National Historic Preservation Act.

- Adverse effects are impacts to the integrity of a property that destroy a portion of the property or the entire property. A direct adverse effect occurs during the activity itself, such as when a road is built through a historic property and the construction process destroys the site. Indirect adverse effects are side effects of the activity or occur after the activity is complete; an example is runoff from a road that eventually erodes a historic property adjacent to it. Adverse effects can be mitigated or avoided altogether through project design. These mitigation or avoidance measures are agreed to in consultation conducted under section 106 of the National Historic Preservation Act with the State Historic Preservation Office and the Advisory Council on Historic Preservation.

Effects to cultural resources may be caused by implementing the forest plan as well as by largely uncontrollable secondary effects, such as from public use, vandalism, or natural causes (e.g., wind and water erosion). Direct effects of the action alternatives include those activities that are conducted and controlled by the Forest Service or authorized by Forest Service permits, including timber and silvicultural management, prescribed fire, wildlife and fisheries management, road and trail construction, facilities construction and maintenance, recreational use and management, and special-use authorizations to third parties.

Alternative A—No action

The existing forest plan, with permit and/or contract-specific terms and conditions, is the current management being used by the Flathead National Forest to address cultural resources. This direction represents the no-action alternative and is the baseline to which the action alternatives are compared. Thus, it is important to understand what actions would continue under the no-action alternative.

Management direction

Under the 1986 forest plan, no identified historic special interest areas for cultural resources are afforded special protection or enhancement treatment. Additionally, the current forest plan does not define a management area specific to cultural resources. Current forestwide guidance requires identification, evaluation, nomination, protection, and interpretation of cultural resources. Coordination and consultation with the Montana State Office of Historic Preservation is also required. Sites eligible for listing in the National Register of Historic Places must be evaluated and formally nominated. Protection protocols and mitigation measures are used when cultural resources or sacred sites are inadvertently discovered during project activities. The Flathead National Forest's heritage program addresses known and unknown cultural resources and properties and locations of historic significance via management direction in the current plan (USDA, 1986b).

Indirect effects of the no-action alternative

Under the no-action alternative, identification, evaluation, nomination, protection, and interpretation of cultural resources would continue. Coordination and consultation with the State Office of Historic Preservation would continue. Sites eligible for listing in the National Register of Historic Places would continue to be evaluated and formally nominated to the Register. Protection protocols and mitigation measures would still be used if cultural resources are inadvertently discovered.

Impacts to known and unknown cultural resources and sacred sites under the no-action alternative were considered in reference to the disturbance associated with continuing management and the proposed implementation of the draft Grizzly Bear Conservation Strategy and are summarized below.

Motorized use and access

Under the no-action alternative, ground disturbance associated with reclaiming roads may result in the inadvertent discovery of and/or damage to cultural resources or sacred sites. Long-term unavailability of roads could also result in reduced ground disturbance from road use and less potential to encounter or damage cultural resources. Under the no-action alternative, amendment 19 requirements would result in about 518 miles of roads being closed and/or reclaimed (see section 3.12). Long-term unavailability of roads could also result in less convenient access to areas of cultural importance that were once easily accessible. Depending on site-specific circumstances, access could require nonmotorized travel methods, which might increase travel times by minutes (feet) to hours (miles) depending on the specific locality.

Cultural resource surveys and consultation requirements would still be required and implemented under the no-action alternative during project-level activities such as road decommissioning to identify, evaluate, and protect National Register-eligible cultural resources. No impacts to known cultural resources or sacred sites were identified.

Recreation

Ground disturbance may result from the use, maintenance, and construction of existing and new recreation developments. Cultural surveys and consultation requirements would still be required and implemented under the no-action alternative during project-level activities, such as road decommissioning, to identify, evaluate, and protect National Register-eligible cultural resources.

Alternatives B modified, C, and D

Management direction

The primary difference between the action alternatives, B modified, C, and D, and the no-action alternative, as currently implemented, is the addition of objectives that provide performance requirements for the completion of inventories, outreach and interpretive projects, and National Register nominations.

Indirect effects

The effects to cultural resources as a result of the action alternatives are determined and defined by survey and consultation requirements at the project level. However, to estimate effects prior to consultation, the action alternatives are contrasted to the no-action alternative to estimate whether the alternative would increase, decrease, or result in no change to the potential for adverse effects to cultural resources.

The Flathead National Forest's proposed management formalizes current practices, specifically, inventory, public outreach, and National Register nomination-related activities. These administrative activities would result in no change in the potential of on-the-ground effects to cultural resources on NFS lands.

Effects to cultural resources are indirect by virtue of other programs within the Flathead National Forest. These effects are summarized below.

Motorized use and access

Ground disturbance with management activities could result in inadvertent discovery of and potential damage to cultural resources or sacred sites. However, unlike the no-action alternative, additional ground disturbance to close and/or reclaim roads would not be required, which may reduce the potential for ground disturbance that results in inadvertent discovery of and damage to cultural resources. Regardless, protection protocols are still applicable under the action alternatives to mitigate impacts to cultural resources and sacred sites. The exact extent and magnitude of this impact is uncertain until site-specific

analysis is conducted. Maintaining temporal and spatial restrictions in access and/or motorized use may make certain sacred areas and cultural resources more difficult to access. Restrictions to access could also require nonmotorized travel methods, which may increase travel times depending on the specific locality.

Recreation

Ground disturbance may occur in conjunction with construction, use, and maintenance of new developed recreation sites and capacity, and cultural resources may be encountered in these areas. However, under the action alternatives, unlike the no-action alternative, the number of new developed recreation sites and capacity would be restricted to support the continued recovery of the NCDE grizzly bear population. (refer to section 3.10.3). This restriction may result in a reduction in potential effects to cultural resources from activities associated with new developed recreation sites. Regardless, if encountered, evaluation and protection protocols are still applicable under the action alternatives to mitigate impacts to National Register-eligible cultural resources and sacred sites.

Consequences to cultural resources from forest plan components associated with other resource programs or management activities

Effects from fire and fuels management, access and recreation, vegetation management, and non-native invasive plant management

Management actions conducted at the site-specific level that result in ground disturbance may have effects on cultural resources and sacred sites. Because these effects are identified, detailed, and disclosed during site-specific analysis, the Forest Service has the opportunity to determine appropriate mitigation, avoidance, and protection measures. Thus, the consequences to National Register-eligible cultural resources from actions associated with programs such as fire and fuels management, access and recreation, vegetation management, and non-native invasive plant management programs are estimated to be minimal and/or avoidable under all alternatives.

Cumulative effects

The effects that past activities have had on cultural resources are discussed in the “Affected environment” section and are reflected in the current condition. Therefore, past activities are not carried forward into the cumulative effects analysis.

When comparing the alternatives qualitatively, continuance of amendment 19 management is a distinctive feature of the no-action alternative for the Forest. For the action alternatives, plan components for grizzly bears in the Northern Continental Divide Ecosystem are being implemented. Bear management subunits within the primary conservation area and zone 1 would have motorized access restrictions. Motorized access restrictions may make it more difficult for Native Americans to access cultural resources or sacred sites within these bear management units (see section 3.12).

Effects determination

Changes to proposed management, outside of implementing plan components for grizzly bears in the Northern Continental Divide ecosystem, are administrative in nature and would have no adverse effects to cultural resources. Ground disturbance associated with implementing the forest plan might result in inadvertent discovery of and potential damage to cultural resources or sacred sites. Protection protocols are in place under all alternatives to mitigate impacts to inadvertent discoveries of cultural resources and sacred sites.

The action alternatives are anticipated to result in less potential for ground disturbance because of limitations on new developed recreation sites and capacity and temporary restrictions to access/motorized

use associated with certain roads and project activities in the primary conservation area and zone 1. However, temporary spatial and temporal restrictions may potentially adversely impact access to sites of cultural importance in the spring during grizzly bear emergence. Project-level evaluation, and consultation as applicable, would be required to determine the exact extent and magnitude of adverse effects.

3.26 American Indian Rights and Interests

3.26.1 Introduction

The Forest Service has obligations under the American Indian Religious Freedom Act of 1978 to protect and preserve for American Indians the inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian (Pub. L. 95-442). Executive Order 13007 of 1996 further directs Federal agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners and to avoid adversely affecting such sites. Consultation with recognized tribal governments is further defined and required by the Native American Graves Protection and Repatriation Act of 1990 (Pub. L. 101-106), the 1992 amendments to the National Historic Preservation Act, and the 1999 revisions to the implementing regulations in 36 CFR § 800; Protection of Historic Properties. These obligations are applicable to all management actions no matter where they occur on the Forest.

National Forest System lands on the Flathead National Forest provide sustenance to American Indians, protect tribal spiritual values, and help perpetuate traditional uses and benefits for tribes and other cultures. Native Americans associated with the plan area, existing tribal rights, and areas of known tribal importance are identified in this section. Existing information is used to assess the condition and trend of resources that affect tribal rights and areas of tribal importance. Information shared by tribes at formal meetings and with individuals in conversations provide a rich source of information on tribal perspectives, resource uses, topics of interest, and the unique relationships tribes have with Federal agencies.

Regulatory framework

Laws and executive orders

Hellgate Treaty of 1855: The Flathead, Kootenai, and Upper Pend d'Oreille Tribes have reserved rights under the Hellgate Treaty of 1855 (July 16, 1855). These rights include the “right of taking fish at all usual and accustomed places, in common with citizens of the Territory, and of erecting temporary buildings for curing; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land.” The Federal government has trust responsibilities to tribes under a government-to-government relationship to ensure that the tribes’ reserved rights are protected. Consultation with the tribes in the early phases of project planning helps the Forest Service meet its trust responsibilities.

National Historic Preservation Act of 1966 (Pub. L. 89-665, as amended, 91-423, 94-422, 94-458, and 96-515) and regulations 36 CFR § 800 and 36 CFR § 7: This act pertains only to tangible properties (buildings, structures, sites, or objects) that are important in history and prehistory. It requires agencies to consider the effects of undertakings on properties eligible to or listed in the National Register of Historic Places by following the regulatory process specified in 36 CFR § 800.

The portions of the act that relate specifically to coordination with Indian tribes were added in the 1992 amendments. These additions reflect the increased importance placed on tribal relations. A section of the act directs State and Federal governments to assist in the establishment of preservation programs on Indian lands. These sections include:

Chapter 3, section 2: It shall be the policy of the federal government, in cooperation with other nations and in partnership with the state, local governments, Indian tribes, and private organizations and individuals to:

- (2) Provide leadership in the preservation of the prehistoric and historic resources of the United States and of the international community of nations and in the administration of the national preservation program.
- (6) Assist state and local governments, Indian tribes and Native Hawaiian organizations and the National Trust for Historic Preservation in the United States to expand and accelerate their historic preservation programs and activities.

National Environmental Policy Act of 1969 (Pub. L. 91-190) and regulations 40 CFR § 1500–1508: Federal agencies began to invite Indian tribes to participate in forest management projects and activities that may affect them.

National Forest Management Act of 1976 (Pub. L. 4-588): Directs consultation and coordination of NFS planning with Indian tribes.

American Indian Religious Freedom Act of 1978 (Pub. L. 95-341 as amended and Pub. L. 103-344): The Act states that “it shall be the policy of the United States to protect and preserve for American Indians their inherent right for freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and Native Hawaiians, including but not limited to access to site, use and possession of sacred objects, and the freedom to worship through ceremonies and traditional rites.” Agencies must make a good faith effort to understand how Indian religious practices may come into conflict with other forest uses and consider any adverse impacts on these practices in their decisionmaking practices. The consideration of intangible, religious, ceremonial, or traditional cultural values and concerns that cannot be tied to specific cultural sites/properties could be considered under the American Indian Religious Freedom Act.

Archaeological Resources Protection Act of 1979 (Pub. L. 96-95) and regulations 43 CFR § 7: Establishes a permit process for the management of cultural sites on Federal lands that provides for consultation with affected tribal governments.

Native American Graves Protection and Repatriation Act of 1990 (Pub. L. 101-601, 25 U.S.C. 3001-3013) and regulations 43 CFR § 10: Addresses the rights of lineal descendants and members of Indian tribes, Alaska Natives, and native Hawaiian organizations to certain human remains and precisely defined cultural items. It covers items currently in Federal repositories as well as future discoveries. The law requires Federal agencies and museums to provide an inventory and summary of human remains and associated funerary objects. The law also provides for criminal penalties in the illegal trafficking in Native American human remains and cultural items.

Interior Secretarial Order 3175 of 1993: Establishes the responsibility of all agencies to carry out the trust responsibilities of the Federal government and to assess the impacts of their actions on Indian trust resources. Requires consultation with tribes when impacts are identified.

Executive Order 12866 of 1993, Regulatory Planning and Review: Enhances planning and coordination with respect to both new and existing regulations. Makes process more accessible and open to the public. Agencies shall seek the views of tribal officials before imposing regulatory requirements that might affect them.

Religious Freedom Restoration Act of 1993 (Pub. L. 103-141): Establishes a higher standard for justifying government actions that may impact religious liberties.

Executive Order 12898 of 1994, Environmental Justice in Minority Populations and Low-Income Populations: Directs Federal agencies to focus on the human health and environmental conditions in

minority and low-income communities, especially in instances where decisions may adversely impact these populations.

Forest Service Tribal Relations Enhancement Act of 2006:

- **Reburial of Human Remains and Cultural Items:** The Native American Graves Protection and Repatriation Act provides for repatriation of human remains and cultural items to lineal descendants and Indian tribes but does not address further disposition of these items. This act explicitly authorizes the reburial of human remains and associated cultural items on NFS lands when they were originally recovered from NFS or adjacent lands.
- **Confidentiality of Information:** An increased level of confidentiality is authorized to protect information relating to reburials, sites, or resources of traditional or cultural importance, including human remains and information relating to traditional and cultural resources and practices provided in the course of research activities.
- **Forest Products for Traditional and Cultural Purposes:** American Indian and Alaska Native tribes have special cultural and traditional needs for forest products located on NFS lands, such as logs and planks for cultural structures. The act creates an exception to the National Forest Management Act requirement to sell certain forest products by authorizing the Secretary to provide these products free of charge when used for traditional and cultural purposes.
- **Access to NFS lands:** The act reinforces the Forest Service's commitment to the American Indian Religious Freedom Act for access to NFS lands.

Executive Order 13007 of 1996, Indian Sacred Sites: This order acknowledges the role of Federal agencies in protecting and preserving the religious practices and places of federally recognized tribes and enrolled tribal members. It also requires agencies to consult with federally recognized tribes to address tribal concerns regarding sacred sites on public land and to ensure access to religious places and avoidance of adverse effects to sacred sites in accordance with existing legislation.

Executive Order 13175 of 2000, Consultation and Coordination with Indian Tribal Governments: Provides direction for consultation with tribal governments for formulating or implementing policies that have tribal implications. Also provides direction regarding consultation and coordination with Indian tribes relative to fee waivers. Calls upon agencies to use a flexible policy with tribes in cases where proposed waivers are consistent with applicable Federal policy objectives. Directs agencies to grant waivers, in areas where the agency has the discretion to do so, when a tribal government makes a request. When a request is denied, the agency must respond to the tribe in writing with the rationale for denial.⁸

⁸ Section 2 of this executive order states:

In formulating or implementing policies that have tribal implications, agencies shall be guided by the following fundamental principles:

- The United States has a unique legal relationship with Indian tribal governments as set forth in the Constitution of the United States, treaties, statutes, Executive Orders, and court decisions. Since the formation of the Union, the United States has recognized Indian tribes as domestic dependent nations under its protection. The Federal Government has enacted numerous statutes and promulgated numerous regulations that establish and define a trust relationship with the United States.
- Our Nation, under the law of the United States, in accordance with treaties, statutes, Executive Orders, and judicial decisions, has recognized the right of Indian tribes to self-government. As domestic dependent nations, Indian tribes exercise inherent sovereign powers over their members

Executive Order 13084 of 1998, Consultation and Coordination with Indian Tribal Governments:

Calls upon agencies to utilize flexible policy approaches at the Indian tribal level in cases when a proposed waiver is consistent with applicable Federal policy objectives. The executive order calls upon agencies to grant waivers in areas where the agency has discretion to do so. This is to be done when a tribal government makes a request; and for those instances where the agency may decline such a request, a reason must be supplied to the tribe.

Code of Federal Regulations

36 CFR § 261 Prohibitions in Areas Designated by Order; Closure of National Forest System Lands to Protect Privacy of Tribal Activities (2011): Provides “regulations regarding special closures to provide for closure of National Forest System lands to protect the privacy of tribal activities for traditional and cultural purposes” and “to ensure access to NFS land, to the maximum extent practicable, by Indians and Indian tribes for traditional and cultural purposes.”

36 CFR § 223.239 and 223.240 Sale and Disposal of National Forest System Timber, Special Forest Products, and Forest Botanical Products: Section 223.239 provides regulations for free use without a permit for members of tribes with treaty or other reserved rights related to special forest products. Also provides regulations for free use without a permit upon the request of the governing body of a tribe. Section 223.240 provides regulations regarding harvest of special forest products by tribes with treaty or other reserved rights.

Key indicator

The measurements indicator for American Indian rights and interests were identified and defined by tribes through consultation with the Forest Service on the proposed action (see USDA, 2015a). Consultation provides the opportunity for tribes to identify potential effects to tribal interests, including native knowledge, tribally affiliated cultural resources, sacred sites, treaty rights, and religious freedom.

Disturbance is a key consideration for effects, as ground disturbance may negatively impact sacred sites and areas. These impacts can be further exacerbated by interactions with fire, weather events, human actions, and environmental change. Access to sacred areas to exercise religious ceremonies and freedoms is another key consideration for effects. Management actions that change access could either beneficially or negatively impact the exercise of treaty rights and expression of religious freedom. Table 169 lists the key indicators that will be used to measure differences among the alternatives.

Table 169. Indicators used to measure differences among alternatives

Indicator	Measure
Disturbance	Degree of activity or natural condition that poses potential threat to sacred sites
Access	Degree of activity or condition that poses potential change to access to areas of Native American interest

and territory. The United States continues to work with Indian tribes on a government-to-government basis to address issues concerning Indian tribal self-government, tribal trust resources, and Indian treaty and other rights.

- The United States recognizes the right of Indian tribes to self-government and supports tribal sovereignty and self-determination.

Methodology and analysis process

Effects to tribal interests are known through direct tribal consultation between the Forest Service and affected tribes. At the programmatic level of a forest plan, consequences are discussed qualitatively.

Information sources

Land use management plans, heritage reports, and information from Forest Service heritage resource specialists who consult with tribal members directly are the primary sources of information used for the analysis.

Incomplete and unavailable information

The Forest Service is not aware of all sites and interests of tribal importance. The Forest Service relies on its relationship and consultation with tribes to be informed as to where and what interests may be impacted by Forest Service actions. The consultation process affords both tribes and the Forest Service opportunities to identify sites, interests, and values of tribal importance as well as to identify mitigations and avoidance and protective measures to preserve tribal interests.

Analysis area

The geographic scope of the analysis for American Indian rights and interests is the NFS lands of the Flathead National Forest. This area represents the NFS lands where changes may occur from activities that result from the action alternatives. The temporal scope of the analysis is the anticipated life of the plan (15 years).

3.26.2 Affected environment (existing condition)

The Flathead National Forest is the traditional homeland of the Kootenai and Salish peoples and, to a lesser extent, the Blackfeet people. The Confederated Salish and Kootenai Tribes of Montana, which includes the Kootenai, the Bitterroot Salish, and the Pend d'Oreille Salish peoples, have reserved treaty rights in the plan area under the Hellgate Treaty of 1855. The Blackfeet Tribe does not have reserved treaty rights in the plan area. However, the Blackfeet Tribe has expressed interest in Forest Service activities in the Challenge Creek area because of its proximity to the Badger-Two Medicine area of the Lewis and Clark National Forest, an area eligible for listing in the National Register as a traditional cultural property important to the Blackfeet people. The Flathead National Forest consults with the Blackfeet Tribe on all projects and undertakings that may affect resources of interest to the Blackfeet in the vicinity of the Badger-Two Medicine traditional cultural property. Additional information on this topic can be found in the Flathead National Forest assessment (USDA, 2014a).

The Confederated Salish and Kootenai Tribes manage the Tribal Mission Mountains Wilderness, which is adjacent to the federally designated Mission Mountains Wilderness on the Forest. The tribes offer the general public recreational use on some of the tribal lands (recreation permit required), but some tribal lands are reserved for tribal members only.

The Confederated Salish and Kootenai Tribes were contacted in the initial project planning stages to advise them of the scope of the undertaking, including its potential effects, and to make their resource concerns (if any) an official part of the planning record. The Flathead National Forest planning team also met with tribal resource staff to review and discuss the proposed action prior to its release and met with the tribe subsequently, including within the format of the interagency meetings. The Flathead National Forest is also in partnership with the tribes to cooperatively manage the heritage resources in and around Hungry Horse Reservoir.

Sacred sites important to federally recognized tribes are managed under Executive Order 13007 (1996), which defines Indian sacred sites as “any specific, discrete, narrowly delineated location on federal land that is identified by an Indian tribe, or Indian individual determined to be 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 tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.” Information about sacred sites is often carefully guarded, sometimes even among other tribal members, making their care and management by the Forest Service a challenge.

The Confederated Salish and Kootenai Tribes have expressed concerns regarding Forest activities in the North Fork of the Flathead in areas associated with traditional travel routes and camp locations and regarding the few graves, rock art sites, and caves located on NFS lands in the plan area.

3.26.3 Environmental consequences

The action alternatives represent programmatic decisions; therefore, they would have no direct effects on American Indian rights and interests. Potential effects would be considered indirect effects in that they would occur later in time and at the site-specific level.

Alternative A—No action

Management direction for alternative A—No action

Under the 1986 forest plan, forestwide guidance requires coordination with Native American tribes on rights and interests issues and concerns. Specific issues addressed via direction and consultation in the current plan include marked and unmarked burial sites, areas of sacred or religious significance, and the accuracy of portrayals of Native Americans in displays and interpretive sites.

Indirect effects of the no-action alternative

Effects to tribal interests, including native knowledge, tribally affiliated cultural resources, sacred sites, treaty rights, and religious freedom, are identified and defined by tribes through consultation. Under the no-action alternative, the Flathead National Forest would continue to meet its obligations to tribes via consultation requirements.

Ground disturbance in conjunction with management activities may occur in the analysis area, and sites of Native American interest may be encountered in these areas. However, consultation requirements are required and implemented under the no-action alternative to protect and mitigate impacts to Native American sites within these areas.

Access and motorized use

Under the no-action alternative and the requirement to meet amendment 19 plan direction (USDA, 1995) (see section 3.12), ground-disturbing activities needed to close and reclaim roads could have a potential impact on Native American interests. Ground disturbance in conjunction with road management, maintenance, and/or closure activities and public use of roads may occur, and Native American sites may be encountered. However, consultation requirements are required and implemented under the no-action alternative as needed to protect and mitigate impacts to Native American sites and access to these sites. Access to NFS lands under amendment 19 plan direction could make some areas that were previously accessible by motorized transport to Native Americans more difficult to reach as road closures could require nonmotorized use, which may increase travel time by minutes (feet) to hours (miles), depending on the specific locality. Details of site-specific effects would be disclosed and discussed during consultation.

Recreation

Ground disturbance may occur in conjunction with recreational use and facilities, and Native American sites may be encountered in these areas due to these activities. However, consultation requirements are required and implemented under the no-action alternative to protect and mitigate impacts to Native American sites if encountered.

Alternatives B modified, C, and D

Management direction

In addition to management direction to provide for grizzly bear habitat, the action alternatives B modified, C, and D include management direction specific to the Forest Service's heritage program. With regard to the latter, the action alternatives' plan components expand upon the current protections in place for areas of tribal importance, using more specific and detailed language than the language used in the Forest's 1986 forest plan.

Effects of forestwide, management area, and geographic area direction

The effects to tribal interests as a result of the action alternatives are determined and defined by the tribes and disclosed by the tribes to the Forest Service during consultation. To estimate effects prior to consultation, the action alternatives are contrasted to the no-action alternative to see if the alternative increases, decreases, or results in no change to the potential for adverse effects to American Indian rights and interests.

The difference between the action alternatives and the no-action alternative, as currently implemented, is the extent of road reclamation anticipated under amendment 19 plan direction as well as the addition of specific objectives to establish a tribal consultation protocol and complete formal management plans. The action alternatives also use more detailed language to articulate protections already afforded to the tribes under the no-action alternative.

Thus, the action alternatives have the potential to have less ground-disturbing activity due to less road reclamation needed, but they do propose additional administrative activities, a consultation protocol, and formalized management plans. It is anticipated that administrative activities that focus on improving communications and planning activities between the tribes and the Forest Service would result in a decrease in the potential for adverse effects to tribal interests.

The action alternatives are anticipated to impact Native American rights and interests associated primarily with access, motorized use, and recreation. The effects of the no-action alternative are presented in the context of these resources and uses for comparison to the action alternatives.

The risk of ground disturbance in conjunction with management activities proposed under the action alternatives for the Forest may still be present, and it may be in areas with Native American interests on NFS lands. However, consultation requirements would still be required and implemented under the action alternatives to protect and mitigate impacts to these interests.

Access and motorized use

All alternatives would support the continued recovery of the NCDE grizzly bear population. For example, all alternatives would retain levels of open or total road densities and secure core that have supported grizzly bear recovery on the Flathead National Forest. Alternatives differ in the range of future actions that could occur. The action alternatives would maintain baseline motorized access levels (see "baseline" in glossary). In contrast to the no-action alternative, these restrictions are expected to result in less ground disturbance and less potential for impacts to physical sites of Native American interest. However,

restrictions to public use of roads might make certain areas temporarily more difficult to reach and require nonmotorized travel methods, which might increase travel times.

Recreation

Ground disturbance may still occur in conjunction with developed recreational use and sites; Native American sites may still be encountered in these areas due to such activities. These restrictions may decrease the potential for impacts to American Indian rights and interests over the no-action alternative. Consultation requirements would be required and implemented under all action alternatives to identify, protect, and mitigate impacts to Native American sites and interests.

Forestwide plan components for access and recreation have similar effects on Native American interests. The allocation of management areas varies by alternative and may affect the type of recreation and access on specific areas of the Forest. Areas allocated to designated or recommended wilderness allocations may have less ground-disturbance impacts but decreased motorized or mechanized transport access to the Forest.

Effects of forestwide, management area, and geographic area direction

The effects to tribal interests are often defined by the tribes and brought to Forest Service awareness during consultation. Current management direction and requirements for consultation have been designed to ensure that areas on NFS lands important to Native Americans are not inadvertently impacted by the Forest Service.

Consequences to American Indian rights and interests from forest plan components associated with other resource programs or management activities

Effects from fire and fuels management, access and recreation, vegetation management, and non-native invasive plant management

Management actions conducted at the site-specific level that result in ground disturbance have the potential for effects to American Native sites and interests. Because these effects are identified, detailed, and disclosed by tribes during consultation, the Forest Service and tribes have the opportunity to work together to determine appropriate mitigation, avoidance, and protection measures. Thus, the consequences to American Indian rights and interests from actions associated with fire and fuels management, access and recreation, vegetation management, and non-native invasive plant management programs are estimated to be minimal and avoidable through consultation under all alternatives.

Cumulative effects

The effects that past activities have had on American Indian rights and interests were discussed in the “Affected environment” section and are reflected in the current condition. Therefore, past activities are not carried forward into the cumulative effects analysis.

The action alternatives represent no direct change to current management of American rights and interests, outside of the addition of a consultation protocol and formalized management plans. Because these are administrative, documentation-related activities, there are no cumulative effects.

3.27 Social and Economic Environment

3.27.1 Introduction

The mission of the Forest Service is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. Flathead National Forest lands both influence and are influenced by local and national publics. Local communities, particularly those adjacent to NFS lands, benefit from a multitude of goods and services provided by the Forest and the Forest Service. These social benefits are often referred to as ecosystem services, which are defined "as goods and services provided wholly or in part by ecosystems and that are of value to people" (Olander et al., 2015, p. 1). The Forest's ecosystem services, alongside infrastructure and operations, are the main ways that public lands contribute to social and economic sustainability. Many local communities were formed based on the availability of roads and ecosystem goods and services such as timber, gold, silver, grazing lands, and other natural resources. Historically, individuals in these communities have benefited from a host of services such as recreation, scenery, employment, and opportunities to connect with nature. The general public across the United States also benefits from the Forest. The benefits include clean air, clean water, conservation of forests, and habitat for aquatic species, wildlife, and threatened or endangered species.

The 2012 planning rule states that plans are to guide management so that forests and grasslands contribute to social and economic sustainability, providing people and communities with ecosystem services and multiple uses that provide a range of social, economic, and ecological benefits for the present and into the future. Specifically, plan components must include standards or guidelines to guide the plan area's contribution to social and economic sustainability, taking into account ecosystem services as well as multiple uses that contribute to local, regional, and national economies and communities in a sustainable manner. Furthermore, reasonably foreseeable risks to social benefits shall be considered when developing the forest plan.

The Forest Service manages NFS lands according to the principle of multiple use. This principle allows the agency to manage land for a variety of uses, including amenity, commodity, non-commodity, and recreation. The Multiple-Use Sustained-Yield Act (Pub. L. 104–333) formalized this management philosophy, stating that the Forest Service is to manage resources to best meet the needs of the American public, with flexibility to provide for "periodic adjustments in use to conform to changing needs and conditions" (Section 4(a) of the Act [16 U.S.C. 531]). For instance, areas suitable for timber production may contribute to the local economy by sustaining timber sector jobs and income, thereby maintaining the social fabric and lifestyles of the community. Wilderness areas also generate significant social and economic well-being by providing world-class recreational settings. Visitors from near and far may benefit from experiencing solitude in these pristine locations while contributing to the regional economy (i.e., the travel- and tourism-related sectors) in terms of jobs, income, and other economic activities.

This section (1) describes the social and economic conditions of the affected environment using key indicators of social and economic sustainability; (2) describes how key benefits of the Forest currently contribute to the social and economic sustainability of beneficiaries, both locally and at a broader scale; and (3) evaluates the impacts of the alternatives B modified, C, and D on the benefits the Forest provides to local residents and the general public.

Regulatory framework

The following is a select set of statutory authorities that govern the evaluation of social and economic resources in the plan area. Many other laws and regulations and policies not listed below also guide the management of these resources.

Laws and executive orders

National Forest Revenue Act (amended 1908): This act requires 25 percent of revenues generated by NFS lands to be paid to the States for use by the counties in which the lands are situated for the benefit of public schools and roads.

Multiple-Use Sustained-Yield Act of 1960: This act identifies principles for managing the resources of the NFS. The direction to manage these resources for the greatest good over time includes the use of economic and social analysis to determine management of the NFS.

National Environmental Policy Act of 1969: This act mandates consideration of the consequences to the quality of the human environment from proposed management actions. The agency must examine the potential impacts to physical and biological resources as well as potential socioeconomic impacts (40 CFR § 1508.14).

Forest and Rangeland Renewable Resources Planning Act of 1974: As amended by the National Forest Management Act of 1976, this act requires consideration of potential economic consequences of land management planning.

Office of Management and Budget Circular A-116 (issued August 16, 1978): This act requires executive branch agencies to conduct long-range planning and impact analysis associated with major initiatives.

Executive Order No. 12898 on Environmental Justice (issued February 11, 1994): This act mandates Federal agencies to make achieving environmental justice part of their mission. This includes identification of and response to disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.

Secure Rural Schools and Community Self-Determination Act of 2000: This act is designed to stabilize annual payments to States and counties containing NFS lands and public domain lands managed by the Bureau of Land Management. Funds distributed under the provisions of this act are for the benefit of public schools, roads, and related purposes.

Regulations

36 CFR § 219, National Forest System Land Management Planning Rule of 2012: Forest plans are to guide management so that forests and grasslands are ecologically sustainable and contribute to social and economic sustainability. The 2012 planning process leads to plans that contribute to ecological, social, and economic sustainability by protecting resources on the national forests to maintain a flow of goods and services from NFS lands over time.

36 CFR § 219.19 Ecological, Social, and economic Sustainability: The Forest Service is directed to “contribute to ecological, social, and economic sustainability by ensuring that all plans will be responsive and can adapt to issues such as the challenges of climate change; the need for forest restoration and conservation, watershed protection, and species conservation; and the sustainable use of public lands to support vibrant communities.”

36 CFR § 219.8 Sustainability: The forest plan must provide for social, economic, and ecological sustainability within Forest Service authority and consistent with the inherent capability of the plan area, as follows:

(b) Social and economic sustainability. The plan must include plan components, including standards or guidelines, to guide the plan area's contribution to social and economic sustainability, taking into account

- 1) Social, cultural, and economic conditions relevant to the area influenced by the plan;
 - 2) Sustainable recreation; including recreation settings, opportunities, and access; and scenic character;
 - 3) Multiple uses that contribute to local, regional, and national economies in a sustainable manner;
 - 4) Ecosystem services;
 - 5) Cultural resources and uses; and
 - 6) Opportunities to connect people with nature.
- 36 CFR § 219.10 Multiple Use: the plan must include plan components for integrated resource management to provide ecosystem services and multiple uses in the plan area. Reasonably foreseeable risks to ecological, social, and economic sustainability should be considered (a)(7).

The term “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. “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.

Key indicators

The social and economic benefits of the Forest are measured by identifying how ecosystem services, operations, infrastructure, and multiple uses contribute, either directly or indirectly, to economic and social sustainability. Specifically, ecosystem services are those social benefits the Forest provides, including both goods and services, that are of value to people. Infrastructure and operations benefits include both physical structures, such as facilities, as well as all the services the Forest staff provide, such as fire suppression.

The social and economic benefits identified in the Flathead National Forest assessment (USDA, 2014a) are listed in table 170. Each benefit is categorized by the type of contribution it makes to social and economic sustainability. These contributions are divided into three main categories: income, jobs, and quality of life. Quality of life is subdivided into three subcategories: well-being, health and safety, and traditional, cultural, and spiritual values. These categories are not mutually exclusive. Some indicators fall under more than one category. For example, outdoor recreation contributes to income, jobs, and quality of life.

Table 170. Contribution of the Flathead National Forest to social and economic sustainability

Key Forest Benefit to Society	Income	Jobs	Well-Being	Health and Safety	Traditional, Cultural, and Spiritual Values
Water quality and quantity				X	
Clean air—particulate matter/haze				X	

Key Forest Benefit to Society	Income	Jobs	Well-Being	Health and Safety	Traditional, Cultural, and Spiritual Values
Inspiration—spiritual values and solitude					X
Cultural and heritage values					X
Carbon sequestration and climate regulation				X	
Flood control				X	
Forest products, vegetation management, and forage	X	X			X
Outdoor recreation	X	X	X	X	X
Scenery	X		X	X	X
Fish and wildlife	X	X			X
Research and education			X	X	X
Other income and jobs (payment in lieu of taxes, indirect and induced income and jobs)	X	X	X		
Direct income and jobs (Forest Service employees and contractors)	X	X		X	
Fire suppression	X	X		X	

Economic and social sustainability

Numerous approaches exist for measuring society's condition or progress towards achieving social and economic sustainability. In the forest planning context, a broad ecosystem services framework, which catalogues the social benefits of national forests, is an ideal framework for identifying how the plan area contributes to social and economic sustainability.

Ecosystem services indicators

Key ecosystem services were identified in the Flathead National Forest assessment. Most of these services, and their corresponding indicators, are described in greater detail in the appropriate resource sections. Note that some key ecosystem services are listed separately in the following section on multiple-use indicators. The following are key ecosystem services identified in the assessment:

- Water quality and quantity
- Clean air—particulate matter, scenic quality/haze
- Inspiration—spiritual values and solitude
- Cultural/heritage values
- Carbon sequestration and climate regulation
- Flood control

Multiple-use indicators

Key multiple uses are included in detail in the given resource chapter. Below is the list of key multiple uses. For more detailed description of each use, please refer to the relevant resource chapter. The following represent key multiple uses:

- Forest products/vegetation management/grazing (for details, see sections 3.3, 3.21, and 3.24)
- Outdoor recreation (for details, see section 3.10)

- Scenery (for details, see section 3.11)
- Fish and wildlife (for details, see sections 3.2 and 3.7).

Operations and Infrastructure

The Forest Service staff, management, and infrastructure also contribute to social and economic sustainability. Key infrastructure and operations contributions are as follows:

- Direct income and jobs (Forest Service employees, contractors, etc.)
- Other income and jobs (payments in lieu of taxes, indirect income and jobs, induced income and jobs)
- Research/education (for details, see sections 3.10 and 3.20)
- Fire suppression (for details, see section 3.8).

Methodology, analysis process, and information sources

To analyze the impacts of the alternatives on contributions to social and economic sustainability, the key benefits provided by the plan area were first identified. The “Affected environment” section describes the condition of income, jobs, and quality of life of local beneficiaries. Then, the social benefits the Forest provides that contribute to the income, jobs, and/or quality of life of local beneficiaries and the general public are described. Some indicators are easier to quantify than others. Jobs and income data are provided when available.

Less quantifiable measures of quality of life, such as well-being or cultural values, are discussed qualitatively. Information provided in the section on the affected environment is drawn mainly from part 2 of the Flathead assessment (USDA, 2014a). The assessment documented various data sources, methodologies, and modeling assumptions used throughout this analysis, such as sources of socioeconomic data (p. 3) and the economic contribution input-output model (p. 82).

Social benefits of the Forest are used and/or valued differently by different groups and communities. To get a clearer understanding of which services are most valued by beneficiaries and contribute most to social and economic sustainability, the Flathead National Forest assessment provided an in-depth study of social and economic conditions and local community values and beliefs. In the “Affected environment” section, the information collected on social, cultural, and economic conditions is synthesized to identify the key social benefits the Forest provides to beneficiaries.

Analysis area

The land administered by the Forest is spread among six counties in Montana: Flathead, Lake, Lewis and Clark, Lincoln, Missoula, and Powell. After a detailed look at commuting patterns, timber processing areas, and recreational visitation, it was determined that the area of influence (the analysis area) for the social and economic analysis would consist of four counties in northwestern Montana that are adjacent to, or in the immediate vicinity of the Flathead National Forest: Flathead, Lake, Lincoln, and Sanders. See section 3.27.2, subsection “Local beneficiaries,” for a discussion of the analysis area.

Notable changes between draft and final EIS

Economic data and the economic impacts analysis in the “Environmental consequences” section were refined between the draft EIS and the final EIS. In the final EIS, IMPLAN and Forest Service input data were replaced with more current (2015) data. Corrections to the economic model were also made between the draft EIS and the final EIS to address two errors that influenced model output presented in the draft

EIS. First, a typo in a proportion in the model led to overstated impacts from household spending. Second, a multiplier error was identified to have had a similar influence, overstating impacts from industries related to multiple use. Model outputs in the final EIS provide a more accurate estimate of the economic contributions from management of the Flathead National Forest under the various alternatives.

3.27.2 Affected environment (existing condition)

Introduction

Different segments of the public have different connections to the land as well as different interests, cultures, and values. Communities characterized in terms of geographical boundaries are place-based (people who live, work, or play in the same general locality), whereas communities characterized according to shared interest, passion, culture, and values transcend geography and can be regarded as “communities of interests.”

The distinction between place and interest is not mutually exclusive. In fact, many communities share location and values, beliefs, and attitudes (because community members choose to live near like-minded people or because of the historical development of natural resource-dependent communities. At the same time, it is equally plausible that people with different or opposing viewpoints reside in the same locality. Considering the overlapping values of different communities, this analysis does not try to parse out individual communities but rather takes a more holistic approach by examining the social benefits the Forest provides to all types of beneficiaries.

Beneficiaries are those who derive specific, local, place-based benefits from the Forest such as employment, income, scenic views, or connection to sacred sites, as well as those who benefit from the Forest more broadly, such as those who value the grizzly bear and benefit from the Forest’s ability to provide safe habitat for the grizzly bear.

Beneficiaries are those in the local communities as well as those in other counties, States, and nations. For example, residents of Missoula County benefit from recreation services on the Forest and are therefore taken into consideration as beneficiaries of recreation. Similarly, national and international beneficiaries are included as recipients of the social benefits of carbon sequestration and climate regulation.

Uses, products, services, and visitor opportunities supported by national forests produce a steady flow of benefits that contribute to the social and economic sustainability of both Forest-dependent communities and the general public. This framework of social benefits provides unique opportunities to explore the linkages between people and the Flathead National Forest that may transcend geographically defined communities.

Local beneficiaries

Although beneficiaries exist in many counties and even countries, this section describes in more detail the social, cultural, and economic conditions of the geographic areas most closely tied to, and impacted by, the Forest. The land administered by the Forest is spread among six counties in Montana: Flathead, Lake, Lewis and Clark, Lincoln, Missoula, and Powell.

After a detailed look at commuting patterns, timber processing areas, and recreational visitation, it was determined that the area of influence (hereinafter called the analysis area) for the social and economic analysis would consist of four counties in northwestern Montana that are adjacent to or in the immediate vicinity of the Flathead National Forest: Flathead, Lake, Lincoln, and Sanders. Although recreation ties suggest the inclusion of Glacier County, the extremely light commuting from Glacier County to the other affected counties led to its exclusion from the analysis area. Lincoln County, on the other hand, is

included due to both substantial commuting across county lines and also some timber processing of Forest timber products in Lincoln County. Sanders and Lake Counties were included because of commuting, trade, and travel corridors across these counties that connect with corridors in Flathead County. Even though Missoula County does process timber harvested from the Forest and does contain Flathead National Forest land, it was not included in the impact area because it is a metropolitan statistical area, unlike Flathead County, and the size of its economy would tend to mask the impacts on the other affected counties. Lewis and Clark and Powell Counties were not included due to the light commuting from these counties and the weak economic ties to the rest of the counties in the analysis area. The geographical relationship of the Forest to the analysis area counties is shown in figure 71.

Demographic information on local beneficiaries provides insight into the social and economic conditions of the affected environment. It also provides a backdrop for understanding how different members of society may be benefitting from the Forest and which services they value most. The data below provide insight into the beneficiaries of the Forest. Beneficiaries are heterogeneous, ranging in age, income, race/ethnicity, educational attainment, employment rate, industry, health, cultural values, priorities, and spiritual beliefs.

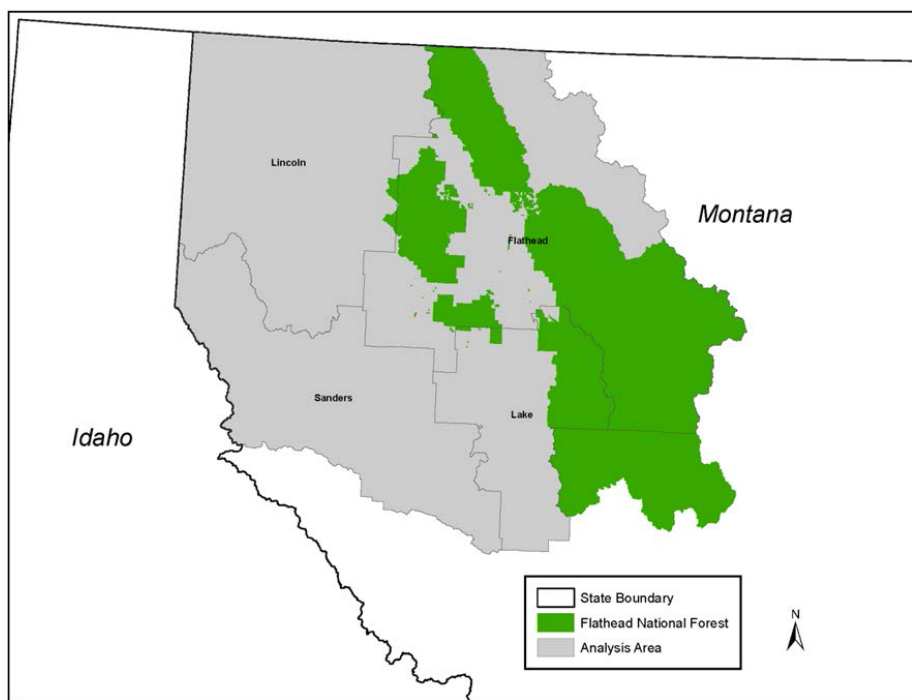


Figure 71. Counties in the social and economic analysis area

The largest county by land area is Flathead County, at 5,088 square miles. The smallest is Lake County, at 1,490 square miles. The majority (71 percent) of the Forest is within Flathead County, which has more than 1.7 million acres of the Flathead National Forest. Although a small fraction of the forested land in Flathead County is administered by the Kootenai National Forest, the bulk of the forested lands is administered by the Flathead National Forest. Lincoln County also has a substantial amount of NFS land; however, the majority of that land is administered by the Kootenai National Forest. Larger towns in Flathead County include Kalispell, Columbia Falls, Bigfork, Whitefish, and other smaller towns and census-designated places. Lake County includes the communities of Polson, St. Ignatius, and Pablo.

Sanders County includes Thompson Falls, Noxon, and Trout Creek. Lincoln County includes Libby, Troy, and Eureka.

Population demographics

From 1990 to 2011, the four-county analysis area had a 90 percent increase in population—from 79,485 to 151,254 people. In comparison, the overall United States population increased by 53 percent during the same period. In the more recent period of 2000 to 2011, the analysis area's population grew by 16 percent, and 79 percent of that increase came from migration into the area. People are choosing to move into the four-county area. According to the U.S. Department of Commerce, Flathead County has the largest population of the four counties (91,301 in 2011) and witnessed the largest positive annual net migration between 2000 and 2012 (Headwaters Economics). Looking at the population change by census tract, it is clear that Flathead County has experienced the most significant growth in the past decade (see figure 72).

The recent sustained population growth in the analysis area has been placing a considerable financial burden on government entities, which are struggling to provide the necessary infrastructure and emergency services for the influx of new residents as well as to maintain and upgrade current facilities (LCCDC, 2012; MWED-FCEDA, 2012). In addition, the population growth occurring in the four counties increases the residential density along the edge of the Forest, which has consequences on riparian and environmentally sensitive areas, use of recreational facilities, fire suppression, and Forest management in general.

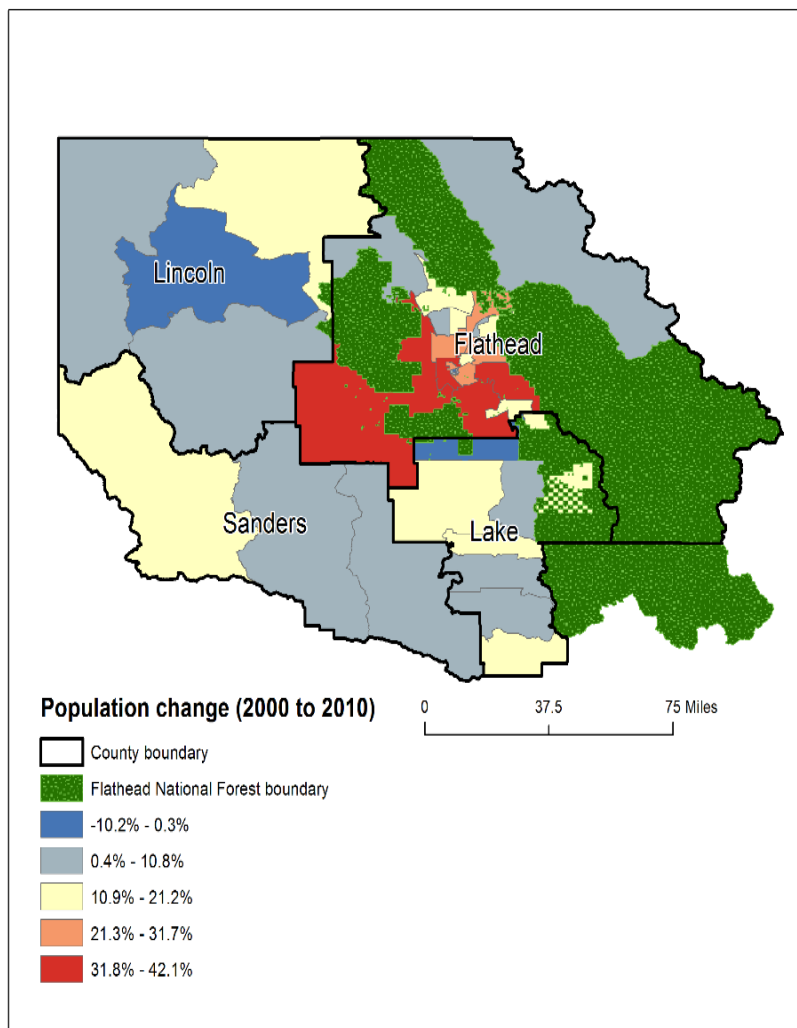


Figure 72. Population change in counties in the analysis area (2000–2010)

Map Source: USDA Forest Service Northern Region, 2015. Data Source: U.S. Census, Population by census tract, 2000 and 2010.

The Forest Service’s 2010 Renewable Resources Planning Act Assessment projected county-level population changes through the year 2060 (Zarnoch, Cordell, Betz, & Langner, 2010). The average population of the four-county area is projected to increase 39 percent from 2010-2035 and then 37 percent from 2035-2060, with Flathead County again having the highest increase (52 percent from 2010-2035 and 45 percent from 2035-2060).

Figure 73 displays the distribution of the population of the analysis area by census tract. The population of the analysis area is not evenly distributed across the counties. The census tracts closest to the Flathead National Forest tend to be more populated.

The racial composition of the four counties also varies considerably (see figure 74). The Flathead Indian Reservation is located in Lake and Sanders Counties. Census tracts within reservation boundaries tend to have the highest concentrations of Native Americans of any area across the analysis area (over 20 percent Native Americans).

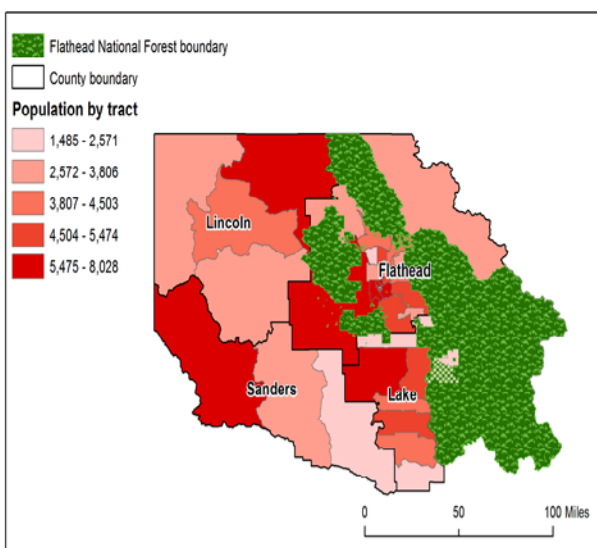


Figure 73. Population by census tracts in the analysis area (2009–2013)

Source: The data in the map are from the U.S. Census American Community Survey, 2013 five-year tables.

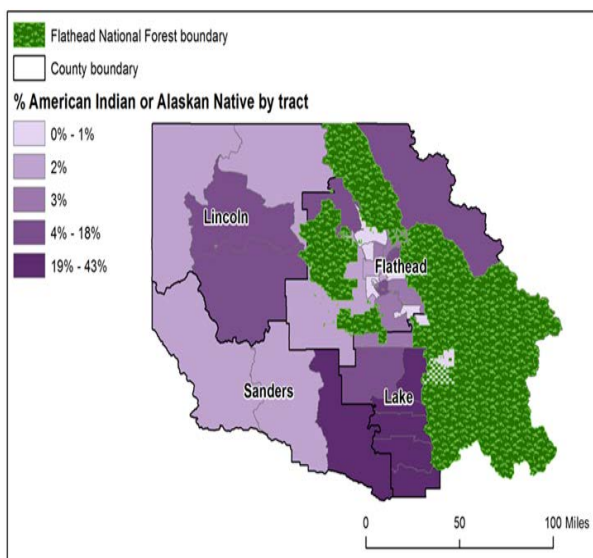


Figure 74. Native American population by census tracts in the analysis area (2009–2013)

Source: The data in the map are from the U.S. Census American Community Survey, 2013 five-year tables.

Table 171 charts the racial makeup of each county. Lake County has a high percentage of American Indians at 22 percent of the county's population. This is a significant percentage because the figure for the four-county region is only 5.7 percent. Lake County, at 6.2 percent, also has a much higher percentage of American Indians than the State of Montana. Much of the Confederated Salish and Kootenai Tribes Indian Reservation is located in Lake County, with portions also in Sanders, Flathead, and Missoula Counties, and the Confederated Salish and Kootenai Tribes tribal government and council is headquartered in Pablo. In Sanders County, 5.6 percent of the population is American Indian. This is

similar to the State's population percentage of 6.2. Flathead, Lincoln, and Sanders Counties have little ethnic diversity, and they have a higher percentage of "White alone" than the State.

Table 171. Total population, and percent of the total population by race, 2011¹

Population	Montana	Flathead County	Lake County	Lincoln County	Sanders County	County Region	United States
Total Population	982,854	90,317	28,628	19,574	11,421	149,940	306,603,772
White alone (%)	89.7	95.8	70.6	96.2	92.0	90.8	74.1
Black or African American alone (%)	0.4	0.2	0.2	0.1	0.2	0.2	12.5
American Indian alone (%)	6.2	1.3	22.0	2.1	5.6	5.7	0.8
Asian alone (%)	0.6	0.5	0.5	0.4	0.2	0.5	4.7
Native Hawaiian and Other Pacific Islander alone (%)	0.1	0.0	0.0	0.0	0.0	0.0	0.2
Some other race alone (%)	0.6	0.3	0.1	0.1	0.3	0.3	5.1
Two or more races (%)	2.3	1.8	6.6	1.0	1.6	2.6	2.5

Source: U.S. Department of Commerce, Census Bureau, American Community Survey Office, Washington, DC, 2012, accessed via EPS-HDT.

1. The data in this table are calculated by the American Community Survey using annual surveys conducted during 2007-2011, and the data are representative of average characteristics during this period.

The age structure of the population is also relevant to land management decisions because people of different ages tend to use national forests in different ways. For example, some people change from nonmotorized activities to motorized as they have aged (USDA, 2014a, ch. 2). From 2000 to 2011, the analysis area has experienced a mild aging of the population (see table 172). The percent of residents 65 and over increased from 13.9 to 15.8 percent, and the percent aged 45–64 jumped from 27.0 to 31.6 percent. This trend is consistent with the United States population as a whole. As the "baby boomer" generation (those born between 1946–1964) transitions into the older age brackets, the age structure of the population becomes more top heavy (USDA, 2014a, pp. 24-25).

Table 172. Age distribution of residents in analysis area, 2000 and 2011¹

Age Category	2000	% of Total Population	2011	% of Total Population
Total Population	130,042	-	149,940	-
Under 18	33,932	26.1	34,769	23.2
18-34	22,357	17.2	27,018	18.0
35-44	20,564	15.8	17,153	11.4
45-64	35,099	27.0	47,318	31.6
65 and over	18,090	13.9	23,682	15.8

Source: U.S. Department of Commerce, Census Bureau, American Community Survey Office, Washington, DC, 2012, and U.S. Department of Commerce, Census Bureau, Systems Support Division, Washington, DC, 2000 (Headwaters Economics).

1. The data in this table are calculated by the American Community Survey using annual surveys conducted during 2007-2011, and the data are representative of average characteristics during this period.

This phenomenon of an aging population is not evenly distributed across the study area. Census tracts farther away from Flathead National Forest boundaries tend to have the highest percentage of residents 65 and over, save the northeastern region of Lake County (see figure 75). The aging of the study area population is significant as it could shift demand for recreation services. One possible way is with a larger

portion of the population entering retirement, residents may have more leisure time available for recreating on NFS lands.

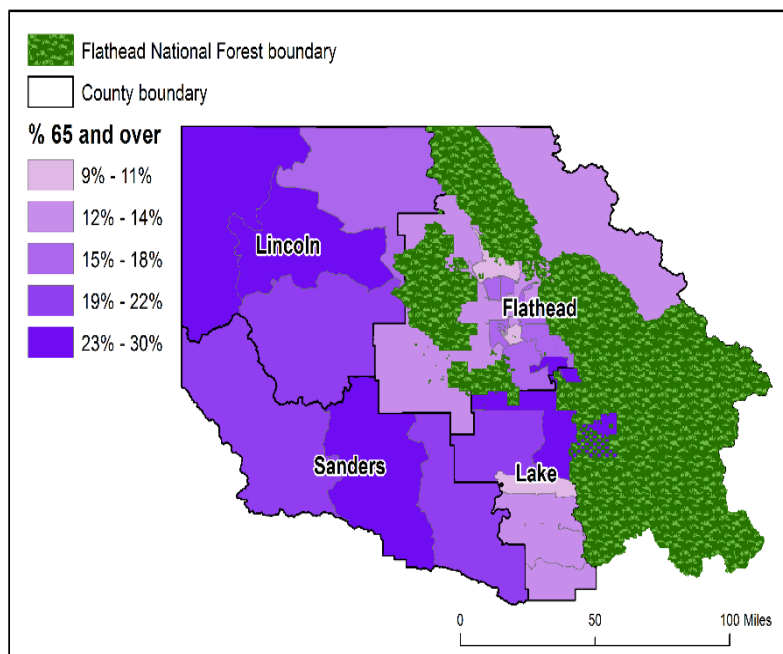


Figure 75. Percent of population 65 and over in the analysis area, by census tract.

Source: The data in the map are from the U.S. Census, American Community Survey, 2013 five-year tables (USCB, 2013).

Economy

Within the four-county analysis area, Flathead County is the largest population center; the main communities in the county are Kalispell, Columbia Falls, and Whitefish (figure 76). Compared to the rest of the multi-county area, Flathead County offers greater economic opportunities, with more diversified industries and higher earnings per capita. Sanders and Lincoln County, conversely, face higher rates of unemployment, lower earnings per job, and a high level of non-labor income from aging and hardship payments. Lake County falls somewhere between Flathead and the other two counties in that it has a different mix of demographics, and economic activity.

Overall, economic conditions in the analysis area lag behind national averages. Lower income levels and higher unemployment are reported from this region. Flathead County had the highest per capita income in 2014, at \$38,982, which was 16 percent lower than the U.S. average of \$46,049. Lincoln, Sanders, and Lake Counties recorded per capita incomes that were more than 30 percent lower than the national average. Unemployment was also higher than the national average for Lincoln and Sanders Counties (figure 77). Lincoln County recorded the highest unemployment rate in 2015, at 11.3 percent.

Additional economic concerns are raised by the data on non-labor personal income, which is high in this region—nearly 50 percent of recorded total personal income (figure 78). Non-labor personal income comes from three sources: investments, age-related payments such as Social Security, and hardship-related payments such as Medicaid. In the West, non-labor personal income is most often higher in rural counties, where fewer and less diverse opportunities for labor income exist. In the strongest metro-area economies, non-labor personal income is at or below 20 percent, and in the more challenged of rural economies, non-labor personal income rises above 50 percent. Across the analysis area, Flathead County

stands out, with dividends, interest, and rent income making up a higher percentage of non-labor personal income (24–48 percent of total). In the other three counties, age- and economic hardship-related payments make up a greater percentage of the non-labor personal income (Lawson, 2014).

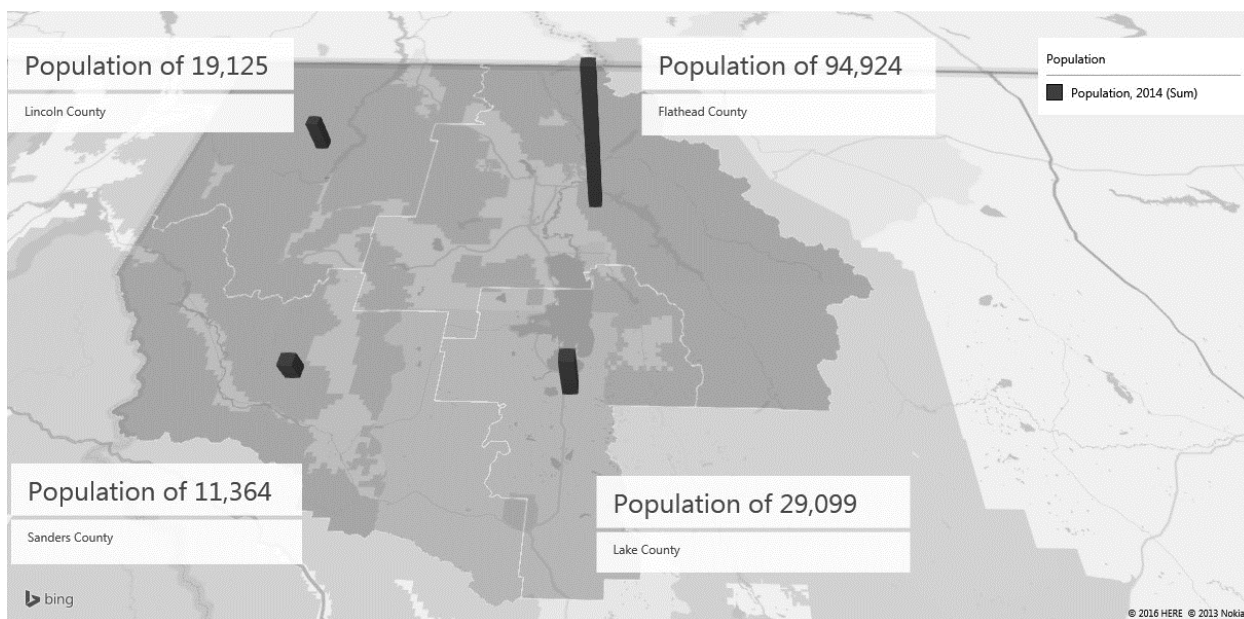


Figure 76. Population (2014) by county in the analysis area

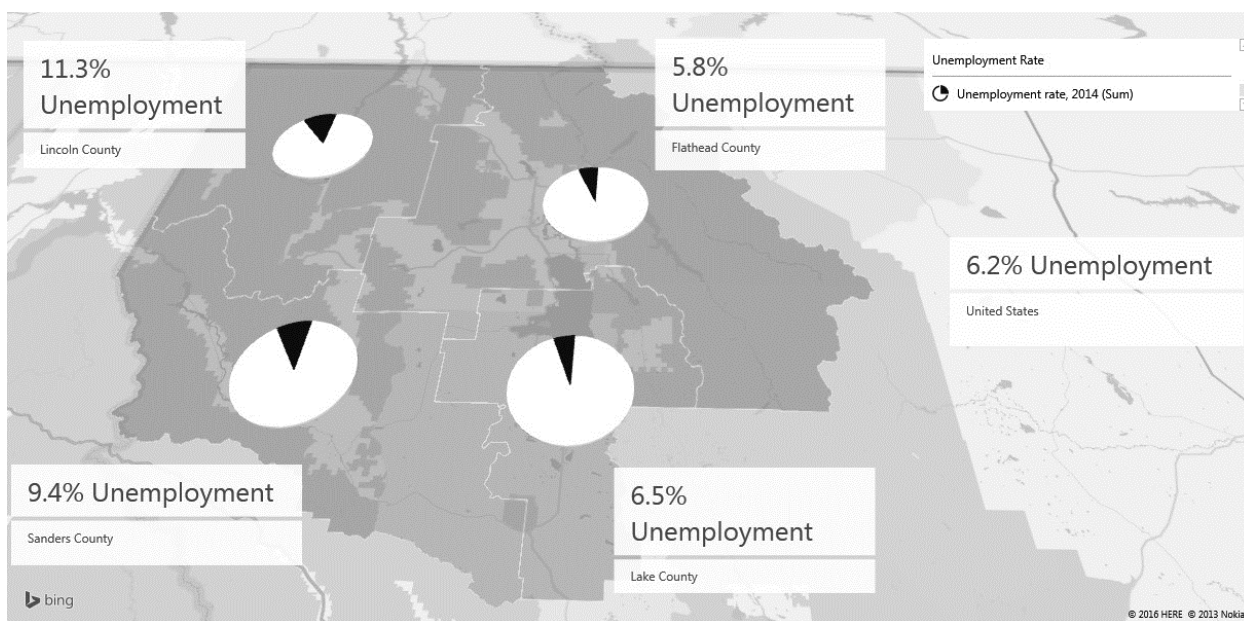


Figure 77. Unemployment rate by county in the analysis area

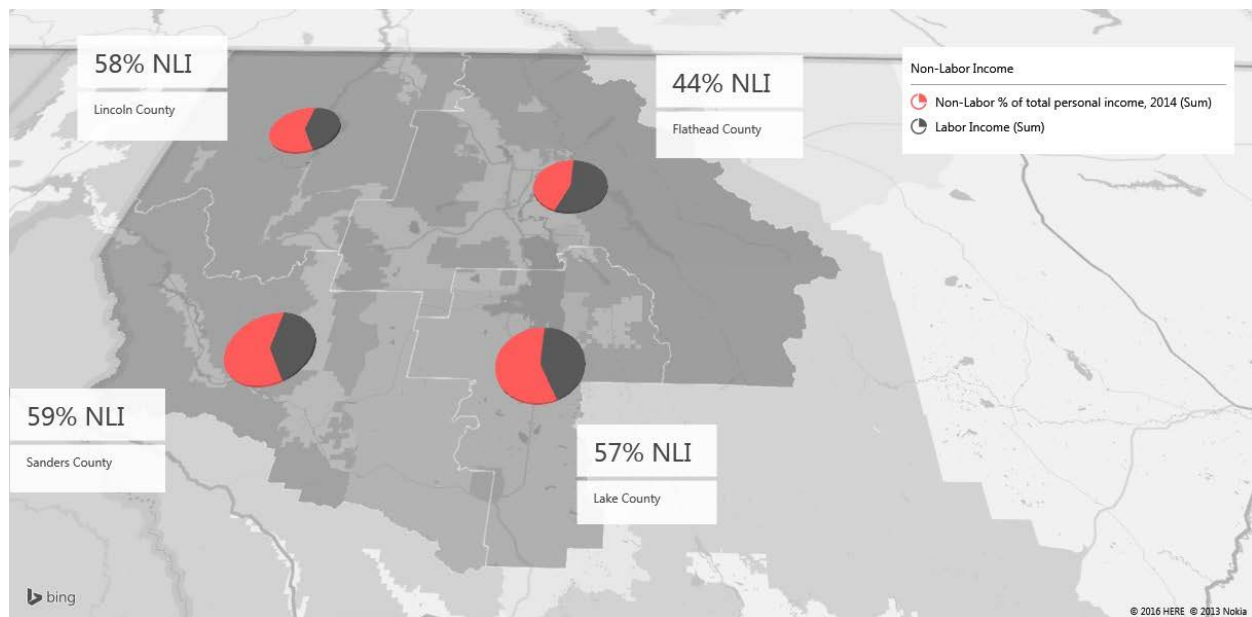


Figure 78. Non-labor income (NLI) by county

In table 173, non-labor personal income and other important economic measurements are listed across the analysis area. Comparing the population, economy, and land measurements for the county region, and individual counties to U.S. national averages provides additional information regarding the four-county analysis area surrounding the Forest.

Table 173. Population, economy, and land summary of the analysis area

Category	Economic Measure	Lake County	Flathead County	Lincoln County	Sanders County	County Region	United States
Population	Population, 2013, Total	29,099	94,924	19,125	11,364	154,512	318,857,056
Trends	Population change (%), 1970-2013	99.4	139.0	5.9	59.8	94.4	56.5
Trends	Employment change (%), 1970-2013	184.8	280.7	20.5	82.9	186.4	103.6
Trends	Personal income change (%), 1970-2013	280.1	325.0	54.9	160.1	241.6	178.7
Properity	Unemployment rate (%), 2014	5.8	6.5	11.3	9.4	7.1	6.2
Prosperity	Average earnings per job, 2013 (2014 dollars)	\$31,075	\$39,896	\$32,121	\$27,670	\$37,052	\$56,965
Prosperity	Per capita income, 2013 (2014 dollars)	\$31,460	\$38,982	\$30,996	\$29,094	\$35,849	\$46,049
Economy	Non-labor income, % of total personal income, 2013	57.4	44.4	58.3	59.4	48.9	35.8
Economy	Services employment, % of total employment, 2013	54.4	73.0	62.9	57.3	68.2	72.1
Economy	Government employment, % of total employment, 2013	22.8	9.0	14.1	13.5	11.9	12.9
Use Sectors	Timber employment, % of total private employment, 2013	2.3	3.5	5.5	6.5	3.7	0.7
Use Sectors	Mining employment, % of total private employment, 2013	0.1	0.1	4.6	1.0	0.5	0.6
Use Sectors	Fossil fuels (oil, gas, & coal) employment, % of total employment, 2013	0.0	0.0	0.1	0.0	0.0	0.5
Use Sectors	Other mining employment, % of total employment, 2013	0.1	0.1	4.5	1.2	0.5	0.3
Use Sectors	Agriculture employment, % of total employment, 2013	8.7	1.8	3.9	9.7	3.5	1.4
Use Sectors	Travel & tourism employment, % of total private employment, 2013	17.8	20.1	19.5	22.4	19.9	15.5
Federal Land ¹	Federal land, % of total land ownership	16.5	72.9	75.4	54.4	62.8	28.8
Federal Land ¹	NFS lands, % of total land ownership	15.1	52.7	74.1	53.8	54.1	8.4
Federal Land ¹	Bureau of Land Management, % of total land ownership	0.0	0.0	0.0	0.0	0.0	11.1
Federal Land ¹	National Park Service, % of total land ownership	0.0	19.1	0.0	0.0	7.6	3.4
Federal Land ¹	Military, % of total land ownership	0.0	0.0	1.3	0.0	0.4	1.1
Federal Land ¹	Other federal land, % of total land ownership	1.5	1.1	0.0	0.6	0.7	4.7
Federal Land ¹	Federal land, % Type A*	17.9	55.4	3.4	5.5	28.2	40.3
Federal Land ¹	Federal payments, % of government revenue, FY2012	1.9	5.2	24.8	22.8	9.2	-
Development	Residential land area, % change, 2000-2010	44.7	37.7	75.5	70.2	47.0	12.3
Development	Wildland-urban interface, % developed, 2010	12.2	27.2	15.1	6.6	15.5	16.3

Source: Headwaters Economics Economic Profile System, 2015.

* Federal public lands that are managed primarily for natural, cultural, and recreational features. These lands include National Parks and Preserves (NPS), Wilderness (NPS, FWS, FS, BLM), National Conservation Areas (BLM), National Monuments (NPS, FS, BLM), National Recreation Areas (NPS, FS, BLM), National Wild and Scenic Rivers (NPS), Waterfowl Production Areas (FWS), Wildlife Management Areas (FWS), Research Natural Areas (FS, BLM), Areas of Critical Environmental Concern (BLM), and National Wildlife Refuges (FWS).

In terms of land base, Flathead and Lincoln County boundaries have a higher percentage of public land in that approximately three out of every four acres are Federal land (figure 79). Among private industries that utilize these lands, the travel and tourism industries remain the largest in terms of employment (figure 80). For example, Flathead County maintains a travel and tourism industry that is roughly 10 times the size of the county's private forestry and forest products sector.

Income and jobs

The Flathead assessment included extensive information on income and jobs for the analysis area. Table 89 in the assessment (USDA, 2014a, pp. 56-57) displays average earnings per job, per capita personal income, total personal income, and components of personal income for the analysis area. The assessment indicates that, although per capita personal income is increasing for all four counties, per capita personal income in Montana, at \$39,684, was lagging somewhat behind the national average of \$42,433 in 2011. For three of the counties in the analysis area, per capita personal income was substantially lower than both the state and the nation. Lake, Lincoln, and Sanders Counties' per capita income ranged from \$26,609 in Sanders County to \$28,556 in Lake County.

In many places, non-labor personal income is the single largest component of total personal income and also the largest source of new personal income. For the four counties in the analysis area, only in Flathead County were labor earnings (56.2 percent) a larger component of personal income than non-labor earnings. Sanders County, at 57.9 percent, had the largest percentage of personal income attributable to non-labor income.

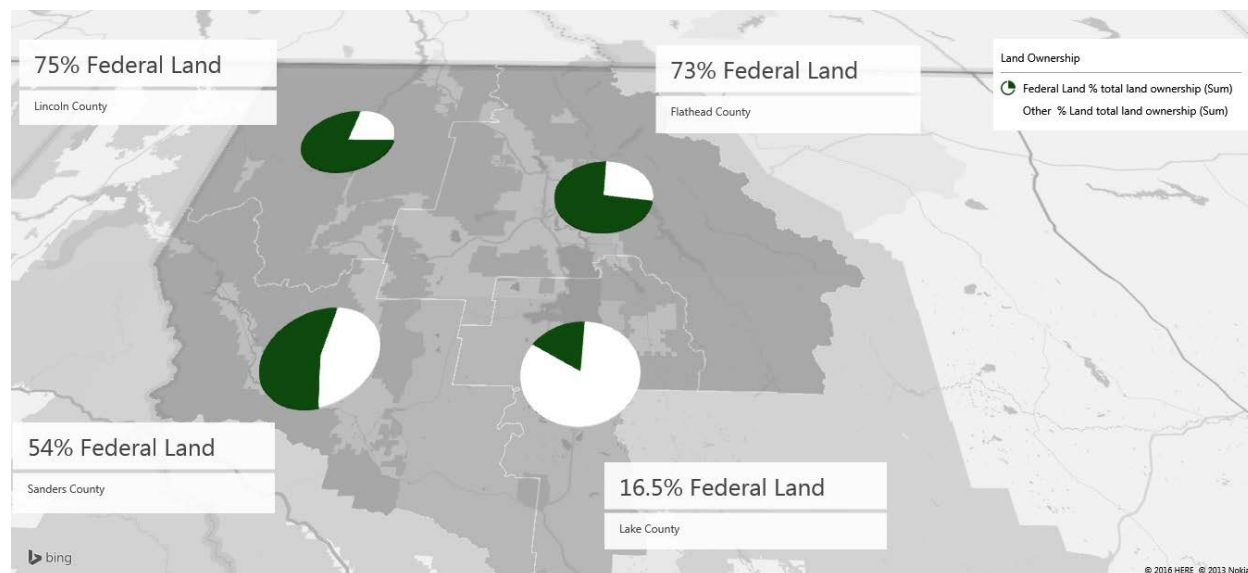


Figure 79. Federal land ownership by county in the analysis area

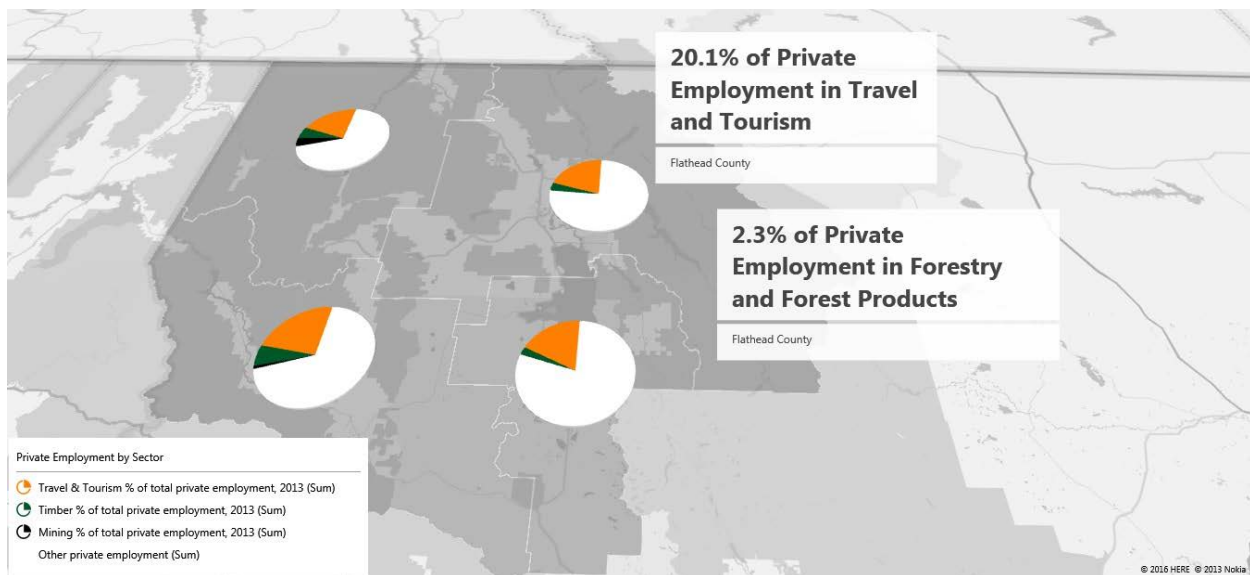


Figure 80. Private employment sectors by county in the analysis area

From 1970 to 2011, there was enormous growth in income-maintenance transfer payments (welfare payments), which grew from \$8 million to \$261 million (in 2011 dollars). Although other types of transfer payments have also seen large increases over this period, the large rise in income-maintenance payments can have important implications for social and economic sustainability. It also indicates a need for land management agencies to pay particular attention to this segment of society when assessing environmental justice impacts. This is particularly important in Lake County, where the percentage of non-labor income derived from income-maintenance payments (at 6.7 percent) is higher than either the state (4.6 percent) or the nation (6.3 percent).

Employment is also an important indicator of the economic health of an area. Employment (measured as total surveyed jobs in the economy) in the state of Montana increased 12.3 percent from 2001 to 2011, down from the 28 percent increase reported from 1990 to 2000. Except for Flathead County, where employment increased by 15.5 percent from 2001 to 2011, all other counties in the analysis area saw employment growth that was slower than that of the state as a whole.

The Flathead assessment also contains detailed information on employment by place of work, type of work, and industry, as well as the amount and percentage of employment in each category (service vs. non-service sectors; wage earners vs. proprietors) for the state of Montana and the four-county analysis area (USDA, 2014a, tables 90-93).

Services-related employment (which includes a wide range of jobs, from restaurant workers and software developers to doctors) makes up a larger share of the economy than does non-service-related employment in the analysis area. Over the 10 years from 2001 to 2011, services-related employment increased for all counties in the analysis area, ranging from a 3.2 percent increase in Lake County up to a 25 percent increase in Flathead County. On the other hand, non-services-related employment (such as farming, forestry, mining, construction, and manufacturing) decreased between 7 to 16 percent for the four counties in the analysis area.

From 1990 to 2012, all four counties in the analysis area had a higher rate of unemployment than the state of Montana. With a few exceptions, Lincoln County had the highest unemployment rate in the four-county analysis during these years, ranging from a high of 16 percent in 1994 down to 6.4 percent in

2006. See figure 92 in the Flathead assessment (USDA, 2014a, p. 54) for the average annual unemployment rate in the four-county analysis area.

In terms of the industries that relate most directly to NFS lands, agriculture and timber-related industries make up a relatively low percentage of the total private employment in the analysis area. Travel and tourism make up a larger portion of private employment in this area. In figure 81, these specific industries are displayed based on the percent of private employment they contribute to the overall economy in the analysis area. In Sanders County, for example, timber industry employment is a much higher percentage than employment in arts, entertainment, and recreation. Conversely, in Flathead County these employment sectors are nearly equal. In all counties considered, accommodations and food services employs more individuals than all other sectors considered, combined.

The trends in these national forest-related industries are different. In figure 82, timber-related employment, tracked from 1998-2013, diverges from the other forms of employment in the analysis area. This data coincides with other evidence of the region's timber industry's decline over recent decades. Conversely, in figure 83, a different trend is evident, in which travel- and tourism-related employment grows in step with employment in the rest of the analysis area. Although both sectors are tied to NFS lands, the timber industry is declining in its employment presence relative to other industries. This makes the significance of impacts to the timber industry less significant in terms of the impact to the overall economy. However, it places greater significance, or sensitivity, on the impacts to the timber industry when considering the industry in isolation, as its own beneficiary.

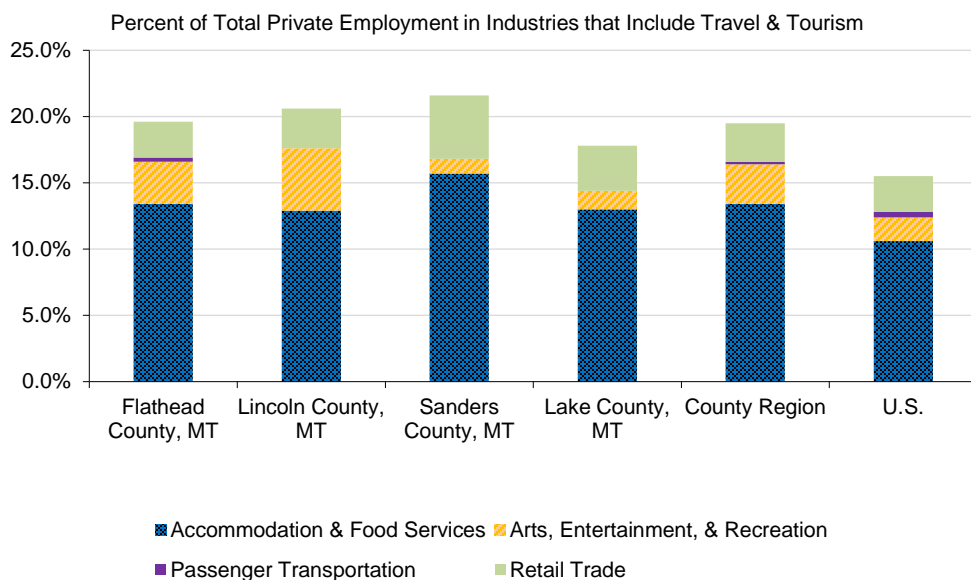


Figure 81. Percent of employment represented by industries that support travel and tourism compared to timber in counties within the analysis area

Source: Headwaters Economics Economic Profile System, 2015.

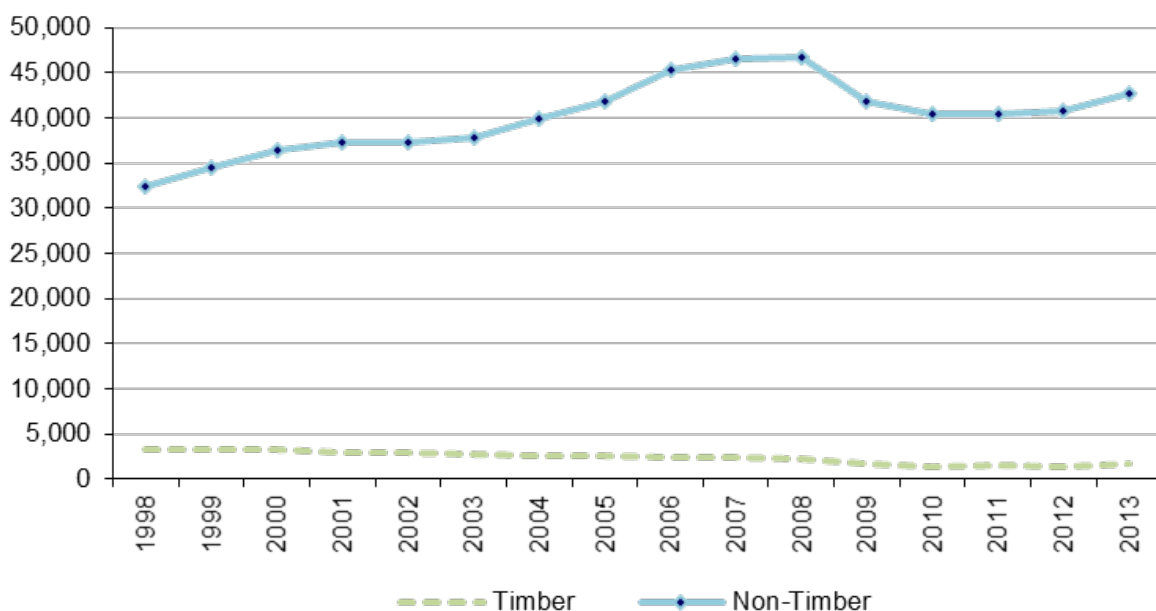


Figure 82. Timber vs. non-timber private employment in counties within the analysis area

Source: Headwaters Economics Economic Profile System (Headwaters Economics).

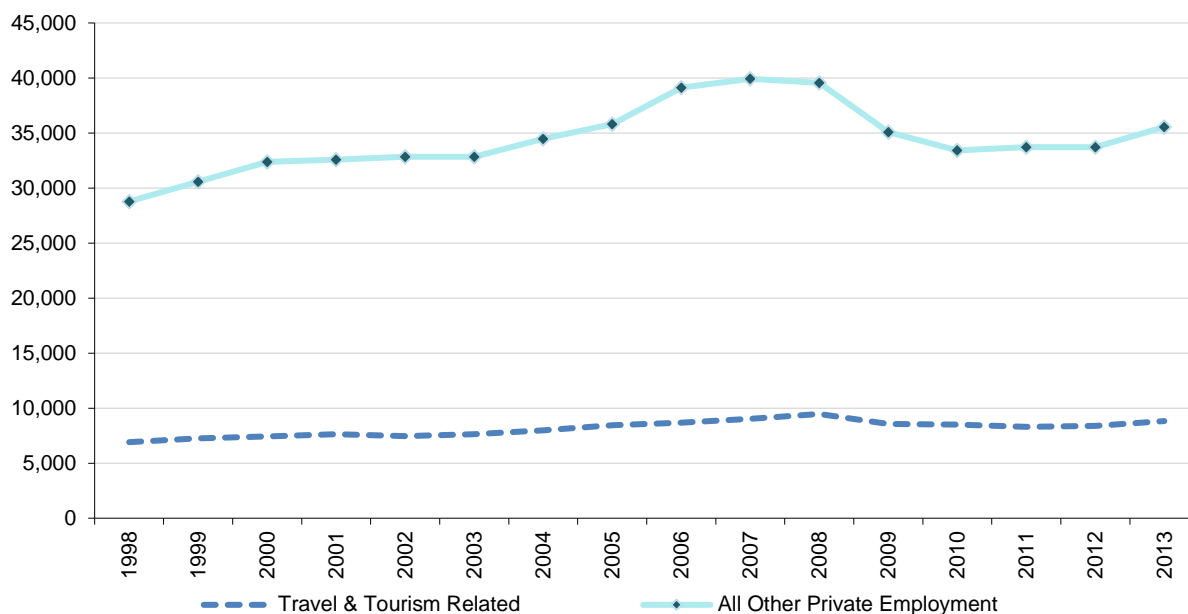


Figure 83. Travel and tourism vs. non-travel private employment in counties within the analysis area

Source: Headwaters Economics Economic Profile System (Headwaters Economics).

Poverty

In the 2007-2011 period, Lake County had the highest estimated percentage of individuals living below poverty (23.2 percent), and Flathead County had the lowest (12.7 percent) (table 174). In this same period, Sanders County had the highest estimated percentage of families living below poverty (16.3 percent), and Flathead County had the lowest (9.1 percent).

Table 174. Poverty level by age and family type in Montana and by county, 2011¹

Family Type	Montana	Flathead	Lake	Lincoln	Sanders	County Region	United States
People	958,682	89,319	28,170	19,323	11,206	148,018	298,787,998
Families	256,806	24,188	7,949	5,987	3,381	41,505	76,507,230
Individuals below poverty (% of total)	139,904 (14.6)	11,325 (12.7)	6,533 (3.2)	3,933 (20.4)	2,371 (21.2)	24,162 (16.3)	42,739,924 (14.3)
Families below poverty (percent of total)	25,026 (9.7)	2,212 (9.1)	1,254 (15.8)	893 (14.9)	550 (16.3)	4,909 (11.8)	8,000,077 (10.5)

1. The data in this table are calculated by the American Community Survey using annual surveys conducted during 2007-2011, and they are representative of average characteristics during this period. Source: U.S. Department of Commerce, Census Bureau, American Community Survey Office, Washington, DC, 2012 (Headwaters Economics).

In summary, the affected economic environment in the analysis area is mixed across counties. The counties that remain most sensitive to Forest Service planning are those with a higher percentage of private employment in industries that benefit directly from adjacent National Forest lands. Furthermore, counties with higher poverty rates, higher unemployment, lower income per capita, and higher non-labor personal income will remain more vulnerable to impacts to employment (i.e., labor opportunities and income).

Quality of life

The quality of life of local beneficiaries is discussed below. For ease of analysis, quality of life is divided into three main categories: well-being; health and safety; and traditional, cultural, and spiritual practices.

Well-being

General indicators of the well-being of populations are educational attainment, income, and jobs. Income and jobs were addressed in the previous section; this section focuses on education.

Educational attainment

Educational attainment (the highest level of formal education a person has received) is a common indicator of well-being as it is linked to a host of social and economic outcomes, including median earnings, homeownership, health, and children's outcomes. Those with higher levels of educational attainment are also considered less vulnerable to economic and environment shocks (such as the Great Recession and climate change) (Romero Lankao & Qin, 2011). Lack of education is closely linked to poverty. At the county level, studies show that areas with a more highly educated workforce grow faster, have higher incomes, and suffer less during economic downturns than other areas. Those with higher levels of educational attainment also tend to be more civically engaged, with higher rates of voting and volunteering and lower rates of criminal behavior (Dee, 2004).

In the four-county analysis area, for the years 2007-2011, educational attainment levels are above the state and national averages in terms of high school graduates (see table 175). The vast majority of residents, aged 25 and above, in the study area, 90.5 percent, have graduated from high school. One quarter (24.8 percent) have earned a bachelor's degree or higher. This rate is slightly below the national level and the State level of 28.2 percent. There are also significant differences in educational attainment among the counties. Flathead and Lake Counties track closely to state and national averages, but Sanders and Lincoln Counties trail behind. Only 16.5 percent and 17.2 percent of residents (25 and older) in Sanders and Lincoln Counties, respectively, had earned a bachelor's degree or above. These disparities in

educational attainment suggest that Flathead and Lake County residents may be less socially vulnerable than their counterparts in Lincoln and Sanders Counties.

Table 175. Educational attainment as percent of total population age 25 and over, in Montana, by county in the analysis area, and in the United States

Education	Montana (%)	Flathead (%)	Lake (%)	Lincoln (%)	Sanders (%)	County Region (%)	United States (%)
No high school degree	8.6	8.0	10.1	13.2	12.9	9.5	14.6
High school graduate	91.4	92.0	89.9	86.8	87.1	90.5	85.4
Associate degree	8.0	8.4	9.3	8.9	5.9	8.4	7.6
Bachelor's degree or higher	28.2	27.6	25.5	17.2	16.5	24.8	28.2
Bachelor's degree	19.4	19.3	16.1	12.1	12.8	17.2	17.7
Graduate or professional degree	8.8	8.3	9.3	5.0	3.6	7.7	10.5

* The data in this table were calculated by the American Community Survey using annual surveys conducted during 2007-2011, and they are representative of average characteristics during this period.

Source: U.S. Department of Commerce, Census Bureau, American Community Survey Office, Washington, DC, 2012 [accessed via EPS-HDT].

Well-being summary

Overall, residents of the four-county analysis area enjoy a relatively high level of well-being. The percentage with a high school degree and an associate degree is higher than that of the nation as a whole, which is a key social indicator of overall well-being. The percentage of those with a bachelor's degree, 17 percent, is on par with the national average. Income and jobs are also important indicators of well-being and are summarized in the Economy subsection above.

Health and safety

General indicators of the level of health and safety of communities include access to exercise opportunities, air quality, water quality, income inequality, violent crime, and life expectancy. The health and safety conditions of the study area are relevant to forest planning as certain land management decisions may improve or worsen county health conditions. Therefore, it is important to consider the current health levels and conditions in the study area. Indicators included in the County Health Rankings and Roadmaps (a database of community health indicators provided by the University of Wisconsin) most relevant to land managers include access to exercise opportunities, water quality, and air quality. Income inequality and violent crime rates are also pertinent as resource extraction projects may lead to the creation of "boom towns," which have been shown to increase income inequality, temporarily disrupt communal ties, and increase fear of violent crime in the short term (Smith, Krannich, & Hunter, 2001).

Table 176. Indicators of health and safety levels in the analysis area related to land management

Health and Safety Indicators	Montana	Flathead County	Lake County	Lincoln County	Sanders County
Access to exercise opportunities ¹	72%	79%	51%	95%	74%
Air pollution—particulate matter ²	10.9	11.4	11.3	11.4	11.2
Drinking water violations ³	12%	3%	27%	67%	6%
Income inequality ⁴	4.4	4.1	4.9	4.4	3.9
Violent crime ⁵	272	298	392	224	195

1. Percentage of population with adequate access to locations for physical activity.
2. Average daily density of fine particulate matter (2.5 micrometers or less in diameter) in micrograms per cubic meter.
3. Percentage of population potentially exposed to water exceeding a violation limit during the past year.
4. Ratio of household income at the 80th percentile to income at the 20th percentile.
5. Number of reported violent crime offenses per 100,000 population.

Source: County Health Rankings and Roadmaps (UWPHI, 2015).

There are significant disparities in health conditions across the four counties in the analysis area.

Although a large majority of the residents of Flathead, Lincoln, and Sanders counties enjoy access to exercise opportunities (defined as living reasonably close to a park or recreational facility such as a gym or pool), only 51 percent of residents in Lake County have adequate access.

The air pollution levels in the analysis area are only slightly above the state as a whole and are relatively constant across the four counties. The low levels of air pollution local beneficiaries enjoy are likely due, in part, to the high concentration of forested land in the area. Section 3.9 contains more details on air quality on the Flathead National Forest.

Although current air pollution levels are low, some residents in the analysis area have been exposed to significant pollution from the asbestos-contaminated vermiculite ore taken from the W.R. Grace mine near Libby, Montana. The exposure to asbestos from mining operation resulted in significant impacts to the health of Lincoln County residents.

The Lake County violent crime rate is significantly higher than the other three counties and over one third higher than the state average.

Lake and Lincoln Counties have also experienced higher than average rates of exposure to unsafe drinking water (measured as reported Environmental Protection Agency violations of drinking water systems). Violations could be related to maximum contaminant levels, treatment techniques, and/or monitoring and reporting requirements to ensure that water systems provide safe water. For more details on water quality on the Flathead National Forest, see section 3.2.8.

Income inequality, a marker of social cohesion (Wilkinson & Pickett, 2006), also varies across the study area. In Lake County, households in the top 20 percent of the income distribution earn almost five times as much as those in the bottom 20 percent. In Sanders and Flathead Counties, households at the top earn four times as much.

A common indicator of overall health used by the World Health Organization and other international organizations is life expectancy at birth. This measures the number of years a child born today is expected to live, given current mortality trends. It is considered by public health professionals a helpful snapshot of the overall health levels in a given area. The Institute of Health Metrics and Evaluation at the University of Washington calculates life expectancy for U.S. counties. In 2013, the life expectancy at birth for males in Montana was 76.4 years, slightly below the U.S. average of 76.5. Although the levels of life expectancy do not differ substantially across counties, it is worth noting that the life expectancy in Flathead County is about two years longer than that in Lincoln County, for both men and women. In Lake County, female life expectancy is above the state average but male life expectancy is slightly below.

Table 177. Life expectancy at birth

Life Expectancy	United States	Montana	Flathead County	Lake County	Lincoln County	Sanders County
Life Expectancy at Birth (Males)	76.5	76.4	77.1	75.5	75	76.2

Life Expectancy at Birth (Females)	81.2	81.2	82.4	82	80.1	80
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Source: U.S. Health Map, Institute of Health Metrics and Evaluation, 2013, University of Washington, Seattle, WA,
<http://vizhub.healthdata.org/us-health-map/>.

The health conditions identified using the County Health Ranking indicators above may be contributing to the lower-than-average life expectancies observed in Lincoln and Lake Counties and the higher than average levels in Flathead County.

Health and safety summary

The analysis area enjoys a relatively high level of health and safety. Life expectancies for all counties are at or near the state level. Air pollution is only slightly above the state level, highlighting the importance the Forest plays in providing clean air. Water quality varies by county, with both Lincoln and Lake Counties receiving a high level of violations, likely due to the quality of the systems providing drinking water rather than the water quality on the Forest. All counties except for Lake County enjoy a high level of access to exercise opportunities, likely due in part to their proximity to outdoor recreation activities on the Forest.

Traditional, cultural, and spiritual values

The Forest has been supporting cultural traditions for thousands of years, and its landscapes serve as a reminder of traditions shared across generations. Contemporary uses of resources and places are critical to maintaining the cultural identity of these communities. Given the ranges of uses, it is not surprising that beneficiaries hold conflicting values and understandings of how the Forest should be managed. Whereas nearly half of Americans believe more public lands should be designated as wilderness, the remainder believe the current amount is either sufficient or too high (Scott, 2003). Although some favor motorized recreation opportunities, others prize more primitive experiences. The following section discusses the benefits the Forest provides to local beneficiaries and the general public in terms of opportunities to express traditional, cultural, and spiritual values. For more detailed information on traditional, cultural, and spiritual values, see section 3.26.

Traditional, cultural, and spiritual values summary

Beneficiaries of the Forest enjoy a high level of opportunity to express traditional, cultural, and spiritual values. The Forest provides these opportunities by employing a multiple-use management strategy that allows for timber harvest and the gathering of forest products, grazing, outdoor recreation, scenery, fishing, hunting, wildlife viewing, inspiration (spiritual and existence values), solitude, and cultural/heritage values.

Social benefits

The Forest contributes to economic and social sustainability by providing the following key benefits. These benefits provide income and jobs and/or enrich the quality of life of local communities and the general public. This is not an exhaustive list of all the benefits the Forest provides. These are “key” benefits—those that were identified as highly valued and likely to be affected by the forest plan.

Water quality

The provision of abundant clean water is a key forest ecosystem service that contributes to human health and safety. Although forests, forest soils, and watersheds provide a considerable amount of clean water to human populations, human uses and natural events can also diminish a forest’s ability to provide plentiful, clean water. The primary water pollutant delivered from NFS lands is sediment, which in high, sustained concentrations can limit the ability of watersheds to support aquatic life. Sediment can also be a

maintenance cost concern for municipal watersheds and, if untreated, can lower the quality of drinking water, changing both its smell and taste.

Surface water quality is regulated under the authority of the U.S. Clean Water Act, whereby Montana's Department of Environmental Quality assesses waters within its jurisdiction and reports to the Environmental Protection Agency those stream segments and other waterbodies with "impaired" quality, meaning they do not meet water quality standards for beneficial uses. These segments or bodies of water must then be assigned and regulated by a total maximum daily limit and monitored for improving conditions.

Within the Forest, the Montana Department of Environmental Quality identified sediment-caused impaired conditions on Logan, Sheppard, Coal, Goat, and Jim Creeks. Additionally, Haskill Creek was ranked as a top municipal water supply priority of the USFS Legacy Program due to rising concerns about increasing sediment caused by human modifications, including permanent developments.

Groundwater is also an important resource in Montana, and it will likely become more important in the future as the state's population and industries grow. More than half of Montanans depend on groundwater for their primary water supply. According to the Natural Resource Information Service, groundwater provides 94 percent of Montana's rural domestic water supply and 39 percent of the public water supply. Water generated in the mountains of the Forest is an important source of recharge for valley aquifers and is therefore an important Forest product.

Groundwater can be contaminated by leaks from underground fuel storage tanks and pipes, leaks from cemeteries, leaks from waste disposal sites such as landfills, seepage from septic systems and cesspools, accidental spills from truck and train mishaps, saline runoff from roads and highways, seepage from animal feed lots, irrigation return flow, leaching and seepage from mine spoils and tailings, and improper operation of injection wells (Keller, 1992). None of these activities occurs on the Forest, although hauling of coal from North Dakota on railcars along the Middle Fork of the Flathead River remains a concern to water quality and human health and safety.

Water quality on and around the Forest remains relatively high, and delivery of water from the Forest to municipal sources, including valley aquifers, will remain an important ecosystem service contributing to the social and economic landscape surrounding the Forest.

Clean air

The provision of clean air and the cleansing of air are two key Forest ecosystem services that contribute to human health and safety in the area. Healthy forests respire oxygen and actively scrub particles and gaseous pollutants out of the air, but they can also become a liability to air quality during wildfires. The primary pollutant delivered from NFS lands is smoke, which contains three of six regulated pollutants: carbon monoxide, particle matter, and volatile organic compounds. These pollutants can negatively impact human health and can contribute to unsafe visibility conditions.

Inspiration and spiritual values, existence values, and solitude

The opportunity to experience solitude or a spiritual connection to nature is another benefit the Forest provides. These inspirational benefits enhance the quality of life of those who hold these values. Both local community members and the general public enjoy these benefits. People can be inspired by and connect with nature in all recreation opportunity spectrum classes (see section 3.10 for a description of the recreation opportunity spectrum). For some user groups, such as backpackers and backcountry skiers, primitive and semiprimitive nonmotorized settings provide the most inspirational opportunities associated with solitude. For motorized and mechanized recreation users, roaded natural and rural settings provide

the most inspiration or opportunities to connect with nature through activities such as snowmobiling, skiing, and camping in developed campgrounds. For others, simply knowing that wild lands (such as wilderness), wildlife (such as grizzly bear and lynx), and wild and scenic rivers exist in the Forest is a benefit, even if they never plan to visit. Native American tribes in the region hold particularly strong existence values around grizzly bear (Kellert, Black, Rush, & Bath, 1996). The existence of these lands and species, in and of themselves, serves as an inspiration and enhances their quality of life (Watson, Martin, Christensen, Fauth, & Williams, 2015). For others, opportunities to experience solitude, particularly in wilderness areas, is a benefit (McKenna et al., 2016).

For more details on specific areas where visitors may experience inspiration through solitude or a spiritual connection to nature on the Forest, see sections 3.10, 3.14, 3.15, and 3.17. For more details on rare species, see section 3.7.

Cultural and heritage values

The plan area is the traditional homeland of the Kootenai and Salish peoples and, to a lesser extent, the Blackfeet people. The Flathead National Forest contains many historic and prehistoric sites that are valued by local communities, tribes, and the general public. The Forest is generally perceived as an important part of the culture and heritage of area communities and is recognized as protecting a number of sites of cultural and historical importance. Many stakeholders believe that Forest management of these sites increases public awareness of and access to opportunities to learn about and interpret the sites' cultural and historic significance. By preserving and facilitating the interpretation of these resources, the Forest provides cultural legacy and heritage values and helps ensure that these values will be passed on to present and future generations. The existence of these sites, as well as the ability to access these sites, increases the quality of life of those of who value them.

In addition to specific cultural sites, ecosystem integrity also contributes to the sustainability of tribal belief systems. These belief systems, including traditional ecological knowledge, are inextricably linked to ecosystem health and resilience (CTKW, 2014).

For more details on the cultural and heritage sites on the Forest, see section 3.25.

Carbon sequestration and climate regulation

Measuring the degree to which national forests contribute to carbon sequestration and climate regulation is a complex matter because forest soil and stand conditions, along with human uses and natural events, all affect the sequestration and release of greenhouse gases. The Forest Service recognizes the vital role that carbon sequestration plays in mitigating greenhouse gases emissions. Carbon dioxide uptake by forests in the coterminous United States offsets over 14 percent of the national total carbon dioxide emissions each year (EPA, 2013). Forests and other ecosystems are carbon sinks because, through photosynthesis, growing plants remove carbon dioxide from the atmosphere and store it. For a description of the carbon storage potential on the Flathead National Forest and its association with greenhouse gas emissions and climate change, see section 3.4.

Flood control

Forest vegetation and soils provide help with flood control. As the wildland-urban interface continues to expand, more people and property may be at risk of flooding. By minimizing erosion and maintaining healthy riparian areas, the Forest ecosystem mitigates flood risk to communities. Fire is also a main driver of erosion and flood risk. By helping to maintain a healthy ecosystem and reduce fire risk, the Forest provides for flood control.

Forest products, vegetation management, and forage

Forest products are key income- and job-sustaining resources provided by the Forest. Forest products provide a wide range of incomes across a number of economic sectors, from raw materials for wood products manufacturing to foraged products that are often sold in local markets. As discussed earlier, forest products are linked to a sector of the economy that is shrinking relative to other areas of activity in the four-county analysis area. This is both a limiting factor in the potential scale of economics impacts and, simultaneously, increases impact sensitivity for this particular beneficiary group.

Outdoor recreation

Outdoor recreation contributes to income, jobs, and quality of life. Outdoor recreation on the Forest generates a considerable amount of income and sustains a number of jobs by helping drive demand for goods and services that support recreational travelers and recreational activities. Downhill skiing, for example, generates direct and indirect spending and jobs related to the recreation, food and hospitality, and arts and entertainment sectors. Although recreation by local visitors is important, the recreational activities of non-local parties are especially important to track because their spending on goods and service is higher than that of local visitors (Stynes & White, 2006). For more details on recreational use, see section 3.10.

Scenery

Scenery is a key benefit of the Flathead National Forest and contributes to well-being. Local community members enjoy the scenic values of the Forest lands on a regular basis. Many have the opportunity to view scenic landscapes on the way to work or during their daily routine. The opportunity to enjoy these scenic landscapes is a key benefit to analysis area residents. Scenery is also a benefit to visitors who come to the area for business or recreation, and it contributes income to local communities (Berrens, Talberth, Thacher, & Hand, 2006). There are many areas with high scenic integrity throughout the Forest. Property values are affected by high-quality scenery, which contributes to higher rental incomes and home values (Berrens et al., 2006). For more detailed information on the scenery resource, see section 3.11.

Fish and wildlife

Fish and wildlife from the Forest contribute to the overall income and jobs benefit by influencing non-local travel and, ultimately, influencing key forms of travel and recreation. Hunting, fishing, and wildlife viewing generate considerable direct and indirect spending and jobs in the recreation, food and accommodation, and arts and entertainment sectors. In Montana, the hunting, fishing, and wildlife viewing economy is estimated to total over \$1.2 billion in direct annual expenditures (USDI-USDC, 2011). A good portion of this activity occurs in and around the Flathead National Forest as a result of wildlife and fish opportunities provided by the Forest.

Beyond spending and job creation, benefits to people from wildlife and wildlife experiences include more directly the opportunities for recreation, food provision, and a variety of less tangible, yet valued experiences. These values are not always accessible to measure as economic trends or quantitative data but are generally viewed to be a crucial quality-of-life factor for many of the residents around the Forest and for many who travel to this area of Montana seeking wildlife experiences.

Research/education

The Forest provides opportunities for research and education. This is a key benefit that enhances the quality of life for the local communities and as well as the general public. Research conducted on the Forest benefits the larger scientific community. Educational programming benefits those who take part, both local community members and the general public, by enriching their understanding of ecosystems, wildlife, and the cultural and heritage sites on the Forest. The educational programming on the Forest

offers a supplement to public education in the analysis area. The Forest also provides educational programming related to wildlife, wildfires, and general best practices in outdoor recreation that are invaluable in forest fire prevention as well as in instances of human-wildlife interaction. The Forest also contains six designated research natural areas that provide excellent opportunities for researchers to advance forest science. For more details on the research natural areas within the Forest, see section 3.20.

Other income and jobs (including payments to counties in lieu of taxes and Secure Rural Schools)

Agency operations, in addition to the other multiple-use resources, provide income and jobs to local economies surrounding the Forest. Another main economic relation between Federal land and county economies are Federal revenue-sharing and land payments, including Secure Rural Schools and payments in lieu of taxes. State and local governments cannot tax federally owned lands the way they can tax privately owned lands. As a result, a number of Federal programs exist to compensate county governments for the presence of Federal lands. These programs can represent a significant portion of local government revenue in rural counties with large Federal landholdings, such as the counties in the analysis area.

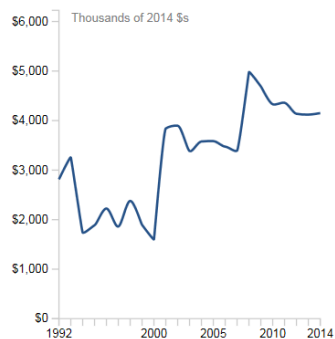
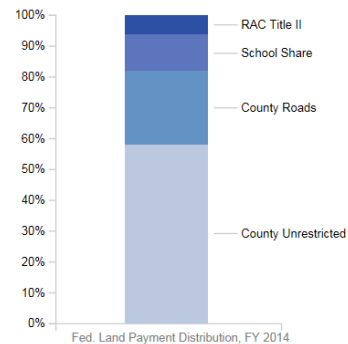
Before 1976, all Federal payments were linked directly to receipts generated on public lands. Congress funded payments in lieu of taxes, with appropriations beginning in 1977, in recognition of the volatility and inadequacy of Federal revenue-sharing programs. Payments in lieu of taxes are intended to stabilize and increase Federal land payments to county governments. More recently, the Secure Rural Schools and Community Self-Determination Act of 2000 decoupled Forest Service payments from commercial receipts. Secure Rural Schools received broad support because it addressed several major concerns around receipt-based programs—volatility, the payment level, and the incentives provided to counties by linking Federal land payments directly to extractive uses of public lands.

Payments in lieu of taxes and Secure Rural Schools each received a significant increase in Federal appropriations in fiscal year 2008 through the Emergency Economic Stabilization Act of 2008. Despite increased appropriations at times, Secure Rural Schools funding status remains in question. A number of bills presented in the 115th (2017-2018) Congress address Secure Rural Schools funding, but have not yet been passed by congress or into law.

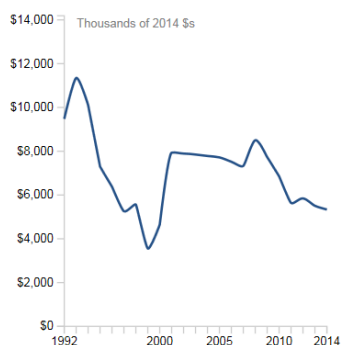
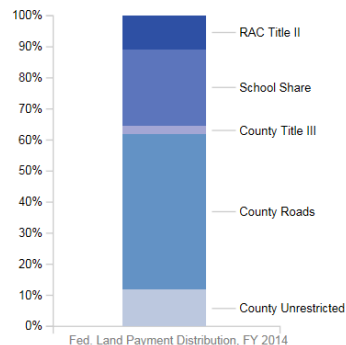
Payments in lieu of taxes formulas are specifically based primarily on population and acres of Federal land. Under this payment structure, Flathead County receives considerably higher payments in lieu of taxes (\$2.4 million annually) than the other counties in the analysis area. Conversely, Lincoln and Sanders Counties rely heavily on Secure Rural Schools payments, which make up a large percentage of their total Federal land payment. Four graphs that show the data that support this discussion are provided in figure 84.

Flathead, MT**Fed. Land Payments Sources, FY 2014**

Total Fed. Land Payment	\$4,150,925
FS SRS Title I	\$1,475,382
FS SRS Title II	\$260,362
FS SRS Title III	
FS 25% Fund	
FS Special Acts	
FS Owl Payments	
BLM O&C (SRS) Title I	
BLM O&C (SRS) Title II	
BLM O&C (SRS) Title III	
BLM 50% Revenue Share	
BLM O&C Owl Payments	
PILT Payment	\$2,415,181

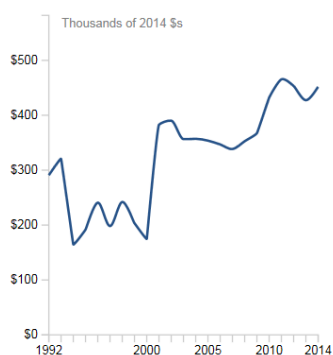
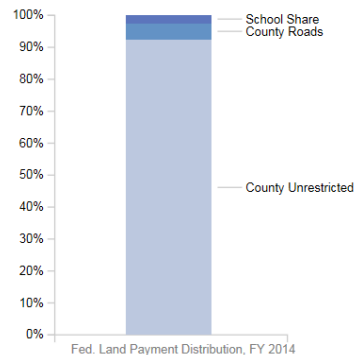
Federal Land Payments History**Programs Receiving Payments****Lincoln, MT****Fed. Land Payments Sources, FY 2014**

Total Fed. Land Payment	\$5,336,415
FS SRS Title I	\$4,002,038
FS SRS Title II	\$564,994
FS SRS Title III	\$141,248
FS 25% Fund	
FS Special Acts	
FS Owl Payments	
BLM O&C (SRS) Title I	
BLM O&C (SRS) Title II	
BLM O&C (SRS) Title III	
BLM 50% Revenue Share	
BLM O&C Owl Payments	
PILT Payment	\$628,135

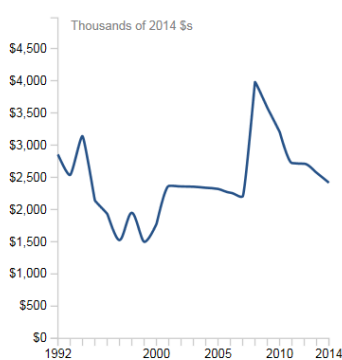
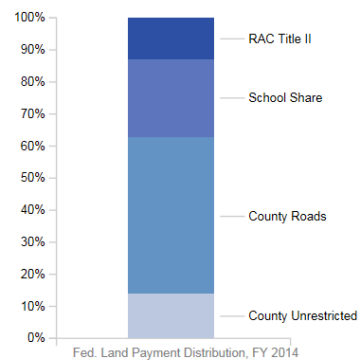
Federal Land Payments History**Programs Receiving Payments**

Lake, MT**Fed. Land Payments Sources, FY 2014**

Total Fed. Land Payment	\$451,757
FS SRS Title I	
FS SRS Title II	
FS SRS Title III	
FS 25% Fund	\$34,408
FS Special Acts	
FS Owl Payments	
BLM O&C (SRS) Title I	
BLM O&C (SRS) Title II	
BLM O&C (SRS) Title III	
BLM 50% Revenue Share	
BLM O&C Owl Payments	
PILT Payment	\$417,349

Federal Land Payments History**Programs Receiving Payments****Sanders, MT****Fed. Land Payments Sources, FY 2014**

Total Fed. Land Payment	\$2,416,489
FS SRS Title I	\$1,773,560
FS SRS Title II	\$312,981
FS SRS Title III	
FS 25% Fund	
FS Special Acts	
FS Owl Payments	
BLM O&C (SRS) Title I	
BLM O&C (SRS) Title II	
BLM O&C (SRS) Title III	
BLM 50% Revenue Share	
BLM O&C Owl Payments	
PILT Payment	\$329,947

Federal Land Payments History**Programs Receiving Payments****Figure 84. Federal land payments by source and county**

Source: Headwaters Economics Economic Profile System (Headwaters Economics).

Note. BLM = Bureau of Land Management, FS = Forest Service, Owl Payments = payments related to the spotted owl, O&C = Oregon and California, PILT = payment in lieu of taxes, RAC = Resource Advisory Council, SRS = Secure Rural Schools.

Fire suppression

The Forest and other Forest Service units provide wildland fire suppression services to local communities. These services contribute to the safety of community homes and infrastructure. Fire-suppression activities also provide jobs and income to local communities, as often local businesses are contracted to provide fire-suppression equipment and resources.

3.27.3 Environmental justice

In 1994, President Clinton issued Executive Order 12898, which directs Federal agencies to focus attention on the human health and environmental conditions in minority and low-income communities. The purpose of this order is to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects on minority and low-income populations.

Environmental justice is the fair treatment and meaningful involvement of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The goal of environmental justice is for Federal agencies to identify adverse impacts that are disproportionately high on minority or low-income populations and identify alternatives that will avoid or mitigate those impacts.

In the context of forest planning, it is important to assess whether the forest plan and alternatives would affect how key social benefits are currently distributed across populations. Specifically, the environmental justice mandate dictates that the Forest examine whether low-income and minority groups would be disproportionately deprived of these benefits or have more difficulty accessing these benefits compared to the population as a whole.

The census data presented in the previous sections describe the demographics of communities surrounding the Forest. These data indicate that there is a concentration of minority and low-income populations within the analysis area. These environmental justice populations are most prevalent in Lake County, where there are high concentrations of Native American families living below the poverty line.

3.27.4 Environmental consequences

The previous sections assessed the social and economic conditions and demographic trends in order to establish a baseline understanding of how the Forest contributes to the social and economic sustainability of local beneficiaries and the general public. The key dimensions assessed are how the Forest currently contributes to income, jobs, and the quality of life of local beneficiaries and the general public. The following section will consider the potential consequences of alternative management scenarios on contributions of the Forest to these three key dimensions of social and economic sustainability: income, jobs, and quality of life. Quality of life is subdivided into three subcategories: well-being, health and safety, and traditional, cultural, and spiritual values.

Effects common to all alternatives

Population trends

As described in the “Affected environment” section, the population of local beneficiaries of the Forest is growing, particularly in Flathead County, due to net in-migration. These new migrants, often referred to as natural amenity migrants, chose to migrate to the area, at least in part, due to the scenic beauty and outdoor recreation supported by the Forest. Communities close to the Forest, such as Whitefish, Montana, have become increasingly attractive as places to live because of their proximity to open spaces and natural settings that provide residents with easy access to recreational opportunities year-round. Under all the alternatives, these open spaces and natural settings would continue to contribute to a higher quality of life for area communities. As populations continue to grow due to natural amenity migrants, there will be increased demand for the benefits the Forest provides, including outdoor recreation, forest products, and fish and wildlife. Population growth in the wildland-urban interface is also a concern. The higher number of homes in these areas increases demand for fire suppression and increases the challenge of fire and fuels management efforts. For more details on how population growth affects fire and fuels management, see section 3.8.

Income and jobs

All alternatives provide similar economic contributions in relation to employment and labor income. Alternatives A, B modified, and D provide the highest levels of these contributions. Results of the economic contribution analysis appear in the two tables below. For more information regarding the following two tables, see Larson (2017). In table 178, labor income refers specifically to earned wage or proprietor income and does not include Social Security, Medicaid, dividends, or capital gains, i.e., government programs or investments. In table 179, employment refers to levels of employed individuals on an annual basis.

Income and employment levels contributed by the Forest and Forest Service operations do not fluctuate widely between alternatives. However, as shown in table 178 and table 179, income and employment

levels would be higher than current (years 2015 and 2016) for all alternatives. Alternatives A, B modified, and D all would produce more jobs and income over current levels, with alternative D producing the most. Alternative C would produce the least amount of jobs and income of the alternatives but would provide slightly more income than currently contributed from the Forest. Variation in employment, across alternatives stems from known differences in wood quantities sold, and hence more or fewer jobs from timber resources. It is anticipated that recreation related visitation to the Forest will increase over time, regardless of the alternatives and so the economic impact model does not differentiate visitation levels, or the recreation impacts between alternatives. However, the Forest anticipates increased local and non-local visitation through higher profile, focused recreation areas, and public information, including signage to those areas. Any benefits from the enhancements to focused recreation areas would be best captured in alternatives B modified and D, as these alternatives have the most focused recreation management.

For more information regarding the following two tables, see the IMPLAN Analysis (J. Larson, 2017).

Table 178. Labor Income in the analysis area by resource and by alternative (average annual labor income, in thousands of 2015 U.S. dollars)

Resource	Current (2015-2016)	A	B Modified	C	D
Recreation (non-local plus local)	\$12,209	\$12,209	\$12,209	\$12,209	\$12,209
Wildlife and Fish (non-local plus local)	\$2,618	\$2,618	\$2,618	\$2,618	\$2,618
Grazing	\$168	\$168	\$168	\$168	\$168
Timber	\$10,578	\$15,545	\$14,839	\$10,599	\$16,016
Minerals	\$0	\$0	\$0	\$0	\$0
Payments to States and Counties	\$5,008	\$5,008	\$5,008	\$5,008	\$5,008
Forest Service Expenditures	\$20,110	\$20,110	\$20,110	\$20,110	\$20,110
Total Forest Management	\$50,692	\$55,658	\$54,952	\$50,712	\$56,130

Table 179. Employment in the analysis area by resource and by alternative (direct employment contribution, estimated number of jobs)

Resource	Current (2015-2016)	A	B Modified	C	D
Recreation (non-local plus local)	532	532	532	532	532
Wildlife and Fish (non-local plus local)	95	95	95	95	95
Grazing	5	5	5	5	5
Timber	228	335	320	228	345
Minerals	0	0	0	0	0
Payments to States and Counties	125	125	125	125	125
Forest Service Expenditures	506	506	506	506	506
Total Forest Management	1,490	1,597	1,582	1,490	1,607

Federal land payments to counties

Under all the alternatives, payments in lieu of taxes and other Federal land payments would continue to reflect Federal land ownership and population growth patterns. Very little change is likely to occur in Federal land ownership; however, population change will remain a driving factor in future payment in lieu of taxes payments. Populations are not expected to fluctuate as a result of the alternatives, and therefore the payments in lieu of taxes are not expected to change across alternatives.

For Secure Rural Schools and other revenue sharing, Federal policy changes and executive budgets establish the structure of the payments and how they will continue into the future. Forest planning will not protect or guarantee these payments but may influence the payment levels, which are currently formulated on forest receipts. Alternative C may reduce forest receipts due to lower overall project levels. This would decrease revenue sharing proportionally.

Quality of life

Under all the alternatives, the Forest would continue to provide benefits to local beneficiaries and the general public that enhance their quality of life through contributions to well-being, health and safety, and traditional, cultural, and spiritual values. The contributions are described in detail in the subsections that follow.

Scenery

Direct and indirect effects: According to section 3.11 on scenery, under all alternatives there would be little to no change in the landscape character of a natural-appearing and naturally evolving forested landscape. Therefore, there would be no significant impact to the quality of life of local beneficiaries and the general public in terms of impacts to the scenic character of the Forest. For more detailed information on scenery, see section 3.11.

Research and education

Direct and indirect effects: Under all the alternatives, the Forest would continue to provide opportunities for research and education. Conservation education programs would continue to provide benefits to the public under all alternatives. According to section 3.20 on research natural areas, all six research natural areas would be maintained; there would be no adverse effects to these areas. Therefore, there would be no significant impact to the quality of life of local beneficiaries and the general public in terms of research and educational opportunities provided by the Forest.

Outdoor recreation and access

Direct and indirect effects: Under all the alternatives, the Forest would continue to offer a spectrum of recreation opportunities and settings to local communities and non-local visitors. Recreation spending has an important influence on local economies; however, it is not anticipated that recreation-related spending would significantly change across alternatives.

Though economic impacts from recreation are estimated to be similar across alternatives, substantive differences are anticipated in recreation experiences. For example, alternatives B modified and D have the same amount of focused recreation areas; these amounts are higher compared to alternative C and alternative A (which has no focused recreation areas). Focused recreation areas typically feature certain types of recreational activities that take place near or at a large lake or reservoir, developed ski area or year-round resort, large campgrounds, or trail systems for featured recreational activities. These areas recognize a variety of sustainable recreation settings and opportunities throughout the four seasons on the Forest. Management activities such as trail and facilities maintenance and increased visitor contacts and education would be emphasized. Recreational use is already occurring in many of these areas, but in some

cases, additional recreational opportunities such as mountain bike trails, hiking trails, or boat ramps would be enhanced or developed. This type of management area provides a focal point not only for existing recreation but also for new recreational activities, thus accommodating existing as well as increases in recreation. A primary benefit to recreationalists would be that the Forest Service would be able to respond better to changing use (patterns and demands), and conditions. Though focused recreation areas may or may not directly contribute to economic growth, the increased management emphasis and visibility of these areas might encourage additional recreational use.

Recreation activities are critically important to local communities; a high percentage (83 percent) of visitors to the Flathead National Forest live within 100 miles of the Forest. Though these visitors typically consume less goods and services per visit, collectively they do generate additional economic activity, especially when consumer spending would otherwise leak or occur outside of the area of interest (e.g., travel, online retailers, etc.). In total, it is estimated that local visitation to the Forest annually contributes \$4.4 million in local labor income.

Water quality

Direct and indirect effects: Under all alternatives, adherence to applicable laws and intentions, such as participation in watershed conservation networks, Forest restoration related to impaired watersheds, and best management practices, would continue.

Clean air

Direct and indirect effects: All action alternatives must meet air quality standards established by Federal and State agencies through the requirements of State implementation plans and smoke management plans. Use of prescribed fire under the action alternatives would be restricted in terms of how much vegetation can be burned and when and where burns can occur. The costs of conducting prescribed fire also increases as a result of burning regulations, which also affects how much vegetation is burned. The limitations related to the use of prescribed fire affect the rate and volume of smoke and particulate emissions, which in turn limit negative impacts on visibility.

Carbon sequestration and climate regulation

Direct and indirect effects: Under all the alternatives, management strategies would increase the likelihood of sustaining and perhaps increasing the Flathead National Forests' ability to sequester carbon over both the short and long term. All action alternatives include a desired condition addressing the sustainability of carbon storage and sequestration potential through maintenance or enhancement of biodiversity and function and managing for resilient forests.

Flood control

Direct and indirect effects: Under all the alternatives, the Forest will continue to mitigate flood risk to communities within the Forest watersheds by minimizing soil erosion and promoting healthy vegetation conditions across the Forest. The level of management activities does vary by alternative, but the extent to which soils are affected under each alternative will vary by project site, so it is not possible to determine differences in the extent to which the Forest may provide for flood control under each alternative. For more detailed information on soil and watershed impacts, see section 3.2.

Forest products

Direct and indirect effects: Under all the alternatives, the Forest would continue to provide opportunities for forest product utilization, including foraging for forest products such as huckleberry or mushroom picking. Opportunities for noncommercial forest product utilization would not vary greatly by alternative.

Traditional values associated with forest products would not be impacted greatly by any of the plan alternatives, although commercial timber harvest is decreased under alternative C.

As described in section 3.21, the projected wood sale quantities for alternatives A, B modified, and D are higher than the average wood products volume sold over the last five years (2011 through 2015), which was 5.7 million cubic feet per year. Only alternative C would produce less than the current timber sale levels.

Grazing

Direct and indirect effects: Under all the alternatives, the Forest would continue to provide opportunities for livestock grazing, including transitory forage. Opportunities for both existing and new grazing allotments would not vary greatly by alternative. Traditional values associated with range management would not be impacted greatly by any of the plan alternatives.

Fish and wildlife

Direct and indirect effects: Under all the alternatives, the Forest would continue to manage habitat to support diverse wildlife species. To the extent to which alternatives influence wildlife and wildlife habitat, there might be linkages to recreation opportunities and recreation spending. The most critical spending for local economies comes from non-local visitation. Though none of the alternatives is currently anticipated to have substantial impacts on wildlife-related recreation, it is important to note that were an alternative to promote or deter non-local wildlife recreation, it could lead to an impact on local economies. For more detailed information on specific wildlife impacts, see the fish and wildlife sections below under specific alternatives as well as section 3.7.

Cultural and heritage values

Direct and indirect effects: Under all alternatives, the Forest would provide protection and access to areas of cultural and historic importance.

Inspiration, spiritual values, and solitude

Direct and indirect effects: Under all the alternatives, the Forest would continue to provide opportunities for inspiration through outdoor recreation and protection of fish and wildlife, wild and scenic rivers, and wilderness areas. Opportunities for solitude are provided under all alternatives. Solitude and inspiration could occur in all recreation opportunity spectrum classes. For more details on areas and opportunities of inspiration (through solitude or spiritual connection to nature) on the Forest, see sections 3.10, 3.14, 3.15, and 3.17.

Alternative A—No action

Income and jobs

Under alternative A, the Forest would continue to provide economic opportunities and would sustain jobs and income to a similar degree as alternatives B modified and D, whereas alternative C would produce less. Alternative A, relative to alternative C, would allow for greater annual forest management activity and would sustain harvest volumes that would equate to approximately \$15.5 million in income and 335 jobs across all four counties. Relative to the entire county area economy, this is a relatively small impact, but to the timber industry specifically, this would be a noticeable change in economic activity.

Quality of life

Under alternative A, the no-action alternative, the Forest would continue to provide benefits to local beneficiaries and the general public that would enhance their quality of life through contributions to well-

being, health and safety, and traditional, cultural, and spiritual values. Contributions that differ for alternative A are described in the subsections below.

Water quality

The most significant change between action alternatives and the existing plan (alternative A) is the incorporation of additional forestwide standards that are specifically designed to protect aquatic resources. Alternative A would not implement these additional forestwide standards, but INFISH standards and guidelines would be carried forward and would largely provide for water quality. No specific plan components would exist for municipal watersheds and source water protection areas.

Outdoor recreation

Outdoor recreation influences quality of life, and alternative A would provide a wide variety of recreation opportunities and settings for users. Although alternative A does not have focused recreation areas, new campgrounds as well as trails may still be built under this alternative. However, focused recreation areas are designed to be more responsive to increases in recreational use than simply increasing site capacity, and alternative A might not offer the same level of responsiveness as alternatives B modified, C, and D.

Additional road closures or road reclamation would benefit individuals who enjoy accessing the Forest to view wildlife, hunt, or fish using nonmotorized means but would be of less benefit to individuals who enjoy accessing the Forest using motorized means of transportation.

Forest products

Under alternative A, commercial timber harvest levels would be higher than under alternatives C and B modified but less than under alternative D. Traditional values associated with forest products and forest product industries would not be impacted greatly by this alternative.

Grazing

Under the no-action alternative, grazing management, as outlined in the “Affected environment” subsection of section 3.24, would continue. Additionally, allotment plans and associated protections for forest resources would also continue. Forage management would continue to provide the necessary animal unit months designated on grazing permits. The quantity and size of grazing allotments could change from the current condition. Additional grazing allotments could be added if they were to meet the goals and guidelines of the existing management areas.

Under alternative A, the no-action alternative, more acres of timber would be suitable for timber harvest than under the action alternatives. This means that suitability and utilization for livestock grazing under alternative A could result in the creation of more transitory range than under the action alternatives. The no-action alternative would provide the most potential for transitory range creation.

Fish and wildlife

Benefits to people from wildlife and wildlife experiences vary broadly but generally relate positively with levels of biodiversity and sustainability. Evidence of this is observed in many places, including locations where biodiversity is demanded by the global tourism and travel industries. Beyond the present time, additional benefits from wildlife occur from repeated and generationally shared experiences. All alternatives would maintain wildlife habitat diversity and associated wildlife experiences and benefits, but the no-action alternative places more emphasis on reducing motorized access, less emphasis on habitat connectivity considering all lands, and less emphasis on sustainability with respect to a changing climate (see section 3.7 and appendix 7 for more details).

Inspiration, spiritual values, and solitude

Alternative A provides about 47 percent of the Forest that is in designated or recommended wilderness. These acres provide primitive and semiprimitive nonmotorized settings that often are associated with solitude, although many areas not within designated or recommended wilderness also provide for solitude. Visitors connect with nature through many different activities and thus are inspired not only in wilderness or primitive areas but also by activities such as snowmobiling, mountain biking, and camping in developed campgrounds. Thus, opportunities for inspiration are provided across the entire Forest for different desired experiences of visitors. This alternative provides more solitude and inspiration values associated with motorized and mechanized recreation opportunities than alternative C but less than alternatives B modified and D. It provides less solitude and inspirational values associated with wilderness and recommended wilderness than alternatives B modified and C but more than D.

Cultural and heritage values

For details on the effects to cultural and heritage resources under alternative A, see section 3.25.

Alternatives B Modified, C, and D*Income and jobs*

Under alternative B modified, the Forest would continue to provide economic opportunities and sustain jobs and income to a similar degree to alternatives A and D, whereas alternative C would produce less. Alternative B modified, relative to alternative C, would allow for greater annual forest management activity and would sustain harvest volumes that would equate to approximately \$14.8 million in income and 320 jobs across all four counties. Relative to the entire analysis area economy, this would be a relatively small impact, but to the timber industry specifically, this would be a noticeable change in economic activity.

Under alternative C, the Forest would continue to provide economic opportunities and would sustain jobs and income to a lesser degree than under all the other alternatives. This alternative would allow for less annual forest management activity and would sustain harvest volumes that would equate to approximately \$10.6 million in income and 228 jobs across all four counties than would be sustained in the other alternatives. Relative to the entire analysis area economy, this would be a relatively small impact, but to the timber industry specifically, this would be a noticeable change in economic activity.

Under alternative D, the Forest would continue to provide economic opportunities and would sustain jobs and income to a similar degree as under alternatives A and B modified, whereas alternative C would produce less. Alternative D, relative to alternative C, would allow for greater annual forest management activity and would sustain harvest volumes that would equate to approximately \$16 million in income and 345 jobs across all four counties. Relative to the entire analysis area economy, this would be a relatively small impact, but to the timber industry specifically, this would be a noticeable change in economic activity.

Quality of life

Under alternative B modified, the Forest would continue to provide benefits to local beneficiaries and the general public which would enhance their quality of life through contributions to well-being, health and safety, and traditional, cultural, and spiritual values. Under alternative C, the Forest would continue to provide benefits to local beneficiaries and the general public that would enhance their quality of life through contributions to well-being, health and safety, and traditional, cultural, and spiritual values. Under alternative D, the Forest would continue to provide benefits to local beneficiaries and the general public that would enhance their quality of life through contributions to well-being, health and safety, and

traditional, cultural and spiritual values. Contributions that would differ by alternative are described in detail in the sections below.

Outdoor recreation and access

As displayed in table 114, alternatives B modified and D have 24 individual areas in the focused recreation management area, covering about 61,000 acres (about 3 percent of the Forest). In contrast, alternative C has 19 individual areas, totaling about 31,200 acres. Alternative A includes approximately 5,655 acres of recreation areas that are similar in character to focused recreation management area 7. Alternatives B modified and D would have the most number of sites and acreage, and alternative C has less than alternatives B modified and C but more than alternative A. As discussed above, the differences in availability of designated recreation areas might or might not directly contribute to changes in local economies but would likely influence local and non-local visitation patterns. It is generally expected that focused recreation areas would encourage visitation through enhanced management and might increase recreation-based economic activity in local areas.

Outdoor recreation influences quality of life, and alternatives B modified, C, and D would provide a wide variety of recreation opportunities and settings for users. Areas not within a focused recreation management area may still build developed recreation sites as well as trails but might not be as responsive to increases in recreational use as focused recreation areas.

Both motorized and nonmotorized access to recreation activities would be provided under the action alternatives. Alternative C would have the most recommended wilderness (management area 1b), with the greatest level of restrictions on motorized use and mechanized transport. Additional access restrictions would benefit individuals who enjoy accessing the Forest using nonmotorized and nonmechanized transport but would be of less benefit to individuals who enjoy accessing the Forest using motorized means of transportation.

Water quality

The most significant difference between the action alternatives and alternative A is the incorporation of additional forestwide plan components that are specifically designed to protect aquatic resources. Plan components for water quality are the same between action alternatives and can be found throughout the watershed and riparian management zone sections of the forest plan. FW-STD-WTR-02 and 03 would benefit groundwater and source water protection areas for public water supplies. FW-DC-WTR-06 would also lead to improved water quality relative to the no-action alternative.

Forest products

Under alternative B modified, commercial timber harvest levels would be higher than under alternative C but would be less than under alternatives A and D. Traditional values associated with forest products and forest product industries would not be impacted greatly by these alternatives.

Grazing

Under alternatives B modified and D, the acres available for timber harvest are the same, and therefore the potential for the creation of transitory range is the same. Under the no-action alternative and alternatives B modified and D, the acres available for summer recreation opportunities are the same, and the potential for livestock conflicts are the same. Recreation effects on livestock grazing of the no-action alternative (alternative A) and alternatives B modified and D would be similar.

Under alternative C, fewer acres of timber would be suitable for harvest than under other alternatives. Alternative C has the lowest acres suitable for timber harvest and thus would have the lowest potential for the creation of transitory range limiting potential suitability and utilization. Under alternative C, more

acres of summer recreation opportunities would be available, resulting in more opportunities for livestock conflicts than the other alternatives. Alternative C would also have the most adverse effects on livestock grazing as it relates to the creation of transitory range.

Under alternatives B modified and D, the acres available for timber harvest are the same, and therefore the potential for the creation of transitory range would be the same. Under the no-action alternative and alternatives B modified and D, the acres available for summer recreation opportunities would be the same.

Fish and wildlife

All alternatives would maintain wildlife habitat diversity and associated wildlife experiences and benefits, but the action alternatives would place more emphasis on maintaining motorized access, more emphasis on habitat connectivity considering all lands, and more emphasis on sustainability with respect to a changing climate (see section 3.7 and appendix 7 for more details).

Inspiration, spiritual values, and solitude

Under alternative B modified, about 53 percent of the Forest would be in designated or recommended wilderness. This alternative would provide more solitude and inspirational values associated with motorized and mechanized recreation opportunities than alternative C but less than alternatives A and D. It would provide less solitude and inspirational values associated with wilderness and recommended wilderness than alternative C but more than alternatives A and D.

Alternative C provides about 66 percent of the Forest that is in designated or recommended wilderness. This alternative provides the least solitude and inspiration values associated with motorized and mechanized recreation opportunities of all the alternatives, but it provides the most solitude and inspiration values associated with wilderness and recommended wilderness.

Alternative D would provide about 45 percent of the Forest in designated wilderness. This alternative would provide the highest amount of solitude and inspiration values associated with motorized and mechanized recreation opportunities of all the alternatives, but it would provide the least solitude and inspiration values associated with wilderness and recommended wilderness.

Cultural and heritage values

For details on the effects to cultural and heritage resources under the action alternatives, see section 3.25.

Environmental justice

As discussed in the “Affected environment” section, environmental justice populations exist within the four-county analysis area. Populations most at risk of experiencing disproportionately high and adverse human health or environmental effects include low-income households and Native Americans living on reservation lands. These populations are not mutually exclusive and are present throughout the analysis area, as discussed in the section on demographics above.

Under all the alternatives, the Forest and management activities would contribute to social and economic sustainability by providing key benefits to environmental justice communities, improving quality of life, and providing opportunities for income and jobs. The Forest would continue to provide for traditional, cultural, and spiritual values that are of particular interest to Native American tribes. No populations in the plan area would experience significant adverse human health impacts or environmental effects due to management actions proposed under any of the alternatives.

Cumulative effects

Many factors influence and affect the local social and economic environment. National, State, and county policies affect population growth, demographics, and land uses. Following is a brief description of some topics that are changing or may change in the future, adding to the effects on local communities from the alternatives.

Population growth and climate change

The West is the fastest-growing region in the country, and this trend is expected to continue for the next 20 years (U.S. Census 2010 data and projections). With this increased growth rate comes an increased diversification of the population. More new residents are migrating in, and the adult children of families living in the region are moving out of the area to find employment. This change in population composition has added to the diversity of attitudes, lifestyles, and values of the population within the four-county analysis area. The social assessment found a concern among some stakeholders that new residents are changing the nature of their communities. As natural amenity migration increases, the demand for outdoor recreation and the cultural value of wildlife viewing may increase. The new wave of natural amenity migrants, who are primarily moving to urban areas, may be more likely to hold existence values around wildlife and recreation over more traditional resource uses (Montag, Patterson, & Sutton, 2003).

For example, Glacier National Park continues to experience an increase in visitation. This suggests that opportunities for inspiration and solitude in Glacier National Park may be reduced in the future. This increase in Glacier National Park visitation may shift some visitors who are in search of solitude and inspiration to areas of the Flathead National Forest. This shift may result in an increased demand for solitude and inspiration in the primitive and semiprimitive areas of the Forest.

Climate change is predicted to increase the number of hot days in the region, leading to increased summer visits to the national forests (Hand & Lawson, in press). As a result, there may be added demand for recreational facilities in the summer months.

Development of forestlands and subdivision of private timberlands

Housing density adjacent to has been increasing, and this trend is expected to continue over the next several decades. Moderate and high increases in residential development are projected around national forests located in Montana (Stein et al., 2007). Although local city, county, and regional planners and the public are making progress in defining desirable development and are recognizing the inherent costs and negative effects associated with subdivision sprawl, growth will continue in some form and overall density will increase. This development would likely add pressure on adjacent Forest Service lands. Pressure would include increased demand for potentially conflicting recreational opportunities, services such as road maintenance, demand for undeveloped and semiprimitive settings, and increased fire management problems.

Montana, like many states across the West, is experiencing a massive divestiture of commercial timberlands for development and subdivisions (MTDNRC, 2010). Corporate timberland has become more valuable for recreational or residential real estate than for timber production. This development results in increased fragmentation of forested landscapes along with an increasing ex-urban migration and a greater desire for recreational properties and other amenity values. Impacts of fragmentation include wildlife habitat degradation, public access issues, and the increased challenges of providing public services and fire protection for new housing developments. Divestiture of corporate timberlands adds to the current trend of increased housing density adjacent to the national forest.

Resource development

Diversification of wood product manufacturing has historically allowed Montana mills to be more resilient in changing markets (MTDNRC, 2010). The majority of the timber harvested in Montana comes off State and private lands, with one third from nonindustrial private lands. The Montana Statewide Forest Resource Strategy (MTDNRC, 2010) recognizes the need to foster responsible management of private lands that integrates harvest of traditional and nontraditional forest products as a tool for good land stewardship. The amount of timber harvest on State and private lands and adjacent national forests will affect the local economy. Additional harvest from these lands would help to stabilize local jobs and income. Any decrease in harvest would add to a decrease in associated jobs and income.

Wildlife

Under the no-action alternative, grizzly bear habitat management would lack the benefit of a coordinated, multi-agency approach to NCDE grizzly bear habitat management that would be provided by the action alternatives. In the future, the signatories to the NCDE grizzly bear conservation strategy would commit to a coordinated approach to motorized access, developed recreation sites, livestock grazing, vegetation management, minerals management, and monitoring of the NCDE grizzly bear population and its habitat. A coordinated approach would be taken even if the grizzly bear is delisted. This could result in a positive impact on the Forest's ability to contribute to existence values for the NCDE grizzly bear on all lands (for more details, see section 6.18).

Clean air

Most impacts to air quality and visual quality within the analysis area are related to the contribution of smoke from areas to the south and west of the Forest, including all the way to the West Coast. Historically, when there are not large fires providing additional smoke to the area, prescribed fires and most wildfires have not produced long-term declines in air or visual quality.

Cultural and heritage values

Cumulative effects: As a result of the implementation of the draft Grizzly Bear Conservation Strategy on the amendment forests, "bear management units within the primary conservation area and zone 1 would have temporary access restrictions during denning season. During denning season it may be more difficult for Native Americans to access sites within these bear management units across all the forests" (see section 6.16.7).

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